MONROE TOWNSHIP GROUNDWATER CONTAMINATION SITE

ADMINISTRATIVE RECORD

March 2, 2000

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MONROE TOWNSHIP GROUNDWATER CONTAMINATION SITE

ADMINISTRATIVE RECORD FILE

INDEX OF DOCUMENTS

Document #: MTG 2.5 00001 - 2.5 00024
Title: Action Memorandum
Category: Removal Response
Recipient: Richard Caspe, Director, Emergency and Remedial Response
Date: December 6, 1999
Note: This document contains information which EPA considers to be confidential. The complete document is located at the EPA Region II Removal Records Center, 2890 Woodbridge Avenue, Edison, NJ 08837.

Document #: MTG 2.7 00001 - 2.7 00064
Title: Health and Safety Plan for Integrated Assessment, Monroe Township Groundwater Contamination, Monroe Township, Gloucester County, New Jersey
Category: Health and Safety Plan
Author: Superfund Technical Assessment and Response Team
Recipient: U. S. Environmental Protection Agency, Region II, New York, New York
Date: July 1999
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Document #: MTG 3.1 00001 - 3.1 00038
Title: Site Quality Assurance Project Plan - Monroe Township Groundwater Contamination
Category: Site Identification
Author: Diane D. Minsavage
Recipient: Dennis Munhall
Date: July 16, 1999
Note: This document contains information which EPA considers to be confidential. The complete document is located at the EPA Region II Removal Records Center, 2890 Woodbridge Avenue, Edison, NJ 08837.

Document #: MTG 3.2 00001 - 3.2 00842
Title: Organic and Inorganic Sampling Data
Category: Remedial Investigation
Recipient: Smita Sumbaly
Date: Dates include August 11, 1999 to August 20, 1999

Document #: MTG 3.4 00001 - 3.4 00066
Title: Sampling Trip Report – Monroe Township Groundwater Contamination
Category: Removal Response
Recipient: Dennis Munhall, Task Monitor
Date: August 4, 1999
Note: This document contains information which EPA considers to be confidential. The complete document is located at the EPA Region II Removal Records Center, 2890 Woodbridge Avenue, Edison, NJ 08837.

Document #: MTG 10.3 00001 – 10.3 00001
Title: Public Availability Session for Monroe Township Groundwater Investigation.
Category: Public Participation
Recipient: N/A
Date: October 7, 1999

Document #: MTG 10.3 00002 – 10.3 00002
Title: Letter to Residents about water sampling on/or about July 26, 1999
Category: Public Participation
Recipient: N/A
Date: July 9, 1999

Document #: MTG 10.3 00003 – 10.3 00003
Title: Notice of Public Availability
Category: Public Participation
Recipient: N/A
Date: Not dated

Document #: MTG 10.6 00001 – 10.6 00001
Title: Monroe Township Groundwater Investigation Fact Sheet
Category: Public Participation
Recipient: N/A
Date: September 24, 1999

Document #: MTG 11.2 00001 - 11.2 00002
Title: EPA Regional Guidance Documents
Category: Technical Source and Guidance Documents
Recipient: N/A
Date: Not dated

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

ACTION MEMORANDUM

DATE: DEC -6 1999

SUBJECT: Documentation of Verbal Authorization and Request for a Ceiling Increase at the Monroe Township Groundwater Contamination Site, Williamstown, Gloucester County, New Jersey

FROM: Chaitanya Agnihotri, On-Scene Coordinator
James S. Haklar, On-Scene Coordinator
Removal Action Branch

TO: Richard L. Caspe, Director
Emergency and Remedial Response Division

THRU: Richard C. Salkie, Chief
Removal Action Branch

Site ID No.: MQ

I. PURPOSE

The purpose of this Action Memorandum is to document a verbal authorization as well as to request authorization for a ceiling increase to conduct the proposed removal activities described herein for the Monroe Township Groundwater Contamination Site (Site), Williamstown, Gloucester County, New Jersey, 08094. The Emergency and Remedial Response Division (ERRD) Director's September 16, 1999 verbal authorization provided a total project ceiling of $100,000 to initiate a removal action providing bottled water delivery to homes with wells contaminated with tetrachloroethylene (PCE), benzene, mercury, lead, copper and thallium at levels in excess of federal Removal Action Levels (RALs) or Maximum Contaminant Levels (MCLs). The removal action also provided for the initiation of the installation of point-of-entry treatment systems for private wells exceeding the RAL and MCL for PCE, benzene and mercury. The proposed removal action is expected to cost an additional $147,000, which will bring the total estimated project ceiling to $247,000, of which $165,000 is for mitigation contracting.

ACTION MEMORANDUM

DATE: DEC -6 1999

SUBJECT: Documentation of Verbal Authorization and Request for a Ceiling Increase at the Monroe Township Groundwater Contamination Site, Williamstown, Gloucester County, New Jersey

FROM: Chaitanya Agnihotri, On-Scene Coordinator
James S. Haklar, On-Scene Coordinator
Removal Action Branch

TO: Richard L. Caspe, Director
Emergency and Remedial Response Division

THRU: Richard C. Salkie, Chief
Removal Action Branch

Site ID No.: MQ

I. PURPOSE

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CONCURRENCES

Name: Monroe Twp. Groundwater | Init: sb | Date: 11/24/99 | Filename: AM#0184

Symbol	ERRD-RAB	ERRD-RAB	ERRD-RAB	ORC-NJSUP	ERRD-DD	ERRD-D		
Surname	Haklar/ Agnihotri	Rotola	Salkie	Karlen	McCabe	Caspe		
Date	11/24/99	11/29/99	11/29/99	12/3/99	12/6/99	12/6/99		

(ERRD) Director's September 16, 1999 verbal authorization provided a total project ceiling of $100,000 to initiate a removal action providing bottled water delivery to homes with wells contaminated with tetrachloroethylene (PCE), benzene, mercury, lead, copper and thallium at levels in excess of federal Removal Action Levels (RALs) or Maximum Contaminant Levels (MCLs). The removal action also provided for the initiation of the installation of point-of-entry treatment systems for private wells exceeding the RAL and MCL for PCE, benzene and mercury. The proposed removal action is expected to cost an additional $147,000, which will bring the total estimated project ceiling to $247,000, of which $165,000 is for mitigation contracting.

Conditions at the Site meet the criteria for a removal action under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as documented in Section 300.415(b)(2) of the National Contingency Plan (NCP).

II. SITE CONDITIONS AND BACKGROUND

This Action Memorandum documents the proposed time-critical removal action for the Site. The Comprehensive Environmental Response, Compensation and Liability Information System ID number for the Site is NJD980769699.

A. Site Description

1. Removal site evaluation (RSE)

The U.S. Environmental Protection Agency (EPA) became aware of groundwater contamination of private wells in Monroe Township while evaluating groundwater contamination associated with the Township's municipal supply wells. During EPA's evaluation of these municipal wells, the Agency obtained groundwater sampling data from the Gloucester County Health Department (GCHD), which indicated that certain private wells in the Township were contaminated with PCE. In addition, based on discussions with the New Jersey Department of Environmental Protection (NJDEP) and the U.S. Geological Survey (USGS), EPA became aware of groundwater contamination problems in the Township that were associated with mercury.

In cooperation with both the NJDEP and the GCHD, EPA selected three areas of Monroe in which to perform tapwater sampling of private wells. These areas were determined based on the locations of previously known elevated concentrations of PCE, and included properties in the areas of the Black Horse Pike, Winslow Road and the area located in the vicinity of the intersection of Tuckahoe Road with Glassboro Road (see Attachment 1). The tap water sampling event was performed in July 1999 with approximately 100 homes being sampled. Of these 100 homes, it was found that 29 homes exceeded the RALs or MCLs for PCE, benzene, mercury, thallium, copper and lead (see Attachment 2).

Based upon the verbal authorization of the Director of ERRD, EPA initiated bottled water delivery to affected homes and initiated the procurement of a contractor to install point of entry treatment systems. EPA is currently performing sampling at residences in which elevated

concentrations of lead, copper and thallium, were detected, in order to determine the source of these contaminants (i.e., whether the source is the residential plumbing).

2. Physical location

The Site is located in the town of Williamstown, in the Township of Monroe. The affected properties are located in the Winslow Road Area (including properties on Winslow Road and Maple Street), the Tuckahoe Road Area (consisting of properties on Tuckahoe Road, Sykes Lane and Glassboro Road) and the Black Horse Pike Area (including properties on Black Horse Pike). Please see Attachment 1 for a schematic representation of these areas.

3. Site characteristics

All of the affected private wells are located in the town of Williamstown, in the Township of Monroe. Williamstown is an area comprised of rural, commercial and residential locations. According to information provided by the GCHD, NJDEP and the USGS, it is believed that the mercury and PCE contamination did not result from a single defined source. The areas of contaminated groundwater are situated throughout the town and are several miles apart. The regional groundwater flow is reported to be in a southeasterly direction.

4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant

Sampling conducted in July 1999 by EPA has identified 29 private wells that are contaminated with PCE, mercury, thallium, copper benzene and lead in concentrations above the federal MCL or RAL. These contaminants are CERCLA designated Hazardous Substances as listed in 40 CFR Table 302.4. Table I provides a summary of the more pertinent analytical information available for the Site.

Table I - Monroe Township Groundwater Contamination Site

MAXIMUM CONCENTRATIONS OF CONTAMINANTS FOUND IN RESIDENTIAL WELLS (ppb)		EPA RAL (ppb)	EPA MCL or Treatment Technique (ppb)
PCE	1,500	70	5
Benzene	470	100	5
Mercury	19.9	10	2
Copper	3,260	1,300	TT*
Lead	62.6	30	TT*
Thallium	4.0	2	2

*Treatment Technique, as per the Safe Drinking Water Act.

5. National priorities list (NPL) status

The Site is not currently listed on the NPL. Although the July 1999 sampling was performed as part of an "integrated assessment" for both removal and NPL evaluation purposes, a Hazard Ranking System package has not been prepared for the Site.

6. Maps, pictures and other graphic representations

A Site map is included as Attachment 1.

B. Other Actions To Date

1. Previous actions

EPA is currently providing bottled water to affected homes, where the concentrations of PCE, mercury, benzene, thallium and copper exceed their respective MCL or RAL. In addition, EPA initiated the process to procure the services of a contractor to install point-of-entry treatment systems at properties with elevated levels of PCE, benzene and mercury.

2. Current action

EPA is currently resampling 17 private wells in order to determine the source of the lead, copper and thallium contamination. In addition, the Agency is planning to perform sampling at additional locations with private wells, in order to fully delineate the extent of contamination in the three aforementioned areas.

C. State and Local Authorities' Roles

1. State and local actions to date

The GCHD is taking a supportive role at the Site. The GCHD has sampled and, upon request by the residents, continues to sample potable wells in the vicinity of the Site for mercury. The NJDEP is performing an investigation of the mercury contamination in the northern portion of the Township known as the Crystal Lake area. It should also be noted that the NJDEP is coordinating its efforts with the USGS, since the USGS is investigating mercury contamination over several counties in New Jersey.

2. Potential for continued State/local response

The NJDEP will continue to investigate, and respond to, mercury contamination in the Crystal Lake Area. In addition, GCHD will continue to sample potable wells for mercury. However, neither the NJDEP nor the local government will provide a safe drinking water supply to the

Black Horse Pike, Tuckahoe Road and Winslow Road areas in a timely manner. It should be noted that the State could use resources from the New Jersey Spill Fund for costs associated with the operation and maintenance of point of entry treatment systems.

III. THREATS TO PUBLIC HEALTH, OR WELFARE, OR THE ENVIRONMENT AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

Conditions at the Site continue to meet the criteria for a removal action under Section 40 CFR 300.415(b)(2) of the NCP. Qualifying criteria for the threats to the public health and welfare include the following:

(ii) Actual or potential contamination of drinking water supplies or sensitive ecosystems; and

Sampling conducted by EPA has resulted in identification of 29 private wells contaminated with PCE, mercury, thallium, copper, lead and benzene in excess of the federal MCL or RAL. Exposure to these contaminants can occur from ingestion of contaminated water and from skin contact from bathing or swimming in contaminated water.

The associated health effects from exposure to the aforementioned contaminants at elevated concentrations is provided below.

SUBSTANCE	HEALTH EFFECT
PCE	A,B,C,D,E,F
Benzene	A, E, F
Mercury	A, C, F
Thallium	A, B, C, F
Copper	A, B,C
Lead	C, F

A - Eye, skin, respiratory irritant
B - Liver damage
C - Kidney Damage
D - Toxic by inhalation, ingestion, or dermal contact
E - Carcinogenic
F - Central nervous system effects

(vii) The availability of other appropriate federal or State response mechanisms to respond to the release.

EPA is the only government agency capable of taking timely and appropriate action to respond to the threat posed by the presence of hazardous substances at the Site. As discussed previously,

State and local authorities will not undertake timely response actions to eliminate the threats posed by the Site.

A removal action is the appropriate mechanism by which EPA can provide alternate water supplies to affected homes.

B. Threat to the Environment

Groundwater, a natural resource, has been determined to be contaminated with PCE, mercury and benzene and is suspected of being contaminated with lead, copper and thallium. At this time, the extent of the threat to the environment cannot be clearly defined.

IV. ENDANGERMENT DETERMINATION

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Actions

1. Proposed action description

The proposed action is to install granular activated carbon (GAC) treatment units at properties with wells contaminated with PCE and benzene above the federal MCL of five parts per billion (ppb), and to install bimetallic treatment units at properties with wells contaminated with mercury above the federal MCL of two ppb. The treatment units will be monitored and maintained for the duration of the removal action, including periodic sampling of the water to assure proper functioning. Additionally, these properties will continue to be provided with bottled water until the treatment systems are installed, while properties with elevated levels of lead, copper and thallium will continue to receive bottled water until the source of the respective contaminants is determined.

2. Contribution to remedial performance

The actions proposed in this memorandum will address the threats posed to public health by providing a safe drinking water supply to affected residences. The proposed action would not adversely affect any plans for long-term remediation of the aquifer.

3. Description of alternative technologies

Two alternatives were considered to immediately address the health threats associated with exposure to the contaminants of concern in private wells at the Site: 1) provision of bottled water; and 2) installation of point of entry treatment systems.

(i) Provision of Bottled Water; and

While not strictly a technology, the provision of bottled water will ensure that residents are supplied with an uncontaminated source of drinking water, until a longer-term action is taken.

(ii) Installation of Point of Entry Treatment Systems.

Point of entry treatment systems are effective means of removing the contaminants of concern from water. The treatment systems would use GAC for removal of PCE and benzene and a bimetallic compound for the removal of mercury. These systems are reliable and are easily maintained, but require monitoring and maintenance to function properly.

4. Engineering Evaluation/Cost Analysis (EE/CA)

Due to the time-critical nature of this removal action, an EE/CA will not be prepared.

5. Applicable or relevant and appropriate requirements (ARARs)

Federal ARARs determined to be practicable for the Site are the Clean Water Act and the Safe Drinking Water Act.

6. Project schedule

The proposed removal action can be initiated immediately upon approval of funding. Barring any unforseen delays or increases in project scope, it is anticipated that EPA's removal action (including maintenance of the treatment systems) can be completed in the summer of 2000. As noted above, New Jersey will take over operation and maintenance after that point.

B. Estimated Costs

This project involves the monitoring and maintenance of installed water treatment systems and the provision of an alternate water supply (i.e., bottled water) for homes identified with the aforementioned contaminants above the federal MCL and RAL. The estimated costs (rounded) for this project are summarized below.

Other Extramural Costs:			
START	$ 5,000	$ 7,500	$ 12,500
Subtotal Extramural Costs	$ 80,000	$ 97,500	$177,500
Extramural Cost Contingency (20%)	$ 16,000	$ 19,500	$ 35,500
Total Extramural Cost	**$ 96,000**	**$117,000**	**$213,000**
Intramural Costs:			
Intramural Direct Cost	$ 2,000	$ 15,000	$ 17,000
Intramural Indirect Costs	$ 2,000	$ 15,000	$ 17,000
Total Intramural Costs	**$ 4,000**	**$ 30,000**	**$ 34,000**
TOTAL PROJECT CEILING	**$100,000**	**$147,000**	**$247,000**

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If the funds for the removal action described herein are not authorized, the groundwater contamination will continue to pose a threat to human health and welfare.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

No federal enforcement action is in progress at this time. Should a responsible party or parties be identified and be willing to undertake timely and appropriate corrective action, all or part of the funds requested herein may not be spent.

IX. RECOMMENDATIONS

This decision document represents the selected removal action for the Monroe Township Groundwater Contamination Site, which is located in the town of Williamstown, Monroe

Township, Gloucester County, New Jersey. This document was developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site continue to meet the NCP Section 300.415(b)(2) criteria for a removal action. The total project ceiling if approved will be $247,000, of which $165,000 comes from the regional removal allowance. There are sufficient monies in our current Advice of Allowance to fund this project.

Please indicate your approval of the verbal authorization for funding as well as a request for a ceiling increase for the Monroe Township Groundwater Contamination Site, as per current Delegation of Authority, by signing below.

Approved: William McCabe **Date:** 12/6/99

Richard L. Caspe, Director
Emergency and Remedial Response Division

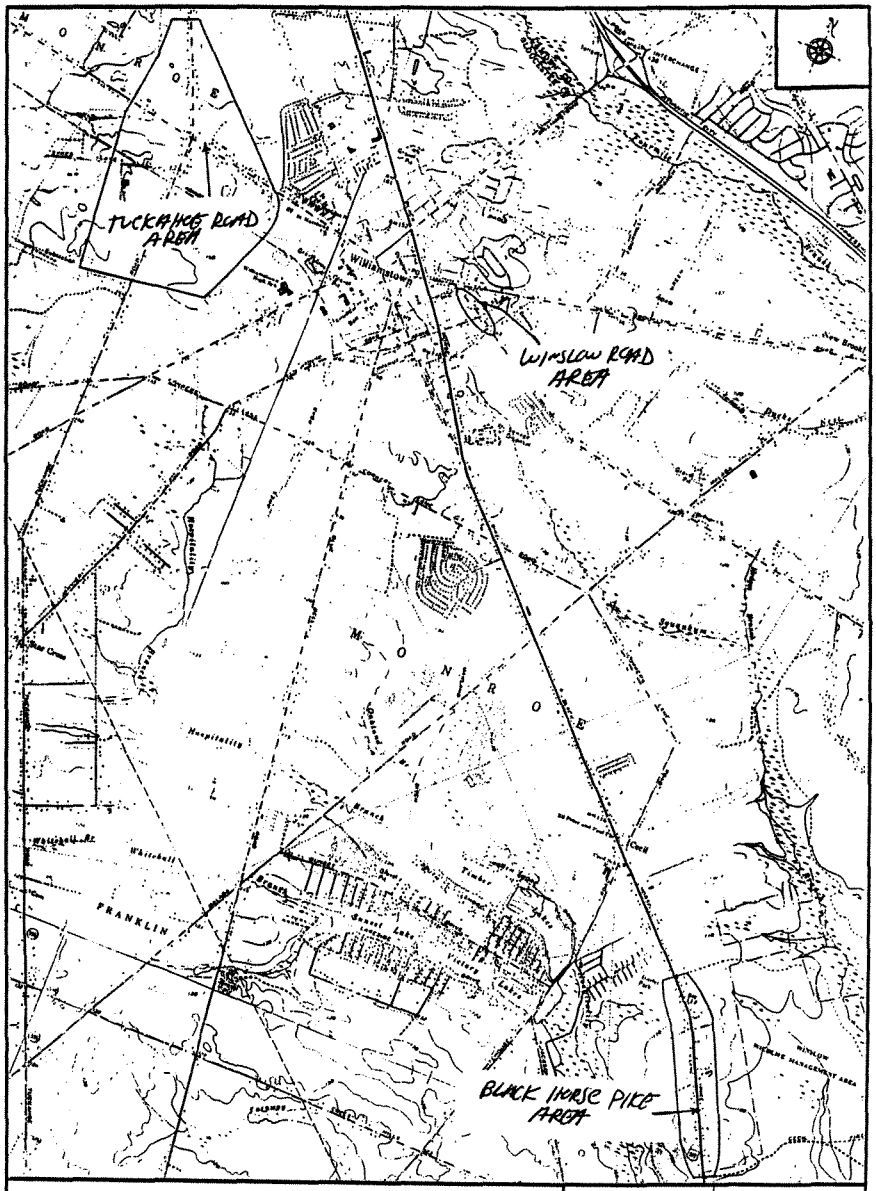
Disapproved: _____ **Date:** _____

Richard L. Caspe, Director
Emergency and Remedial Response Division

cc: (after approval is obtained)

R. Caspe, ERRD-D
W. McCabe, ERRD-DD
R. Salkie, ERRD-RAB
J. Rotola, ERRD-RAB
G. Zachos, ACSMB
R. Dease, ERRD-RPB
B. Bellow, CD
K. Weaver, OPM-FAM
D. Karlen, ORC-NJSUP
R. Gherardi, OPM-FIN
T. Johnson, 5202
P. McKechnie, OIG
J. Smolenski , NJDEP
G. Wheaton, NOAA
A. Raddant, DOI
O. Douglas, START

ATTACHMENT 1
Site Map



WESTON Roy F. Weston, Inc. FEDERAL PROGRAMS DIVISION	EPA PM: D. Munhall	FIGURE 1: Site Location Map
IN ASSOCIATION WITH RESOURCE APPLICATION,Inc. C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES, PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.	START PM: D. Minsavage	Monroe Township Groundwater Contamination

ATTACHMENT 2
Summary of July 1999 Sampling Results

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Page 1

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ATTACHMENT 2
Summary of July 1999 Sampling Results

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ATTACHMENT 3

DETAILED COST ESTIMATE
Monroe Township Groundwater Contamination Site

Confidential

ATTACHMENT 3
DETAILED COST ESTIMATE
Monroe Township Groundwater Contamination Site

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Monroe Township Groundwater Contamination Site

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DETAILED COST ESTIMATE
Monroe Township Groundwater Contamination Site

Page 4

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ATTACHMENT 3
DETAILED COST ESTIMATE
Monroe Township Groundwater Contamination Site

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ENFORCEMENT SENSITIVE
ENFORCEMENT ADDENDUM

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HEALTH AND SAFETY PLAN
FOR
INTEGRATED ASSESSMENT
MONROE TOWNSHIP GROUNDWATER CONTAMINATION
MONROE TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY

Prepared for:

U.S. Environmental Protection Agency
Region II
New York, New York 10007

Prepared By:

Superfund Technical Assessment and Response Team
Roy F. Weston, Inc.
Federal Programs Division
Edison, New Jersey 08837

EPA Contract No.: 68-W5-0019
DCN: START-02-F-03687
TDD No.: 02-99-06-0019
PCS No.: 4858

July 1999

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SECTION I - APPROVALS

Prepared By: Dais D. Minsavage — 20 July 1999.
START Project Manager — Date

Approved By: [signature] — 7/21/99
START Health and Safety Officer — Date

The signatures below indicate that the individuals have read and understood this Health and Safety Plan.

NAME	SIGNATURE	AFFILIATION	DATE
Harry Allen		Region II START	
Kiersten Dorneman		Region II START	
Dennis Foerter		Region II START	
Gerry Gilliland		Region II START	
Melissa Kaplan		Region II START	
Diane Minsavage		Region II START	
Jennifer Sy		Region II START	

SECTION II - GENERAL

2.0 Introduction

This section of the Site Health and Safety Plan (HASP) document defines general applicability and general responsibilities with respect to compliance with Health and Safety programs at the Monroe Township Groundwater Contamination (MTGC) site located in Monroe Township, Gloucester County, New Jersey.

The purpose of this HASP is to define the requirements and designate protocols to be followed at the MTGC site during investigation and remediation activities. Applicability extends to all Government employees, contractors, subcontractors and visitors.

All personnel on site, contractors and subcontractors included, shall be informed of the site emergency response procedures and any potential fire, explosion, health, or safety hazards of the operation. This HASP summarizes those hazards and defines protective measures planned for the site.

This plan must be reviewed and an agreement to comply with the requirements must be signed by all personnel prior to entering the exclusion zone or contamination reduction zone.

During development of this plan, consideration was given to current safety standards as defined by EPA/OSHA/NIOSH, health effects and standards for known contaminants, and procedures designed to account for the potential for exposure to unknown substances. Specifically, the following reference sources have been consulted:

- OSHA 29 CFR 1910.120 and EPA 40 CFR 311
- U.S. EPA, OERR ERT Standard Operating Safety Guides
- NIOSH/OSHA/USCG/EPA Occupational Health and Safety Guidelines
- (ACGIH) Threshold Limit Values

All visitors entering the contamination reduction zone and exclusion zone at the site will be required to read and verify compliance with the provisions of this HASP. In addition, visitors will be expected to comply with relevant OSHA requirements such as medical monitoring, training and respiratory protection (if applicable). Visitors will also be expected to provide their own protective equipment.

In the event that a visitor does not adhere to the provisions of the HASP, he/she will be requested to leave the work area. All non-conformance incidents will be recorded in the site logbook.

2.1 Proposed Site Activities

Region II START will conduct an off-site/on-site reconnaissance and media sampling event in order to determine the presence of on-site contamination, as well as identify potential and/or actual impacts to human and environmental receptors in the vicinity of the site. The sampling event will occur after the evaluation of data collected during the on-site reconnaissance.

During the on-site reconnaissance, START will verify planned sampling locations by examining the site and the surroundings. START will conduct the following activities during the site reconnaissance:

- locate all potential waste sources;
- determine the physical state of wastes present at the site;
- identify each source type;
- examine each source for evidence of hazardous substance migration;
- evaluate the degree of source containment;
- identify overland flow (i.e., runoff) pathways;
- determine the distances from sources to on-site and nearby targets;
- refine the site sketch depicting important features; and
- evaluate the need for the emergency response action at the site.

Sampling activities at this site may include collecting samples from groundwater (private supply wells) and air. Some of these activities could be intrusive. Information obtained from these investigations will be utilized to complete a Final Draft Integrated Assessment (IA) Report.

2.2 Emergency Telephone Numbers:

Chemtrec	(800) 424-9300
TSCA Hotline	(800) 424-9065
	(202) 544-1401
ATSDR	(404) 329-3311 (Day)
	(404) 639-0615 (Night)
AT&F (Explosives Information)	(800) 424-9555
National Response Center	(800) 424-8802
Pesticide Information Service	(800) 845-7633
RCRA Hotline	(800) 424-9346
CMA Chemical Referral Center	(800) 262-8200
National Poison Control Center	(800) 942-5969
U.S. DOT	(202)366-0656 (Day)
	(202) 426-2075 (Hotline)

2.3 WESTON Contacts:

START Team Leader	Owen B. Douglass, Jr., CIH, PhD 1090 King George Post Road Suite 201 Edison, NJ 08837 (732) 225-6116 (W) (610) 353-1074 (H) (800) 759-8888, pin 1364760 (Beeper)
START Assistant Team Leader	W. Scott Butterfield, CHMM (732) 225-6116 (W) (609) 883-3199 (H) (800) 759-8888, pin 1364761 (Beeper)
START Health and Safety Officer	Paul Potvin (732) 225-6116 (W) (732) 774-5782 (H) (800) 759-8888, pin 1364763 (Beeper)
Corporate Health and Safety Supervisor	Robert Schoenfelder (505) 837-6556

SECTION III - HEALTH AND SAFETY PERSONNEL

3.0 Health and Safety Personnel Responsibilities

The START Project Manager (PM), the START Team Leader, and START Health and Safety Officer, and all START representatives share responsibilities for formulating and enforcing health and safety requirements and implementing the HASP.

3.1 SI, SIP, ESI, or IA Project Manager

The SI, SIP, ESI, IA PM has the overall responsibility for the project and to assure that the goals of the site assessment project are attained in a manner consistent with the HASP requirements. The PM will coordinate with the designated Field Task Coordinator, Site HSO, and the START contract HSO to assure that the goals of the SI, SIP, ESI, or IA are completed in a manner consistent with the HASP.

3.2 WESTON Corporate Health and Safety Supervisor (CHSS)

WESTON's Health and Safety Supervisor is responsible for establishing health and safety policies and procedures, and for the overall administration of the corporation's health and safety program.

3.3 START Health and Safety Officer (HSO)

The START HSO shall be responsible for overseeing development of the HASP and shall ensure that the HASP complies with all federal, state, and local health and safety requirements. The HSO provides technical and administrative support for the START Health and Safety Program.

3.4 Designated Site HSO

The designated Site HSO has total responsibility for ensuring that the provisions of this HASP are adequate and implemented in the field. Changing field conditions may require decisions to be made concerning adequate protection programs. Therefore, it is vital that personnel assigned as HSO be experienced and meet the additional training requirements specified by OSHA in 29 CFR 1910.120.

SECTION IV - SITE HISTORY AND PHYSICAL DESCRIPTION

4.0 Location

The MTGC site is located in three (separate) rural/residential areas in Monroe Township, Gloucester County, New Jersey. The site consists of private residential well contamination in several areas located within Monroe Township including the residences and/or buildings located in the vicinity of the Crayon Box Nursery School, the Hughes residence, and the Carrigan residence.

4.1 Description

The MTGC site is a suspected area of widespread groundwater contamination located in the aforementioned southern New Jersey community. Background information indicates that there is no known waste source associated with the site. The three areas of concern currently include 1) residences and buildings located in the vicinity of the Crayon Box Nursery School (on Glassboro Road); 2) residences and building located in the vicinity of the Hughes residence (on South Black Horse Pike); and 3) residences and buildings located in the vicinity of the Carrigan residence (on Winslow Road). A Site Location Map is provided as Figure 1. Groundwater generally flows toward the southeast in Monroe Township. Public water supplies are generally not currently available to these residences and/or buildings.

4.2 History

Groundwater samples have been collected from the Monroe Township Municipal Utilities Authority (MTMUA) wells since 1976. The samples have been variously analyzed for mercury, metals, and volatile organic compounds (VOCs). Mercury was detected a elevated levels in MTMUA well Nos. 4 and 5; MTMUA well No. 4 has been abandoned. Tetrachloroethene (PCE) has been detected in groundwater samples collected from MTMUA well Nos. 5, 6, 7, and 8. In January 1997, based on exceedances of the maximum contaminant level (MCL) for PCE in water from well No. 5, the New Jersey Department of Environmental Protection (NJDEP) directed MTMUA to treat the water from well No. 5 and/or use alternate sources of drinking water.

Beginning in 1993, the Gloucester County Health Department (GCHD) collected numerous groundwater samples from wells in Monroe Township. Most of the samples were analyzed for mercury; 42 samples (collected from 23 wells) were analyzed for VOCs. Mercury has been detected in groundwater samples collected from areas throughout the township; mercury was detected in several groundwater samples collected from a residential neighborhood located in the vicinity of Crystal Lake. The NJDEP is funding treatment systems and/or connections to the municipal water system for the affected residences located around Crystal Lake through the spill fund. PCE was detected in

Figure 1
Site Location Map

This page replaces the original page which contains information that EPA considers to be confidential. The complete document is located at the EPA Region II Removal Records Center, 2890 Woodbridge Avenue, Edison, NJ 08837.

groundwater samples collected from ten wells, including two municipal wells. Several of these residents have applied to the NJDEP spill fund to pay for treatment systems.

The U.S. Geological Survey (USGS) collected groundwater samples from 13 observation/monitoring wells, 6 MTMUA wells, and 1 municipal well in Washington Township (located northwest of Monroe Township) between 1996 and 1998. These samples were analyzed for VOCs. Analytical results indicate the presence of PCE and several breakdown products of PCE (i.e., trichloroethene [TCE], 1,1-dichloroethene [DCE], trans-1,2-DCE, and cis-1,2-DCE) in samples collected from four of the MTMUA wells and the Washington Township well. Other VOCs detected in the USGS samples include 1,1,1-trichloroethane (TCA), chloroform, and 1,2-dichloroethane (DCA). Some of the concentrations detected exceeded the prevailing state or federal MCLs.

At this time, there are no confirmed sources associated with the widespread groundwater contamination; however, there are currently three potential sources which may have contributed to the regional groundwater contamination. One potential source, the Crump residence, is located on Glassboro Road, adjacent to the Crayon Box Nursery School. The second potential source, Universal Process Equipment, was located at 3398 South Black Horse Pike. The third potential source, Precision Metal Crafters, is located adjacent to the Carrigan residence. None of these potential sources are included on the NJDEP hazardous waste sites list.

SECTION V - SITE-RELATED INCIDENTS, COMPLAINTS, AND ACTIONS

5.0 General

Section 4.2 of this document presents a brief summary of site-related actions. Available background information does not indicate the occurrence of site-related incidents or complaints.

SECTION VI - CHEMICAL CONTAMINANTS DATA

6.0 Introduction

This section outlines the potential chemical hazards which workers may be exposed to during work on this project. This is a representative list of known and suspected hazardous substances at this site. Other chemicals may be present at the site which have not yet been identified. Unless a material is identified by a valid label, it shall be considered as unknown, and handled as such.

6.1 Chemical Data Information

Contaminant/ Source (conc.)	PEL/TLV/IDLH/ Routes of Exposure	Symptoms of Exposure	First Aid Procedures
Tetrachloro-ethene (PCE)	OSHA PEL - 100 ppm (Ca) ACGIH TLV - 25 ppm IDLH - 150 ppm Routes of Exposure - Inhalation, absorbance, ingestion, skin and/or eye contact	Eye, skin, and nose irritant; nausea; flushed face and neck; vertigo; dizziness, incoherence; headache, somnolence; skin erythema (redness); liver damage; [CARC].	Eye: irrigate immediately Skin: Prompt soap wash Breath: Respiratory support Swallow:Immediate medical attention
Mercury	OSHA PEL - 0.1 mg/m^3 (as Hg) ACGIH TLV - 0.025 mg/m^3 (as Hg) IDLH - 10 mg/m^3 (as Hg) Routes of Exposure - Inhalation, absorbance, ingestion, skin and/or eye contact	Eye and skin irritant; cough, chest pain, dyspnea (diff. breathing); bronchitis, pneumontis; tremors, insomnia, irritability, fatigue, indecision, head-aches, weakness; stomatitis, salivation; GI disturbance, anorexia, weight loss; proteinuria	Eye: irrigate immediately Skin: Prompt soap wash Breath: Respiratory support Swallow:Immediate medical attention

Contaminant/ Source (conc.)	PEL/TLV/IDLH/ Routes of Exposure	Symptoms of Exposure	First Aid Procedures
Trichloroethene (TCE)	OSHA PEL - 100 ppm ACGIH TLV - 50 ppm IDLH - 1,000 ppm (Ca) Routes of Exposure - Inhalation, absorbance, ingestion, skin and/or eye contact	Eye and skin irritant; headache, vertigo; visual disturbance; fatigue, giddiness, tremors, somnolence, nausea, vomiting; dermatitis; cardiac arrhythmias, paresthesia; liver injury [CARC]	Eye: irrigate immediately Skin: Prompt soap wash Breath: Respiratory support Swallow:Immediate medical attention
1,1,1-Tri-chloroethane (TCA)	OSHA PEL - 350 ppm ACGIH TLV - 50 ppm IDLH - 2,000 ppm (Ca) Routes of Exposure - Inhalation, skin and/or eye contact	Dizziness, nausea, vomiting; visual disturbance, staggering, slurred speech, convulsions, coma; liver and kidney damage; liquid: frostbite; reproductive, teratogenic effects; [CARC]	Eye and Skin: 1) if frostbite has not occurred - wash immediately with soap and water; 2) if frostbite has occurred - seek immediate medical attention; DO NOT rub affected areas or flush with water Breath: Respiratory support
1,1- Dichloro-ethene (DCE)	OSHA PEL - 1 ppm ACGIH TLV - 10 ppm IDLH - ND (Ca) Routes of Exposure - Inhalation, absorbance, ingestion, skin and/or eye contact	Skin, eye, and throat irritant; dizziness; headaches; nausea; dyspnea; liver and kidney disfunction; [CARC]	Eye: irrigate immediately Skin: Prompt water flush Breath: Respiratory support Swallow:Immediate medical attention

Contaminant/ Source (conc.)	PEL/TLV/IDLH/ Routes of Exposure	Symptoms of Exposure	First Aid Procedures
1,2-DCE	OSHA PEL - 200 ppm ACGIH TLV - 200 ppm IDLH - 1,000 ppm Routes of Exposure - Inhalation, ingestion, skin and/or eye contact	Eye and respiratory system irritant; central nervous system (CNS) depressant	Eye: irrigate immediately Skin: Prompt soap wash Breath: Respiratory support Swallow:Immediate medical attention
1,2-Dichloro-ethane (DCA)	OSHA PEL - 50 ppm ACGIH TLV - 10 ppm IDLH - 50 ppm (Ca) Routes of Exposure - Inhalation, absorbance, ingestion, skin and/or eye contact	Eye irritant; corneal opacity; CNS depressant; nausea, vomiting; dermatitis; liver, kidney, CNS damage; [CARC]	Eye: irrigate immediately Skin: Prompt soap wash Breath: Respiratory support Swallow:Immediate medical attention
Chloroform	OSHA PEL - 50 ppm ACGIH TLV - 10 ppm IDLH - 500 ppm (Ca) Routes of Exposure - Inhalation, absorbance, ingestion, skin and/or eye contact	Eye, skin irritant; dizziness, mental dullness, nausea, confusion; headache, fatigue; anesthesia; enlarged liver; [CARC]	Eye: irrigate immediately Skin: Prompt soap wash Breath: Respiratory support Swallow:Immediate medical attention

6.2 Characteristics

Chemical characteristics for the chemicals listed above are provided in attached CAMEO reports and the Material Safety Data Sheets (MSDS). In Appendix A, also include MSDSs for chemicals utilized in conducting site assessment sampling activities.

6.3 Sources

The MTGC site consists of private residential well contamination in several area in Monroe Township. Elevated levels of VOCs (up to 914 μg/L of PCE) and mercury (as high as 21.0 μg/L) have been detected in groundwater samples collected from private wells.

There are no confirmed sources associated with the groundwater contamination; however, there are currently three potential sources which may have contributed to the regional groundwater contamination. One potential source, the Crump residence, is located on Glassboro Road, adjacent to the rayon Box Nursery School. The second potential source, Universal Process Equipment, was located at 3398 South Black Horse Pike. The third potential source, Precision Metal Crafters, is located adjacent to the Carrigan residence.

SECTION VII - HAZARD ASSESSMENT

7.0 General

This HASP defines the hazards and methods to protect personnel from those hazards identified in the background information. The evaluation of hazards is based upon the knowledge of site background information and anticipated risks posed by the specific operation.

The following subsections describe each task/operation in terms of the specific associated hazards. In addition, the protective measures to be implemented during completion of those operations are also identified.

7.1 Task-Specific Risk Analysis

This HASP involves two tasks; on-site reconnaissance and groundwater (private supply wells) sampling. Background information indicates that various chlorinated organic compounds and mercury have been detected in groundwater samples collected from wells in the areas of concern. Proper personal protective equipment (PPE) will be worn to prevent any hazards associated with contact from the hazardous substances. Since only groundwater samples will be collected, it is not anticipated that ambient air (in the breathing zone) will be impacted; therefore, continuous air monitoring will not be performed.

On-site Reconnaissance Hazard	**Preventitive Measure**
1. slips, trips, falls	1. identify, mark hazards
2. ticks, biological hazards	2. training, self check
3. heat stress/cold stress	3. awareness, work/rest schedule

Sampling Hazard	**Preventitive Measure**
1. slips, trips, falls	1. identify, mark hazards
2. ticks, biological hazards	2. training, self check
3. heat stress/cold stress	3. awareness, work/rest schedule
4. back injuries	4. proper lifting techniques
5. chemical exposure	5. proper PPE

There will be no confined space entry.

MSDSs for preservation liquids are attached to the end of the HASP.

SECTION VIII - TRAINING AND MEDICAL REQUIREMENTS

8.0 Training and Medical Requirements

The following sections outline the training and medical surveillance requirements that must be met prior to individuals working on any known or suspected hazardous waste site.

8.1 Personnel Training Requirements

Consistent with the OSHA 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response, all site personnel are required to be trained in accordance with the standard. At a minimum all personnel are required to be trained to recognize the on-site hazards, the provisions of this HASP, and the responsible personnel.

8.1.1 Pre-assignment and Annual Refresher Training

Prior to arrival on site, each employer will be responsible for certifying that his/her employees meet the requirements of pre-assignment training, consistent with OSHA 29 CFR 1910.120 paragraph (e)(3). The employer should be able to provide a document certifying that each general site worker has received 40 hours of off-site instruction, as well as a minimum of 3 days actual field experience under the direct supervision of a trained, experienced supervisor. Workers who are on site only occasionally to perform a specific limited task and who are unlikely to be exposed to hazardous substances over their PELs, are required to have a minimum of 24 hours of instruction off site and a minimum of 8 hours of supervised field experience. If an individual employee has work experience and/or training that is equivalent to that provided in the initial training, an employer may waive the 40-hour training so long as that equivalent experience is documented or certified. All personnel must also receive 8 hours of refresher training annually.

8.1.2 Site Supervisors Training

Consistent with OSHA 29 CFR 1910.120 paragraph (e)(8), individuals designated as site supervisors require an additional 8 hours of training.

8.1.3 Training and Briefing Topics

All site individuals will receive a pre-entry briefing by a qualified person. Topics to be discussed will be based on anticipated site hazards. All personnel shall be required to read and understand the requirements of the HASP prior to working on the project and will sign the HASP to indicate this has been completed.

8.2 Medical Surveillance Requirements

Medical monitoring programs are designed to track the physical condition of employees on a regular basis, as well as survey pre-employment or baseline conditions prior to potential exposures. The medical surveillance program is a part of each employers Health and Safety program.

8.2.1 Baseline or Pre-assignment Monitoring

Prior to being assigned to a hazardous or a potentially hazardous activity involving exposure to toxic materials, the employee must receive a pre-assignment or baseline physical. The contents of the physical are to be determined by the employer's medical consultant. As suggested by NIOSH/OSHA/USCG/EPA's Occupational Safety & Health Guidance Manual for Hazardous Waste Site Activities, the minimum medical monitoring requirements for work at the site is as follows:

- Complete medical and work histories.
- Physical examination.
- Pulmonary function tests (FVC and FEV1).
- Chest X-ray (every 3 years).
- EKG.
- Eye examination and visual acuity.
- Audiometry.
- Urinalysis.
- Blood chemistry and heavy metals toxicology.

The pre-assignment physical should categorize employees as fit-for-duty and able to wear respiratory protection.

8.2.2 Periodic Monitoring

In addition to a baseline physical, all employees require a periodic physical within the last 12 months unless the advising physician believes a shorter interval is appropriate. The employer's medical consultant should prescribe an adequate medical which fulfills OSHA 29 CFR 1910.120 requirements. The pre-assignment medical outlined above may be applicable.

All personnel working in contaminated or potentially contaminated areas at the site will verify currency (within 12 months) with respect to medical monitoring and training. This data will kept on site. Private/personnel information that falls under the U. S. Privacy Act will not be collected.

8.2.3 Site Specific Medical Monitoring

For activities at the MTGC site, no specific tests are required prior to individuals entering the Exclusion Zone or Contamination Reduction Zone.

8.2.4 Exposure/Injury/Medical Support

As a follow up to an injury or possible exposure above established exposure limits, all employees are entitled to and encouraged to seek medical attention and physical testing.

Depending upon the type of exposure, it is critical to perform follow-up testing within 24 to 48 hours. It will be up to the employer's medical consultant to advise the type of test required to accurately monitor for exposure effects.

8.2.5 Exit Physical

At termination of employment or reassignment to an activity or location which does not represent a risk of exposure to hazardous substances, an employee shall require an exit physical. If his/her last physical was within the last 6 months, the advising medical consultant has the right to determine adequacy and necessity of the exit exam.

SECTION IX - ZONES, PERSONAL PROTECTION, AND COMMUNICATION

9.0 Site Zones

The three general work zones which may be established at the site are the Exclusion Zone, Contamination Reduction Zone, and Support Zone. A site map identifying the work zones will not generally be included in the HASP. The work zones will be determined in the field in accordance with HASP guidelines. Based on the type of sampling to be conducted, it is unlikely that an Exclusion Zone or Contamination Reduction Zone will be established at the MTGC site.

9.1 Exclusion Zone

The Exclusion Zone (EZ) is defined as the area where contamination is either known or likely to be present, or because of activity, will provide a potential to cause harm to personnel. Entry into the Exclusion Zone requires the use of personnel protective equipment.

9.2 Contamination Reduction Zone

The Contamination Reduction Zone (CRZ) is the area where personnel conduct personal and equipment decontamination. It is essentially a buffer zone between contaminated areas and clean areas. Activities to be conducted in this zone will require personal protection as defined in the decontamination plan.

9.3 Support Zone

The Support Zone is situated in clean areas where the chance to encounter hazardous materials or conditions is minimal. Personal protective equipment is therefore not required.

9.4 Personal Protection

This section describes the general requirements of the EPA-designated Levels of Protection (A-D), and the specific levels of protection required for each task at the Site. Based on the sampling to be conducted at the site, only Level D will be required at the MTGC site.

9.4.1 Levels of Protection

Personnel wear protective equipment when assessment activities involve known or suspected atmospheric contamination vapors, gases, or particulates; or the potential for direct contact with skin-affecting substances exists. Full facepiece respirators protect lungs, gastrointestinal tract, and eyes against airborne toxicant.

Chemical-resistant clothing protects the skin from contact with skin-destructive and absorbable chemicals.

The specific levels of protection and necessary components for each have been divided into four categories according to the degrees of protection afforded:

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be worn when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B is the primary level of choice when encountering unknown environments and/or handling/sampling unknown materials.

Level C: Should be worn when the criteria for using air-purifying respirators are met, and a lesser level of skin protection is needed.

Level D: Should be worn only as a work uniform and not in any area with respiratory or skin hazards. It provides minimal protection against chemical hazards.

Modifications of these levels are permitted, and routinely employed during site work activities to maximize efficiency. For example, Level C respiratory protection and Level D skin protection may be required for a given task. Likewise the type of chemical protective ensemble (i.e., material, format) will depend upon contaminants and degrees of contact.

The Level of Protection selection is based upon the following:

- Type and measured concentration of the chemical substance in the ambient atmosphere and its toxicity.
- Potential for exposure to substances in air, liquids, or other direct contact with material due to work being conducted.
- Knowledge of chemicals on site, along with properties such as toxicity, route of exposure, and contaminant matrix.

In situations where the type of chemical, concentration, and possibilities of contact are unknown, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better identified.

9.4.2 Level D Personnel Protective Equipment:

- o Coveralls
- o Gloves
- o Boots/shoes, leather or chemical-resistant, steel toed
- o Safety glasses
- o Hard hat

9.4.3 Reassessment of Protection Program

The Level of Protection provided by PPE selection shall not be upgraded or downgraded during this investigation. All of the field work (i.e., the collection of groundwater samples from private wells) will be performed using Level D PPE.

9.4.4 Task Specific PPE Requirements

TASK	LEVEL OF PROTECTION	SPECIFIC MATERIALS
On-site Reconnaissance	Level D	Steel Toe Boots, safety glasses, and hard hats (as appropriate)
Site Sampling (groundwater sampling)	Level D	Level D - Nitrile inner and outer gloves, Latex boot covers, Steel toe boots, Tyvek coveralls (if deemed necessary; Sarans if splash is a hazard), safety glasses (goggles or face shield if splash is a hazard), and hard hats (if appropriate).

9.5 Communications

Successful communications between field teams and contact with personnel in the support zone are essential, as is communication with off-site agencies such as police and fire. The

following communications systems will be available during activities at the Site (check all systems that apply):

X	Intrinsically Safe Radio			
___	Compressed Air Horn			
___	Hand Signals			
___	Public Telephone	(location	)(number -	)
___	Site Telephone	(location	)(number -	)
X	Portable Telephone	(location	)(number -	) TBD

9.6 Identification of Nearest Medical Assistance

As part of the site control program, the Site PM must post the identification and location of the nearest medical facilities where response personnel can receive assistance in the event of an emergency. Medical facilities typically include area hospitals, emergency clinics, on-call physicians, medical specialists, or emergency, ambulance, fire, and police services. Information on the nearest medical facility for this site can be found in Section 14.5.

If there is no medical facility in close proximity to the site, at least one individual on site must be trained to render first aid in the event of an emergency. The following individual(s) on site are certified to perform first aid:

NAME	FIRST AID/CPR EXPIRATION DATE	
Harry Allen	02/09/01	Expired
Kiersten Dorneman	07/27/01	07/27/99
Dennis Foerter	Expired	11/24/99
Gerry Gilliland	10/24/00	Expired
Melissa Kaplan	N/A	N/A
Diane Minsavage	03/19/00	11/24/99
Jennifer Sy	05/26/01	Expired

SECTION X - MONITORING PROCEDURES

10.0 Air Monitoring and Action Levels

According to 29 CFR 1910.120(h), air monitoring shall be used to identify and quantify airborne levels of hazardous substances and health hazards in order to determine the appropriate level of employee protection needed on site.

10.1 Routine Air Monitoring Requirement

Sampling at this site will consist of the collection of groundwater samples from private wells located on residential and/or commercial properties. It is highly unlikely that ambient air (in the breathing zone) will be impacted; therefore, continuous air monitoring will not be performed.

SECTION XI - SAFETY CONSIDERATIONS

11.0 Lighting

Work areas must have adequate lighting for employees to see to work and identify hazards (5 footcandles minimum - comparable to a single 75 or 100 watt bulb). Personnel should carry flashlights in all normally dark areas for use in the event of a power failure. Applicable OSHA standards for lighting, 29 CFR 1910.120(m) shall apply.

11.1 Electrical Power

All electrical power must have a ground fault circuit interrupter as part of the circuit. All equipment must be suitable and approved for the class of hazard. Applicable OSHA standards for electrical, 29 CFR 1926 Subpart K, shall apply.

11.2 Eye Wash Protection

All operations involving the potential for eye injury, splash, etc., must have approved eye wash units locally available as per 29 CFR 1910.151(c).

11.3 Fire Protection/Fire Prevention

Operations involving the potential for fire hazards shall be conducted in a manner as to minimize the risk. Non-sparking tools and fire extinguishers shall be used or available as appropriate. Sources of ignition shall be removed. When necessary, explosion-proof instruments and/or bonding and grounding will be used to prevent fire or explosion.

11.4 Utilities

Overhead and underground utility hazards shall be identified and/or inspected prior to conducting operations involving potential contact.

11.5 Slips, Trips, and Falls

Caution will be used to reduce general physical hazards. Where there is a fall potential, it will be guarded or posted to prevent employee use.

11.6 Heat Stress

The combination of warm ambient temperature and protective clothing increases the potential for heat stress. Heat stress disorders include: heat rash, heat cramps, heat exhaustion, and heat stroke.

Heat stress can be prevented by assuring an adequate work/rest schedule. It is recommended that workers break a minimum 10 to 15 minutes for every 2 hours when temperature exceed 72.5 degrees F and protective clothing is worn. More frequent breaks are necessary as the temperatures and level of protection are increased.

A work/rest schedule can be calculated based on heat stress monitoring results. Monitoring consists of taking the radial pulse of a worker for 30 seconds immediately after exiting the work area.

If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If the heart rate still exceeds 110 beats per minute at the next rest period, increase the following rest period by one-third. The initial rest period should be at least 5 minutes.

11.7 Cold Stress

With outdoor work in the winter months, the potential exists for hypothermia and frostbite. Protective clothing greatly reduces the possibility of hypothermia in workers. However, personnel will be instructed to wear warm clothing and to stop work to obtain more clothing if they become too cold. Employees will also be advised to change into dry clothes if their clothing becomes wet from perspiration or from exposure to precipitation.

In cold weather, the potential for frostbite exists, especially in body extremities. Personnel will be instructed to pay particular attention to hands, feet, and any exposed skin when dressing. Personnel will be advised to obtain more clothing if they begin to experience loss of sensation due to cold exposure. Employees will be encouraged to use the heated shelters on site at regular intervals depending upon the severity of ambient temperatures. Symptoms of cold stress, including heavy shivering, excessive fatigue, drowsiness, irritability, or euphoria necessitate immediate return to the shelter.

11.8 Noise

Hearing protection is required for workers working around noise sources where the noise level is greater than 85 dBA (time weighted average).

SECTION XII - STANDARD SAFE WORK PRACTICES

12.0 General

The following items are requirements to protect the health and safety of workers and will be discussed in the safety briefing prior to initiating work on the site:

- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of contamination is prohibited in the exclusion zone and contamination reduction zone.

- Hands and face must be washed upon leaving the exclusion zone and before eating, drinking, chewing gum, tobacco, smoking, or other activities which may result in ingestion of contamination.

- A buddy system will be used. Hand signals will be established to maintain communication.

- During site operations, each worker will consider himself as a safety backup to his partner. Off-site personnel provide emergency assistance. All personnel will be aware of dangerous situations that may develop.

- Visual contact will be maintained between buddies on site when performing hazardous duties.

- No personnel will be admitted to the site without the proper safety equipment, training, and medical surveillance certification.

- All personnel must comply with established safety procedures. Any staff member who does not comply with safety policy will be immediately dismissed from the site.

- Proper decontamination procedures must be followed before leaving the site.

SECTION XIII - DECONTAMINATION PROCEDURES

13.0 Decontamination Plan

Any site where hazardous waste cleanup operations occur must have a plan that outlines decontamination procedures. These procedures must be made available to employees and must be implemented before anyone enters areas on-site where there is suspected contamination. The plan must ensure that chosen decontamination methods are effective for the specific hazardous substances present, and that the methods themselves do not pose any health or safety hazards.

The Site HSO will be responsible for monitoring the decontamination procedures. Monitoring will include reviewing the decontamination procedures to ensure that they are adequate for removal of the site contaminants, and ensuring that proper decontamination procedures are being followed.

13.1 Personnel Decontamination

All personnel leaving the contaminated area of a site (the Exclusion Zone) must be decontaminated to remove any harmful chemicals or infectious organisms that may have adhered to them. Step-by-step procedures for decontamination of personnel wearing PPE Levels A through C are found in Appendix E. The procedures given are for the maximum and minimum amount of decontamination used for each level of protection.

The maximum decontamination procedures for all levels of protection consist of specific activities at 19 stations. Each station emphasizes an important aspect of decontamination. Decontamination lines are site-specific and vary depending on the types of contamination and work activities conducted on-site.

13.2 Disposition of Decontamination Wastes

Investigation-derived wastes generated during the site inspection will be disposed of in accordance with OERR Directive 9345.3-02, Management of Investigation-Derived Wastes During Site Inspections (May 1991), or most recent directive regarding disposal of such wastes.

SECTION XIV - SPILL CONTAINMENT PROGRAM

14.0 Spill/Release Contingency Measures

In the event of a potential release or spill of a hazardous material, certain measures will be taken to ensure that spill response capability is maintained during site investigation activities.

14.1 Response

Any person observing a spill or release will act to remove and/or protect injured/contaminated persons from any life-threatening situation. First aid and/or decontamination procedures will be implemented as appropriate.

First aid will be administered to injured/contaminated personnel. Unsuspecting persons/vehicles will be warned of the hazard. All personnel will act to prevent any unsuspecting persons from coming in contact with spilled materials by alerting other nearby persons. Attempt to stop the spill at the source, if possible. Without taking unnecessary risks, personnel will attempt to stop the spill at the source. This may involve activities such as uprighting a drum, closing a valve or temporarily sealing a hole with a plug.

Utilizing radio communications, the emergency coordinator (START PM) will be notified of the spill/release, including information on material spilled, quantity, personnel injuries and immediate life threatening hazards. Air monitoring will be implemented by the Site HSO to determine the potential impact on the surrounding community. Notification procedures will be followed to inform on-site personnel and off-site agencies. The emergency coordinator will make a rapid assessment of the spill/release and direct confinement, containment and control measures. Depending upon the nature of the spill, measures may include:

- Construction of a temporary containment berm utilizing on-site clay absorbent earth
- Digging a sump, installing a polyethylene line and
- Diverting the spill material into the sump
- Placing drums under the leak to collect the spilling material before it flows over the ground
- Transferring the material from its original container to another container

The emergency coordinator will notify the OSC of the spill and steps taken to institute clean-up. Emergency response personnel will clean-up all spills following the spill clean-up plan developed by the emergency coordinator. Supplies necessary to clean up a spill will be immediately available on site. Such items may include, but are not limited to:

- Shovel, rake
- Clay absorbent
- Polyethylene liner
- Personal safety equipment
- Steel drums
- Pumps and miscellaneous hand tools

The major supply of material and equipment will be located in the Support Zone. Smaller supplies will be kept at active work locations. The emergency coordinator will inspect the spill site to determine that the spill has been cleaned up to the satisfaction of the OSC. If necessary, soil, water or air samples may be taken and analyzed to demonstrate the effectiveness of the spill clean-up effort. The emergency coordinator will determine the cause of the spill and determine remedial steps to ensure that recurrence is prevented. The emergency coordinator will review the cause with the OSC and obtain his/her concurrence with the remedial action plan.

SECTION XV - EMERGENCY PLAN

15.0 Emergency Response/Contingency Plan

This section describes contingencies and emergency planning procedures to be implemented at the site. This plan is compatible with local, state and federal disaster and emergency management plans as appropriate.

15.1 Pre-Emergency Planning

During the site briefings held prior to field work, all employees will be trained in and reminded of provisions of the emergency response plan, communication systems, and evacuation routes. Section 7.1 identifies the hazardous conditions associated with specific site activities. The plan will be reviewed by the START HSO and revised if necessary. This will ensure that the plan is adequate and consistent with prevailing site conditions.

15.2 Personnel Roles and Lines of Authority

The Site Supervisor has primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of personnel from the site area, and evacuation of adjacent residents. He/she is additionally responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow-up reports completed. The HSO may be called upon to act on the behalf of the site supervisor, and will direct responses to any medical emergency. The individual contractor organizations are responsible for assisting the project manager in his/her mission within the parameters of their scope of work.

15.3 Site Security

During any emergency situation it is important that site security and control are maintained. The emergency coordinator will be responsible for ensuring that no individuals are allowed to enter the site or be put in any danger due to the nature of the emergency situation on the site.

15.4 Emergency Recognition/Prevention

Personnel will be familiar with techniques of hazard recognition from pre-assignment training and site-specific briefings. The HSO is responsible for ensuring that prevention devices or equipment are available to personnel. The following presents a list of potential hazards and prevention/control measures:

HAZARD	PREVENTION/CONTROL	LOCATION
Fire/Explosion	Fire Extinguisher Alarm System Fire Inspections	To Be Determined
Spill	Berms/Dikes Sorbent Materials Foams	To Be Determined
Air Release	Water Spray Foam Alarm System Evacuation Routes	To Be Determined

The locations of the equipment will be discussed during the site specific briefing and periodically during the project.

15.5 Evacuation Routes/Procedures

In the event of an emergency which necessitates an evacuation of the site, the following alarm procedures will be implemented:

Evacuation alarm notification should be made using three short blasts on the air horn, supplemented by the use of hand-held radios. All personnel should evacuate to a location upwind of any activities. Ensure that a predetermined location is identified off site in case of an emergency, so that all personnel can be accounted for. The predetermined location will be identified during the daily safety meeting.

Personnel will be expected to proceed to the closest exit with your buddy, and mobilize to the safe distance area associated with the evacuation route. Personnel will remain at that area until the re-entry alarm is sounded or an authorized individual provides further instructions.

15.6 Safe Distances and Places of Refuge

No single recommendation can be made for evacuation or safe distances because of the wide variety of emergencies which could occur. Safe distances can only be determined at the time of an emergency based on a combination of site and incident-specific criteria. However, the following measures are established to serve as general guidelines.

In the event of minor hazardous materials releases (small spills of low toxicity), workers in the affected area will report initially to the contamination reduction zone. Small spills

or leaks (generally less than 55 gallons) will require initial evacuation of at least 50 feet in all directions to allow for cleanup and to prevent exposure. After initial assessment of the extent of the release and potential hazards, the emergency coordinator or his designee will determine the specific boundaries for evacuation. Appropriate steps such as caution tape, rope, traffic cones, barricades, or personal monitors will be used to delineate and secure the boundaries.

In the event of a major hazardous material release (large spills of high toxicity/greater than 55 gallons), workers will be evacuated from the building/site. Workers will assemble at the entrance to the site for a head count by emergency coordinator and to await further instruction.

If an incident may threaten the health or safety of the surrounding community, the public will be informed and, if necessary, evacuated from the area. The emergency coordinator, or his designee will inform the proper agencies in the event that this is necessary.

Places of refuge will be established prior to the commencement of activities. These areas must be identified for the following incident:

- Chemical release
- Fire/explosion
- Power loss
- Medical emergency
- Hazardous weather

In general, evacuation will be made to the command post, unless the emergency coordinator determines otherwise. It is the responsibility of the emergency coordinator to determine when it is necessary to evacuate personnel to off-site locations.

In the event of an emergency evacuation, all the employees will gather at the entrance to the site until a head count establishes that all are present and accounted for. No one is to leave the site without notifying the emergency coordinator.

15.7 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel. In the event of a medical emergency, personnel will take direction from the HSO and notify the appropriate emergency organization. In the event of a fire or spill, the site supervisor will notify the appropriate local, state, and federal agencies. Section 15.7.1 through 15.7.3 present Route To Hospital Maps for the three areas.

Organization	Contact	Telephone
Ambulance:	Emergency Services	911
Police:	Monroe Township	911
Fire:	Monroe Township	911
Hospital:	Kennedy Memorial Hospital - Washington Township Division 435 Hurffville-Crosskeys Road Washington Township, NJ	911 or (856) 582-2500

Directions to Hospital:

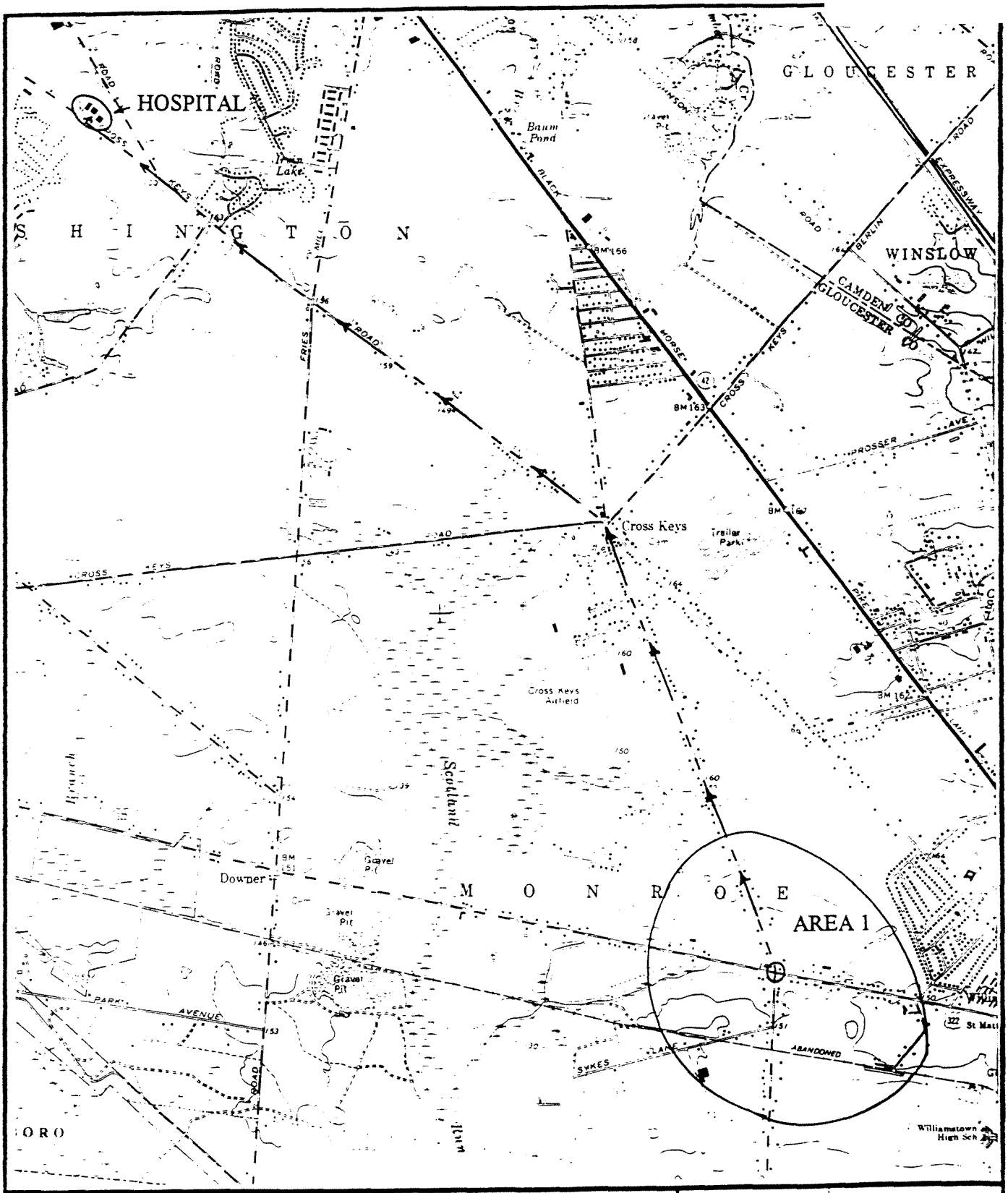
Area 1) From the corner of Glassboro Road (Routes 322 and 536) and Tuckahoe Road (Route 555); head north on Tuckahoe Road (approximately 1.6 miles) to a six-corner intersection; turn left (approximately 45°) onto Hurffville-Crosskeys Road; proceed approximately 2.1 miles on Hurffville-Crosskeys Road; the hospital will be on the right.

Area 2) From the vicinity of the Hughes residence, follow Black Horse Pike (Route 322) northwest (towards Williamstown) approximately 3 miles; at fork in the road, veer left onto Crosskeys-Williamstown Road (Routes 322 and 654) - follow Crosskeys-Williamstown Road approximately 3 miles (through Williamstown) to a six-corner intersection, here Crosskeys-Williamstown Road becomes Hurffville Crosskeys Road (Route 654); proceed straight through the intersection, continue approximately 2.1 miles on Hurffville-Crosskeys Road; the hospital will be on the right.

Area 3) From the intersection of Winslow Road and New Brooklyn Road (Route 536), proceed west on New Brooklyn Road one block to the intersection of New Brooklyn Road and Black Horse Pike (Route 42); turn right onto Black Horse Pike, proceed approximately 6.1 miles to intersection of Black Horse and Green Tree (Route 651); turn left onto Green Tree, continue approximately 2.3 miles to intersection of Green Tree and Hurffville-Crosskeys Road (Route 654); turn left onto Hurffville-Cross Keys Road, continue approximately 1.3 miles; the hospital will be on the left.

15.7.1 ROUTE TO HOSPITAL MAP (AREA 1)

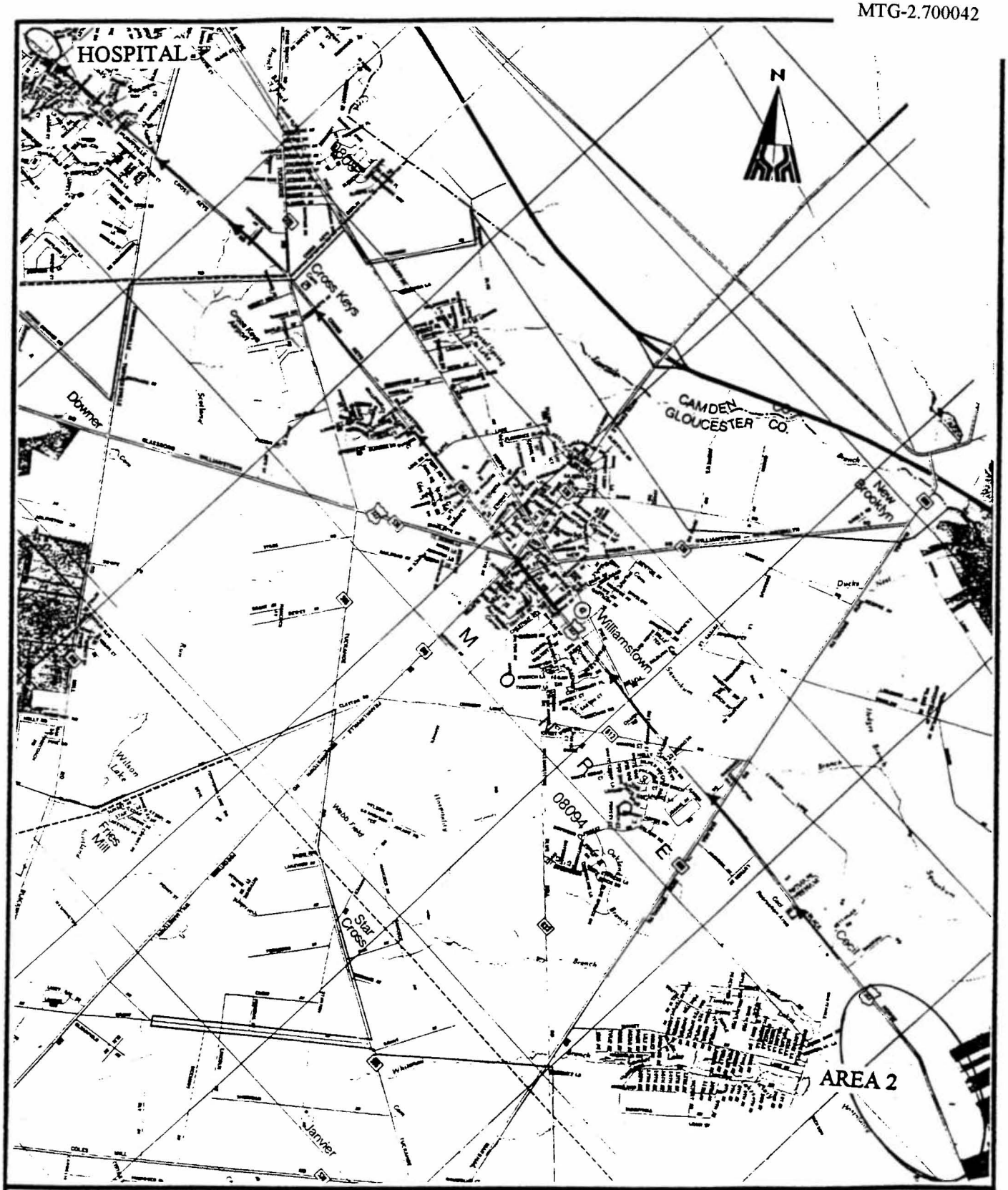
[PLACE HOLDER FOR ROUTE TO HOSPITAL MAP]



WESTON MANAGERS DESIGNERS/CONSULTANTS **Roy F. Weston, Inc.** FEDERAL PROGRAMS DIVISION	EPA TM D. Munhall	Route to Hospital Map - Area 1
IN ASSOCIATION WITH RESOURCE APPLICATION, Inc. C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES, PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.	START PM D. Minsavage	Monroe Twp Groundwater Contamination

15.7.2 ROUTE TO HOSPITAL MAP (AREA 2)

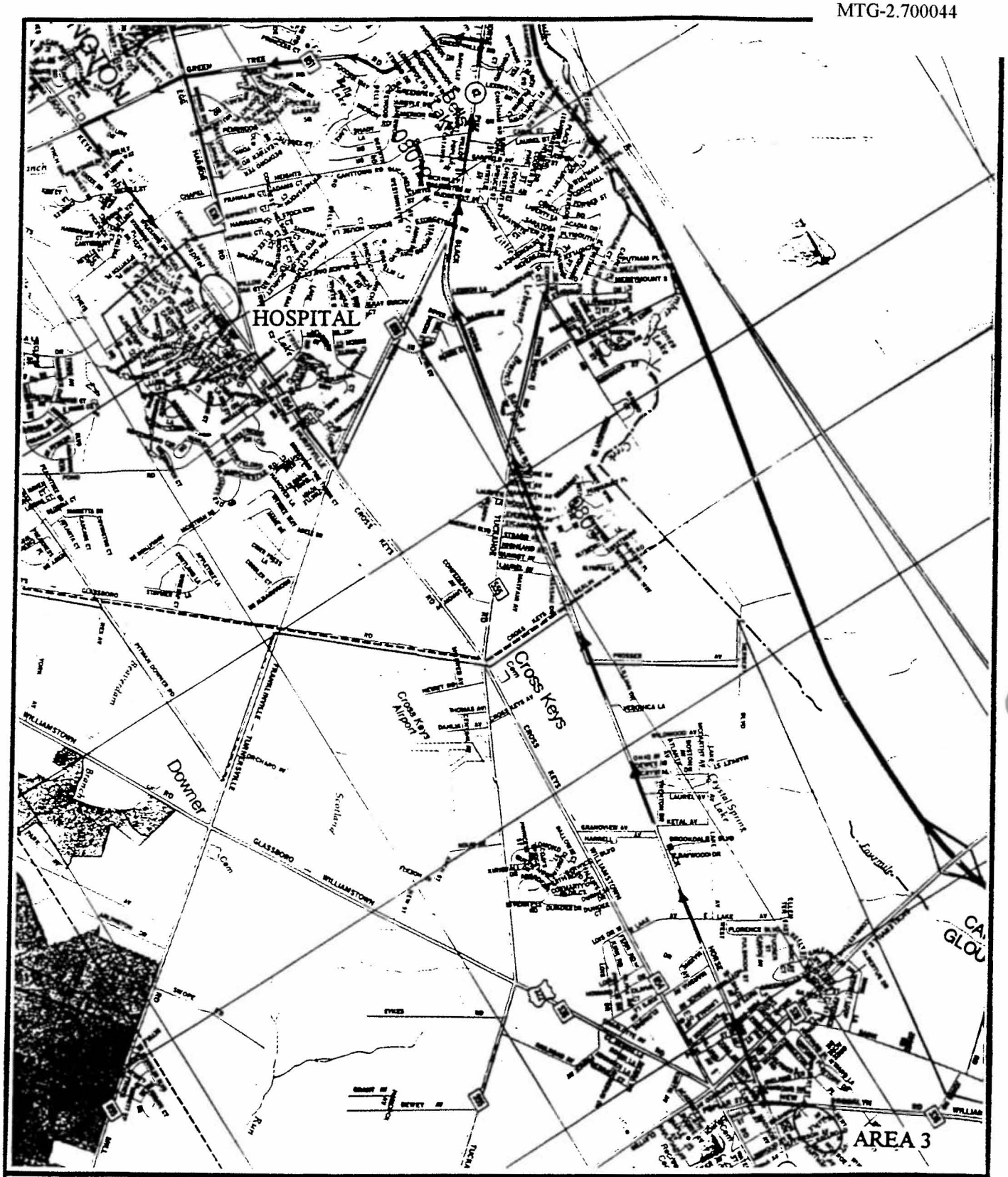
[PLACE HOLDER FOR ROUTE TO HOSPITAL MAP]



WESTON MANAGERS DESIGNERS/CONSULTANTS Roy F. Weston, Inc. FEDERAL PROGRAMS DIVISION	EPA TM D. Munhall	Route to Hospital Map - Area 2
IN ASSOCIATION WITH RESOURCE APPLICATION, Inc. C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES, PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.	START PM D. Minsavage	Monroe Twp Groundwater Contamination

15.7.3 ROUTE TO HOSPITAL MAP (AREA 3)

[PLACE HOLDER FOR ROUTE TO HOSPITAL MAP]



Roy F. Weston, Inc. FEDERAL PROGRAMS DIVISION	EPA TM D. Munhall	Route to Hospital Map - Area 3
IN ASSOCIATION WITH RESOURCE APPLICATION, Inc. C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES, PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.	START PM D. Minsavage	Monroe Twp Groundwater Contamination

15.8 Emergency Medical Treatment Procedures

Any person who becomes ill or injured in the exclusion zone must be decontaminated to the maximum extent possible. If the injury or illness is minor, full decontamination should be completed and first aid administered prior to transport. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket). First aid should be administered while awaiting an ambulance or paramedics. All injuries and illnesses must immediately be reported to the PM.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site. This information is included in Table 3.1.

Any vehicle used to transport contaminated personnel will be treated and cleaned as necessary.

15.9 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the PM or designated alternate will advise the fire commander of the location, nature, and identification of the hazardous materials on site.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available on site to control or extinguish the fire; and,
- Remove or isolate flammable or other hazardous materials which may contribute to the fire.

15.10 Spill or Leak

In the event of a spill or a leak, site personnel will:

- Inform their supervisor immediately;
- Locate the source of the spillage and stop the flow if it can be done safely; and,
- Begin containment and recovery of the spilled materials.

15.11 Emergency Equipment/Facilities

The following is a list of potentially available emergency equipment on site:

- o First aid kit
- o Fire extinguisher
- o Stretcher
- o Site telephone
- o Solvent material
- o Spill kits
- o Emergency SCBAs
- o Eye wash
- o Emergency shower
- o Two-way radio
- o Overpacks
- o Berm materials

15.12 Site Topography, Layout and Weather Conditions

Prior to work beginning at a site it is important to note particulars about that site that might be important during an emergency situation. In particular, it is important to note specifics about the site topography, the layout of the site and any special weather conditions that are known or are expected to occur. This information should then be used to ensure that emergency response planning has taken into account site-specific requirements.

Site Topography - The MTGC site is located on Monroe Township, Gloucester County, New Jersey.

Layout - The MTGC site is a suspected area of widespread groundwater contamination located on southern New Jersey. The site consists of three mixed- usage areas, ranging from rural to residential and commercial, and spans approximately 7 miles. Background information indicated that there are no known waste sources associated with the site. The township is located in an area of relatively flat terrain. Groundwater flow in Monroe Township is generally towards the southwest.

Weather Conditions - In July, mainly hot and humid weather expected which may include occasional rainfall and/or electrical storms.

15.13 Accident Report

For all occupational injuries, accident, and/or illness that occurs on site, an Employee Incident Report must be filled out and given to the START HSO.

SECTION XVI - MEDICAL DATA SHEET/FIELD TEAM REVIEW

16.0 Field Team Data

Name	40-Hour Training	8-Hour Refresher	Supervisor Training	First Aid/ CPR	Fit Test	Medical
Harry Allen	06/16/95	03/16/98	09/25/98	02/09/98 02/09/98	01/23/98	01/23/98
Kiersten Dorneman	03/13/98	NA	09/25/98	07/27/98	03/11/98	3/5/98
Dennis Foerter	03/17/89	06/02/98	01/27/93	05/06/96 01/15/98	-	11/19/98
Gerry Gilliland	01/16/87	03/06/98	01/23/92	10/24/97 10/24/97	-	10/22/97
Melissa Kaplan						
Diane Minsavage	02/15/91	02/23/98	01/05/95	03/19/97 01/15/98	01/16/98	01/23/98
Jennifer Sy	03/09/90	06/09/98	09/12/95	02/09/98 02/09/98	05/26/98	11/2/98

APPENDIX A

CHEMICAL DATA SHEETS

Material Safety Data Sheet

From Genium's Reference Collection
Genium Publishing Corporation
1145 Catalyn Street
Schenectady, NY 12303-1836 USA
(518) 377-8855

GENIUM PUBLISHING CORP.

No. 313

PERCHLOROETHYLENE
(Revision D)
Issued: November 1978
Revised: August 1988

SECTION 1. MATERIAL IDENTIFICATION

Material Name: PERCHLOROETHYLENE

Description (Origin/Uses): Used in commercial dry cleaning and metal-degreasing operations; used to a lesser extent in home products and in veterinary anthelmintics (worming).

Other Designations: Ethylene Tetrachloride; Tetrachloroethylene; C_2Cl_4; CAS No. 0127-18-4

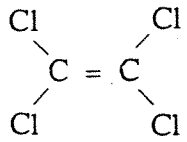
Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

NFPA

HMIS		NFPA	
H	1		
F	0	R	1
R	1	I	3
PPG*		S	2
*See sect. 8		K	0

SECTION 2. INGREDIENTS AND HAZARDS

SECTION 2. INGREDIENTS AND HAZARDS	%	EXPOSURE LIMITS
Perchloroethylene, CAS No. 0127-18-4	Ca 100	**OSHA PEL** 8-Hr TWA: 100 ppm Ceiling: 200 ppm Maximum Peak above the Ceiling: 300 ppm for 5 min. in any 3 Hrs **ACGIH TLVs, 1987-88** TLV-TWA: 50 ppm, 340 mg/m³ TLV-STEL: 200 ppm, 1340 mg/m³ **Toxicity Data*** Human, Inhalation, TC_{Lo}: 96 ppm/7 Hrs



*See NIOSH, *RTECS* (No. KX3850000), for additional data with references to reproductive, irritative, tumorigenic, and mutagenic effects.

SECTION 3. PHYSICAL DATA

Boiling Point: 250°F (121°C)
Specific Gravity (H_2O = 1): 1.623
% Volatile by Volume: 100
Water Solubility (%): Insoluble
Molecular Weight: 166 Grams/Mole
Vapor Pressure: 19 Torrs at 77°F (25°C)
Vapor Density (Air = 1): 5.83

Appearance and Odor: A clear, colorless liquid; ethereal odor.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	Flammability Limits in Air	LOWER	UPPER
*	*	% by Volume	*	*

Extinguishing Media: *Perchloroethylene does not burn. Use extinguishing agents that will put out the surrounding fire.

Unusual Fire or Explosion Hazards: Perchloroethylene vapor is heavier than air and it collects in low-lying areas such as sumps, wells, and underground piping systems. Enter these low-lying areas with appropriate caution.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Use care in selecting safety equipment (see sect. 5, Conditons to Avoid).

SECTION 5. REACTIVITY DATA

Perchloroethylene is stable in closed containers during routine operations. It does not undergo hazardous polymerization.

Chemical Incompatibilities: Hazardous chemical reactions involving perchloroethylene and barium, beryllium, or lithium are reported in Genium reference 84, page 491M-208.

Conditions to Avoid: Prevent contact with incompatible chemicals. Avoid exposure to direct sunlight. Monitor the stabilizer level in the perchloroethylene product; get specifications from your supplier for the proper inhibitor levels. This material forms hydrochloric acid (HCl) if the inhibitor level becomes too low. Do not mix perchloroethylene with caustic soda or potash. This material may degrade or attack rubber and some plastics and coatings, so select protective gear and handling equipment carefully.

Hazardous Products of Decomposition: Although perchloroethylene itself does not burn, it can be very hazardous in fires because of thermooxidative degradation at high temperatures to very toxic phosgene and corrosive hydrogen chloride. Electric arcs and perchloroethylene vapor may also produce these products of hazardous decomposition.

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SECTION 6. HEALTH HAZARD INFORMATION

Perchloroethylene is not listed as a carcinogen by the NTP, IARC, or OSHA.

Summary of Risks: Perchloroethylene affects the central nervous system (CNS), causing incoordination, headache, vertigo, light narcosis, dizziness, unconsciousness, and even death. All of these can occur as the level and duration of exposure continues.

Medical Conditions Aggravated by Long-Term Exposure: None reported. **Target Organs:** CNS, eyes, skin.
Primary Entry: Inhalation, skin. **Acute Effects:** Irritation of the skin, eyes, and upper respiratory tract (URT); CNS effects.
Chronic Effects: None reported.

FIRST AID
Eyes: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes.
Skin: Immediately wash the affected area with soap and water.
Inhalation: Remove the exposed person to fresh air; restore and/or support his or her breathing as needed.
Ingestion: Never give anything by mouth to someone who is unconscious or convulsing. Do not induce vomiting.

GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES. Seek prompt medical assistance for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel, provide ventilation, and eliminate all sources of ignition immediately. Cleanup personnel need protection against contact with and inhalation of vapor (see sect. 8). Contain large spills and collect waste or absorb it with an inert material such as sand, earth, or vermiculite. Use nonsparking tools to place waste liquid or absorbent into closable containers for disposal. Keep waste out of sewers, watersheds, and waterways. **Waste Disposal:** Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations
Air Contaminant (29 CFR 1910.1000 Subpart Z)

EPA Designations (40 CFR 302.4)
RCRA Hazardous Waste, No. U210
CERCLA Hazardous Substance, Reportable Quantity: 1 lb (0.454 kg), per Clean Water Act (CWA), section 307 (a) and Resource Conservation and Recovery Act (RCRA), section 3001

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. Where splashing of perchloroethylene solution may occur, wear a full face shield/splash guard. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133). **Respirator:** Consult the *NIOSH Pocket Guide to Chemical Hazards* for general recommendations on respirator protection. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine use (e.g., cleaning reactor vessels or storage tanks), wear an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode. **Warning:** Air-purifying respirators will *not* protect workers in oxygen-deficient atmospheres. **Other:** Wear impervious gloves, boots, aprons, and gauntlets, etc., to prevent prolonged or repeated skin contact with perchloroethylene. Suggested material includes polyvinyl alcohol, polyethylene, or neoprene. Leather shoes are also appropriate. **Ventilation:** Install and operate general and local ventilation systems that are powerful enough to maintain airborne levels of perchloroethylene dust below the OSHA PEL standard cited in section 2. **Safety Stations:** Make eyewash stations, washing facilities, and safety showers available in areas of use and handling. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do *not* wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from shoes and equipment.
Comments: Practice good personal hygiene; always wash thoroughly after using this material. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do *not* eat, drink, or smoke in any work area. Avoid inhaling perchloroethylene vapor. Select safety equipment carefully (see sect. 5, Conditions to Avoid).

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage/Segregation: Store perchloroethylene in a cool, dry, well-ventilated area away from barium, beryllium, and lithium.

Special Handling/Storage: Protect containers from physical damage. Fit all holding tanks with an air-drying venting system that prevents moist air from entering the tank and allows for perchloroethylene vapor expansion and contraction; airtight storage facilities are not recommended. Aluminum is not recommended for storage facilities.

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: Tetrachloroethylene	**DOT Label:** None	**IMO Label:** Saint Andrew's Cross (X)*
DOT ID No. UN1897	**DOT Hazard Class:** ORM-A	**IMO Class:** 6.1

*Harmful-Stow away from Foodstuffs (Materials of IMO Class 6.1, Packaging Group III).

References: 1, 12, 73, 84-94, 100, 103.

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Medical Review: MJ Hardies, MD

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Material Safety Data Sheet

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GENIUM PUBLISHING CORP.

No. 26 MTG-2.700051

MERCURY
(Revision C)
Issued: September 1981
Revised: August 1988

SECTION 1. MATERIAL IDENTIFICATION 26

Material Name: MERCURY

Description (Origin/Uses): Used in barometers, thermometers, hydrometers, and pyrometers; in mercury arc lamps producing ultraviolet rays; in switches and fluorescent lamps; as a catalyst in oxidations of organic compounds; in alloys; in explosives; and for extracting gold and silver from ore.

Other Designations: Colloidal Mercury; Metallic Mercury; Quicksilver; Hg; Hydrargyrum;
CAS No. 7439-97-6

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

Comments: Inorganic and organic mercury compounds are highly toxic, as is pure mercury.

Genium

HMIS

H	3	R	1
F	0	I	4
R	0	S	1
PPG*		K	0

*See sect. 8

SECTION 2. INGREDIENTS AND HAZARDS	%	EXPOSURE LIMITS
Mercury, CAS No. 7439-97-6	Ca 100	**OSHA PEL** Ceiling: 1 mg per 10 m³ **ACGIH TLV (Skin*), 1987-88** TLV-TWA: 0.05 mg/m³ as Hg (Mercury Vapor) **Toxicity Data**** Rabbit, Inhalation, LC_{Lo}: 29 mg/m³ (30 Hrs)
*Mercury can be absorbed through intact skin, which contributes to overall exposure. **See NIOSH, *RTECS* (OV4550000), for additional data with references to reproductive, mutagenic, and tumorigenic effects.		

SECTION 3. PHYSICAL DATA

Boiling Point: 673°F (357°C)
Specific Gravity (H_2O = 1): 13.546 at 68°F (20°C)
Vapor Pressure: 0.0018 Torr at 77°F (25°C)
Water Solubility (%): Insoluble
Molecular Weight: 201 Grams/Mole
Melting Point: -37.93°F (-38.85°C)

Appearance and Odor: A silver, heavy liquid; odorless. **Danger:** Mercury vapor has no warning properties.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	Flammability Limits in Air	LOWER	UPPER
		% by Volume		
*	*		*	*

Extinguishing Media: *Mercury does not burn. Use extinguishing agents that will put out the surrounding fire.

Unusual Fire or Explosion Hazards: When exposed to the high temperatures that occur during a fire, mercury can vaporize to form extremely toxic fumes.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

SECTION 5. REACTIVITY DATA

Mercury is stable in closed containers at room temperature under normal storage and handling conditions. It cannot undergo hazardous polymerization.

Chemical Incompatibilities: Hazardous reactions involving mercury and acetylene, ammonia, boron phosphodiiodide, chlorine, chlorine dioxide, methyl azide, sodium carbide, nitric acid, oleum, and sulfuric acid are reported (Genium ref. 84).

Conditions to Avoid: Do not expose mercury to incompatible chemicals.

Hazardous Products of Decomposition: Extremely toxic mercury metal fumes are likely to be produced during fires.

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SECTION 6. HEALTH HAZARD INFORMATION

Mercury is not listed as a carcinogen by the NTP, IARC, or OSHA.

Summary of Risks: Mercury is very toxic due to its liquid and fat solubility, lack of charge, and membrane permeability. It is a slowly cumulative poison that concentrates in the brain, kidneys, and liver. It is very hazardous when spilled or heated. Mercury and its vapor are rapidly absorbed by the membranes lining the respiratory tract, the gastrointestinal (GI) tract, and the skin. Mercury is a teratogen (causes physical defects in embryos). **Medical Conditions Aggravated by Long-Term Exposure:** Preexisting problems of the target organs can be worsened. Provide preplacement and periodic medical exams emphasizing the target organs. **Target Organs:** Skin, eyes, respiratory system, central nervous system (CNS), kidneys. **Primary Entry:** Skin absorption/contact, inhalation. **Acute Effects:** Erosion of the respiratory/GI tracts, nausea, vomiting, bloody diarrhea, shock, headache, metallic taste. Inhalation of high concentrations for short periods can cause pneumonitis, chest pain, dyspnea, coughing, stomatitis, gingivitis, and salivation. **Chronic Effects:** Tremors, emotional problems, loss of concentration, depression, drowsiness, fatigue, insomnia, loss of memory, kidney problems, eye lesions, vision disturbances, sore mouth and throat, problems with the sense of taste or smell, nosebleeds, nasal inflammation, loss of weight or appetite, poor hand-eye coordination, awkwardness, and unsteadiness, as well as dermatitis. **FIRST AID: Eyes.** Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. **Skin.** Immediately wash the affected area with soap and water because of the increased exposure from skin absorption. **Inhalation.** Remove exposed person to fresh air; restore and/or support his or her breathing as needed. Have medical personnel administer oxygen to treat the chemical pneumonitis that may develop. **Ingestion.** Never give anything by mouth to someone who is unconscious or convulsing. Note to physician: If indicated by degree of ingestion, saline cathartics and charcoal should be used. Chelation therapy with d-penicillamine may also be indicated.

GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES. Seek prompt medical assistance for further treatment, observation, and support after first aid. Treatment of chronic mercury poisoning requires expert medical care. At the first signs, immediately remove the exposed person from further exposure and have him or her examined and treated by a physician trained in occupational mercury poisoning.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel, restrict access to the spill area to necessary personnel, and provide adequate ventilation. Clean up spills promptly. Specialized equipment and/or techniques may be required to safely deal with large mercury spills; if large quantities of mercury are used in the workplace, detailed, prior spill-management planning is recommended. Collect spilled mercury by using a suction pump and an aspirator bottle with a long capillary tube. For finely divided mercury in inaccessible cracks, corners, etc., treatment with calcium polysulfide and excess sulfur is recommended to convert the mercury globules into mercury sulfide. Vacuum cleaners may be used if they are equipped with specially designed mercury-absorbent exhaust filters. Collect the mercury into tightly sealed containers for later disposal or reclamation. Cleanup personnel must use the recommended personal protective equipment (see sect. 8).

Waste Disposal: Consider reclamation, recycling, or destruction rather than disposal in a landfill. Do not pour mercury down a drain. Mercury is very harmful to the environment. Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations

— Air Contaminant (29 CFR 19010.1000 Subpart Z)

EPA Designations (40 CFR 302.4)

RCRA Hazardous Waste No. U151

CERCLA Hazardous Substance, Reportable Quantity: 1 lb (0.454 kg)*

*Per the Clean Water Act, § 407 (a); Clean Air Act, § 112; and Resource Conservation and Recovery Act, § 3001.

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. Where splashing of mercury may occur, wear a full face shield or splash guard. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133).

Respirator: Use a NIOSH-approved respirator per the *NIOSH Pocket Guide to Chemical Hazards* for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow OSHA respirator regulations (29 CFR 1910.134). **Other:** Wear impervious gloves, boots, aprons, gauntlets, etc., to prevent any contact with mercury and the skin.

Ventilation: Install and operate general and local ventilation systems powerful enough to continuously maintain airborne levels of mercury below the OSHA PEL standard cited in section 2.

Safety Stations: Make emergency eyewash stations, washing facilities, and safety/quick-drench showers available in work areas.

Contaminated Equipment: Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do *not* wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean mercury from shoes and equipment. Separate work and street clothes; store work clothes in special lockers and always shower before changing to street clothes.

Comments: Practice good personal hygiene; always wash thoroughly after using this material. Keep it off of your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do *not* eat, drink, or smoke in any work area.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage/Segregation: Store mercury in a cool, dry, well-ventilated area in tightly closed unbreakable polyethylene containers. Protect these containers from physical damage.

Special Handling/Storage: Construct storage areas to have smooth, hard, nonporous floors with no cracks or spaces so that spilled mercury globules do not form in inaccessible areas.

Comments: Mercury evaporates slowly, but if it is spilled it can form many tiny globules that evaporate much faster than a single pool of it will. In an unventilated area, significant concentration of mercury vapor can develop from this enhanced evaporation effect. This poisonous vapor is particularly hazardous if breathed over a long period of time, so spills or releases of mercury require very meticulous cleaning procedures.

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: Mercury, Metal
DOT Hazard Class: ORM-B
DOT Label: None
DOT ID No. NA2809
IMO Class: 8
IMO Label: Corrosive

References: 1, 2, 8, 26, 38, 84-94, 100.

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Material Safety Data Sheet

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GENIUM PUBLISHING CORP.

No. 312
TRICHLOROETHYLENE
(Revision E)

Issued: July 1979
Revised: August 1987

SECTION 1. MATERIAL IDENTIFICATION

23

MATERIAL NAME: TRICHLOROETHYLENE

DESCRIPTION (Origin/Uses): Prepared from *sym*-tetrachloroethane by way of eliminating HCl by boiling with lime. Used to manufacture organic chemicals, pharmaceuticals; in degreasing and dry cleaning; and as a solvent for fats, waxes, rubbers, oils, paints, varnishes, ethers, and cellulose esters.

OTHER DESIGNATIONS: Ethylene Trichloride; TCE; Trichloroethene; 1,1,2-Trichloroethylene; C_2HCl_3; NIOSH *RTECS* #KX4550000; CAS #0079-01-6

MANUFACTURER/SUPPLIER: Available from several suppliers, including:
Dow Chemical USA, 2020 Dow Center, Midland, MI 48640;
Telephone: (517) 636-1000; (800) 258-CHEM

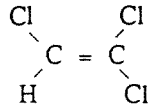
COMMENTS: Trichloroethylene is a toxic solvent and a suspected occupational carcinogen.

HMIS			
H	2	R	1
F	1	I	3
R	1	S	1
PPE*		K	0

* See sect. 8

SECTION 2. INGREDIENTS AND HAZARDS

Ingredients	%	HAZARD DATA
Trichloroethylene, CAS #0079-01-6; NIOSH *RTECS* #KX4550000	100	ACGIH Values 1987-88 TLV-TWA*: 50 ppm, 270 mg/m^3 TLV-STEL**: 200 ppm, 1080 mg/m^3 OSHA PEL 1986*** 8-Hr TWA: 100 ppm Ceiling: 200 ppm NIOSH REL 1986 10-Hr TWA: 25 ppm TOXICITY DATA Human, Oral, LD_{Lo}: 7 g/kg Human, Inhalation, TC_{Lo}: 6900 mg/m^3 (10 Min) Human, Inhalation, TC_{Lo}: 160 ppm/ 83 Min Human, Inhalation, TD_{Lo}: 812 mg/kg



* The TLV-TWA is set to control subjective complaints such as headache, fatigue, and irritability.

** The TLV-STEL is set to prevent incoordination and other beginning anesthetic effects from TCE. These levels should provide a wide margin of safety in preventing liver injury.

*** The OSHA PEL is 300 ppm for 5 minutes in any 2 hours.

SECTION 3. PHYSICAL DATA

Boiling Point ... 188.6°F (87°C)
Vapor Pressure ... 58 Torr at 68°F (20°C)
Water Solubility ... Insoluble
Vapor Density (Air = 1) ... 4.53
Evaporation Rate ... Not Listed
Specific Gravity ... 1.4649 at 68°F (20°C)
Melting Point ... -120.64°F (-84.8°C)
Molecular Weight ... 131.40 Grams/Mole

Appearance and odor: Colorless, nonflammable mobile liquid; sweetish odor like chloroform.

COMMENTS: TCE is highly soluble in lipids. A high vapor pressure at room temperature provides the potential for TCE vapors to contaminate use areas.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	Flammability Limits in Air	LOWER	UPPER
Not Listed	770°F (410°C)	% by Volume	8%	10.5%

EXTINGUISHING MEDIA: TCE has no flash point in a conventional closed tester at room temperature, but it is moderately flammable at higher temperatures. Use dry chemical, carbon dioxide, alcohol foam, or other extinguishing agents suitable for the surrounding fire.

OSHA Flammability Class (29 CFR 1910.106): Not Regulated

UNUSUAL FIRE/EXPLOSION HAZARDS: During fire conditions TCE emits highly toxic and irritating fumes, including hydrochloric acid and phosgene. SPECIAL FIRE-FIGHTING PROCEDURES: Wear a self-contained breathing apparatus with a full facepiece operated in a pressure-demand or another positive-pressure mode. At TCE vapor levels of 300-1000 ppm, fire fighters who lack the proper respiratory equipment may experience incoordination and impaired judgment.

DOT Flammability Class (49 CFR 173.115): Not Regulated

SECTION 5. REACTIVITY DATA

Trichloroethylene is stable. Hazardous polymerization can occur under certain circumstances (see Conditions to Avoid and Comments, below).

CHEMICAL INCOMPATIBILITIES include magnesium or aluminum powder, NaOH, KOH, or other strong alkaline materials. Reactions with alkaline materials may lead to the formation of dangerous explosive mixtures of chloroacetylenes.

CONDITIONS TO AVOID: When TCE is heated (as in the case with vapor degreasers) or exposed to sunlight, it requires extra stabilization against oxidation, degradation, and polymerization. It is slowly decomposed by light when moist.

PRODUCTS OF HAZARDOUS DECOMPOSITION include hydrochloric acid and phosgene under certain conditions at elevated temperatures.

COMMENTS: TCE is stable under normal handling and storage conditions, and hazardous polymerization is not expected to occur. However, failure of the stabilizer at elevated temperatures or other extreme conditions may allow polymerization to take place..

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No. 312 8/87 TRICHLOROETHYLENE

SECTION 6. HEALTH HAZARD INFORMATION

Trichloroethylene is listed as a carcinogen by the NTP, IARC, and OSHA. NIOSH recommends that trichloroethylene be treated as an occupational carcinogen. IARC carcinogenic results are animal suspect, animal positive, and human indefinite. SUMMARY OF RISKS: Moderate exposures to TCE cause symptoms similar to those of alcohol inebriation. Higher concentrations cause narcotic effects. Ventricular fibrillation has been cited as the cause of death following heavy exposures. TCE-induced hepato cellular carcinomas have been detected in mice during tests conducted by the National Cancer Institute (*Chem & Eng News* 54 [April 5, 1976]:4). Organ systems affected by overexposure to TCE are the central nervous system (euphoria, analgesia, anesthesia), degeneration of the liver and kidneys, the lungs (tachypnea), heart (arrhythmia) and skin (irritation, vesication, and paralysis of fingers when immersed in liquid TCE). Contact with the liquid defats the skin, causing topical dermatitis. Certain people appear to experience synergistic effects from TCE exposure concomitant with exposure to caffeine, alcohol, and other drugs. When combined with alcohol intake, toxic effects are increased and may cause a red, blotchy facial and upper body rash commonly called "degreaser's flush." Other reported symptoms of TCE exposure include abnormal fatigue, headache, irritability, gastric disturbances, and intolerance to alcohol. Toxic effects from testing of TCE on humans include hallucination, distorted perception, somnolence (general depressed activity), and jaundice. TARGET ORGANS: Respiratory system, central nervous system, heart, liver, kidneys, and skin. PRIMARY ENTRY: Ingestion, inhalation, skin contact. ACUTE EFFECTS: Headache, vertigo, visual disturbance, tremors, nausea, vomiting, dermatitis, dizziness, drowsiness, and irritation to the eyes, nose, and throat. CHRONIC EFFECTS: None Reported. MEDICAL CONDITIONS AGGRAVATED BY LONG-TERM EXPOSURE: Diseases of the liver, kidneys, lungs, and central nervous system. FIRST AID: EYE CONTACT: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. Get medical help.* SKIN CONTACT: Wash thoroughly with soap and water. Remove and launder contaminated clothing before wearing it again; clean material from shoes and equipment. Get medical help.* INHALATION: Remove victim to fresh air; restore and/or support his breathing as needed. Do not give adrenalin to the victim. Get medical help.* INGESTION: Call a poison control center. Never give anything by mouth to someone who is unconscious or convulsing. A professional decision regarding whether or not to induce vomiting is required. Do not give adrenalin to the victim. Get medical help.*

*GET MEDICAL ASSISTANCE = IN PLANT, PARAMEDIC, COMMUNITY. Get prompt medical assistance for further treatment, observation, and support after first aid.

COMMENTS: Workers' responses to TCE vary significantly because of many factors, including age, health status, nutrition, and intake of alcohol, caffeine, and medicines. Do not use these substances before, during, or after exposure to TCE. If a worker displays any of the symptoms of exposure to TCE, thoroughly investigate all the possible contributing factors to determine, if possible, how much the work environment levels of TCE are responsible.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

SPILL/LEAK: Inform safety personnel of any trichloroethylene spill or leak and evacuate the area for large spills. Cleanup personnel must use respiratory and liquid contact protection. Adequate ventilation must be provided. Confine the spilled TCE to as small an area as possible. Do not allow it to run off to sewers or open waterways. Pick up spilled TCE with a vacuum cleaner or an absorbent such as vermiculite.

DISPOSAL: Consider reclamation, recycling, or destruction rather than disposal in a landfill.

Trichloroethylene is designated as a hazardous substance by the EPA (40 CFR 116.4).

Trichloroethylene is reported in the 1983 EPA TSCA Inventory.

EPA Hazardous Waste Number (40 CFR 261.33): U228

EPA Reportable Quantity (40 CFR 117.3): 1000 lbs (454 kgs)

Aquatic Toxicity Rating, TLm 96: Not Listed

SECTION 8. SPECIAL PROTECTION INFORMATION

GOGGLES: Always wear protective eyeglasses or chemical safety goggles. Follow the eye and face protection guidelines of 29 CFR 1910.133. GLOVES: Wear impervious gloves. RESPIRATOR: Use a NIOSH-approved respirator per the *NIOSH Guide to Chemical Hazards* (Genium ref. 88) for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow the respirator guidelines in 29 CFR 1910.134. Any detectable concentration of TCE requires an SCBA, full facepiece, and pressure-demand/positive-pressure modes. WARNING: Air-purifying respirators will not protect workers from oxygen-deficient atmospheres. OTHER EQUIPMENT: Wear rubber boots, aprons, and other suitable body protection appropriate to the existing work environment. VENTILATION: Install and operate general and local exhaust ventilation systems of sufficient power to maintain airborne concentrations of TCE below the OSHA PEL standards cited in section 2. SAFETY STATIONS: Make eyewash stations, washing facilities, and safety showers available in areas of use and handling. Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them. OTHER SPECIAL MODIFICATIONS IN THE WORKPLACE: Because of the unresolved controversy about the carcinogenic status of TCE, all existing personal protective equipment and engineering technology should be used to prevent any possibility of worker contact with this material.

COMMENTS: Practice good personal hygiene. Keep material off of your clothes and equipment. Avoid transfer of material from hands to mouth while eating, drinking, or smoking. Adhere to the sanitation requirements of 29 CFR 1910.141 and 29 CFR 1910.142.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

STORAGE SEGREGATION: Prevent TCE from coming into contact with strong caustics such as NaOH; KOH; chemically active metal like Ba, Li, Na, Mg, Ti; and powdered aluminum or magnesium in acidic solutions. SPECIAL HANDLING/STORAGE: Store this material in a cool, dry, well-ventilated area. Avoid elevated temperatures because products of toxic and corrosive decomposition from TCE may form. Monitor the level of any stabilizer component that may be added to the TCE. (Consult the technical data from the supplier to determine the specifics of any added stabilizer.) If applicable, follow the supplier's recommendation concerning proper rotation of stock, shelf-life requirements, and levels of stabilizers.

ENGINEERING CONTROLS IN THE WORKPLACE: Avoid collecting aluminum fines (very small particles) or chips in a TCE vapor degreaser. Monitor TCE stabilizer levels regularly. Only trained personnel should operate vapor degreasers.

TRANSPORTATION DATA (per 49 CFR 172.101-2):

DOT Hazard Class: ORM-A	DOT ID No. UN1710	IMO Class: 6.1
IMO Label: St. Andrew's Cross (X)*	DOT Shipping Name: Trichloroethylene	DOT Label: None

* Harmful - Stow away from foodstuffs (IMO Label, Materials of Class 6.1 Packaging Group III).

References: 1-9, 12, 14, 21, 73, 87-94. PI

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Approvals JO Ricciocco

Indust. Hygiene/Safety 11-18-87

Medical Review

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GENIUM PUBLISHING CORP.

No. 311

METHYL CHLOROFORM

(Revision E)
Issued: November 1975
Revised: November 1988

SECTION 1. MATERIAL IDENTIFICATION 27

Material Name: METHYL CHLOROFORM

Description (Origin/Uses): Used in cold-type metal cleaning; also in cleaning plastic molds.

Other Designations: 1,1,1-Trichloroethane; CH_3CCl_3; CAS No. 0071-55-6

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

HMIS
H 2 R 1
F 0 I –
R 1 S 2
PPG* K 1
*See sect. 8

NFPA

SECTION 2. INGREDIENTS AND HAZARDS/EXPOSURE LIMITS

Methyl Chloroform, CAS No. 0071-55-6

OSHA PELs	ACGIH TLVs, 1988-89	Toxicity Data**
8-Hr TWA: 350 ppm, 1900 mg/m³	TLV-TWA: 350 ppm, 1900 mg/m³	Man, Inhalation, LC_{Lo}: 27 g/m³ (10 Mins)
STEL: 450 ppm, 2450 mg/m³	TLV-STEL: 450 ppm, 2450 mg/m³	Man, Inhalation, TC_{Lo}: 350 ppm
		Human, Oral, TD_{Lo}: 670 mg/kg
		Rat, Oral, LD_{50}: 10300 mg/kg

*Contact your supplier for specifications, including details about inhibitors that can be added to the methyl chloroform product.
**See NIOSH, *RTECS* (KJ2975000), for additional data with references to irritative, reproductive, and mutagenic effects.

SECTION 3. PHYSICAL DATA

Boiling Point: 165°F (74.1°C)
Melting Point: -26.5°F (-32.5°C)
Vapor Density (Air = 1): 4.55
Vapor Pressure: 100 Torrs at 68°F (20°C)
Molecular Weight: 133 Grams/Mole
Solubility in Water (%): Insoluble
Specific Gravity (H_2O = 1): 1.3376 at 68°F (20°C)
% Volatile by Volume: Ca 100

Appearance and Odor: A colorless liquid; mild, sweetish, pleasant, etherlike odor that may be just perceptible (if unfatigued) at about 100 ppm in the air.

Comments: Small variations in the above-noted physical properties are expected because of the various inhibitors that may be included in the methyl chloroform product.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point: None Found	Autoignition Temperature: 998°F (537°C)	LEL: 8.0% v/v	UEL: 10.5% v/v

Extinguishing Media: Methyl chloroform does not burn at ordinary temperatures. High-energy sources such as an electric arc or an elevated temperature are required for ignition of this material. When the source of ignition is removed, methyl chloroform tends to stop burning. Use water spray to cool fire-exposed containers. Use water fog, carbon dioxide, dry chemical, or foam to fight fires involving this material or nearby fires. Unusual Fire or Explosion Hazards: Methyl chloroform vapor is heavier than air and may travel a considerable distance to a low-lying high-energy source of ignition and flash back to its origin. Use care in selecting equipment (see sect. 5, Comments). Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

SECTION 5. REACTIVITY DATA

Stability/Polymerization: Methyl chloroform is stable in closed containers during routine operations. Hazardous polymerization cannot occur. Chemical Incompatibilities: Methyl chloroform can react dangerously with acetone, nitrogen tetroxide, oxygen (gas or liquid), sodium, sodium hydroxide, and sodium-potassium alloys. Conditions to Avoid: Avoid exposure to any high-energy source of ignition or to incompatible chemicals. Hazardous Products of Decomposition: Toxic and corrosive gases such as hydrogen chloride, dichloracetylene, chlorine, and phosgene can be produced by decomposition of methyl chloroform at high temperatures, contact with hot metals, or exposure to ultraviolet radiation. Phosgene is usually produced in very small quantities; however, the significant irritating properties of hydrogen chloride (the dominant product of decomposition) prevent significant exposure to the phosgene. Comments: This material can be hydrolyzed by water to form hydrochloric acid and acetic acid. It will react with strong caustics to form flammable or explosive materials. It attacks natural rubber. Methyl chloroform requires an inhibitor content to prevent corrosion of metals. When the inhibitor is depleted, this material can decompose rapidly by reaction with finely divided white metals such as aluminum, magnesium, or zinc. Do not use these metals in pressurized spraying equipment where methyl chloroform is involved.

SECTION 6. HEALTH HAZARD INFORMATION

Carcinogenicity: Methyl chloroform is not listed as a carcinogen by the NTP, IARC, or OSHA.
Summary of Risks: Methyl chloroform exhibits low oral toxicity. It can defat the exposed skin of workers and cause redness and scaling. Although methyl chloroform is low in systemic toxicity, it is an anesthetic that is capable of causing death if it is inhaled at concentrations of 14000 to 15000 ppm. Fatalities that have occurred in poorly ventilated areas such as pits or tanks are attributed to anesthesia and/or sensitization of the myocardium to epinephrine. Quick and complete recovery is reported upon prompt removal of unconscious exposed persons from the area of exposure. The TLV-TWA cited in section 2 is set to prevent initial anesthetic effects and/or objections to the

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SECTION 6. HEALTH HAZARD INFORMATION, cont.

odor. Medical Conditions Aggravated by Long-Term Exposure: None reported. Target Organs: Skin, eyes, heart, cardiovascular system, and CNS. Primary Entry: Inhalation, skin absorption. Acute Effects: Headache, lassitude, dermatitis, skin and eye irritation, cardiac arrhythmias, and depression of the CNS. Chronic Effects: None reported. FIRST AID: Eyes. Immediately flush eyes, including under the eyelids, gently but thoroughly with flooding amounts of running water for at least 15 minutes. Skin. Rinse the affected area with flooding amounts of water, then wash it with soap and water. Inhalation. Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Have qualified medical personnel administer oxygen as required. Ingestion. Unlikely. Should this type of exposure occur, medical help is not readily available, and the amount swallowed was appreciable, give the exposed person milk of magnesia to drink and induce vomiting. Repeat this procedure. Aspiration hazards exist, so the decision whether or not to induce vomiting must be made carefully. If vomiting is to be induced, carry it out as quickly as possible before the ingested methyl chloroform is internally absorbed. This procedure would increase the chance of aspiration. Get medical help (in plant, paramedic, community) for all exposures. Seek prompt medical assistance for further treatment, observation, and support after first aid. Note to Physician: The estimated lethal dose by ingestion for a man weighing 150 pounds is 0.5 to 1 pint. Do not use adrenalin or sympathomimetic amines in treatment because of the increased cardiac sensitivity involved. Ingestion may cause spontaneous vomiting.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel, evacuate unnecessary personnel, eliminate all sources of ignition immediately, and provide adequate explosion-proof ventilation. Cleanup personnel need protection against skin or eye contact with this liquid as well as inhalation of its vapor (see sect. 8). Contain large spills and collect or absorb waste with an inert material such as sand, earth, or vermiculite. Use nonsparking tools to place liquid or absorbent waste into closable containers for disposal. Keep waste out of sewers, watersheds, and waterways. Waste Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.

OSHA Designations
Listed as an Air Contaminant (29 CFR 1910.1000 Subpart Z).
EPA Designations (40 CFR 302.4)
RCRA Hazardous Waste, No. U226
CERCLA Hazardous Substance, Reportable Quantity: 1000 lbs (454 kg), per the Resource Conservation and Recovery Act, § 3001.

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. Where splashing is possible, wear a full face shield. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133). Respirator: Use a NIOSH-approved respirator per Genium reference 88 for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine operations (spills or cleaning reactor vessels and storage tanks), wear an SCBA. Warning: Air-purifying respirators will *not* protect workers in oxygen-deficient atmospheres. Other: Wear impervious gloves, boots, aprons, and gauntlets, etc., to prevent prolonged or repeated skin contact with this material. Suggested materials include neoprene, polyvinyl alcohol, or polyethylene. Natural rubber is not recommended. Ventilation: Install and operate general and local maximum, explosion-proof ventilation systems powerful enough to maintain airborne levels of this material below the OSHA PEL standard cited in section 2. Local exhaust ventilation is preferred because it prevents dispersion of the contaminant into the general work area by eliminating it at its source. Consult the latest edition of Genium reference 103 for detailed recommendations. Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work areas. Contaminated Equipment: Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do *not* wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from your shoes and equipment. Other: Exercise care in the selection of safety and handling equipment because methyl chloroform attacks natural rubber. Comments: Practice good personal hygiene; always wash thoroughly after using this material. Keep it off your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do *not* eat, drink, or smoke in any work area. Do not inhale methyl chloroform vapor. Consider functions of the CVS, CNS, liver, and skin while administering preplacement and periodic medical exams.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage/Segregation: Store methyl chloroform in closed containers in a cool, dry, well-ventilated area away from sources of ignition and incompatible chemicals (see sect. 5). Protect containers from physical damage. Steel is a recommended material for storage containers. Special Handling/Storage: Prevent moisture contamination of storage facilities. Monitor levels of inhibitor. Use caution in cleaning operations involving white metal fines (see sect. 5). Engineering Controls: Make sure all engineering systems (production, transportation) are of maximum, explosion-proof design. Electrically ground and bond all containers and pipelines, etc., used in shipping, transferring, reacting, production, and sampling operations to prevent generating static sparks. Other: Personnel who regularly work with methyl chloroform should avoid drinking alcoholic beverages shortly before, during, or after exposure.

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: 1,1,1-Trichloroethane
DOT Hazard Class: ORM-A
ID No. UN2831
DOT Packaging Requirements: 49 CFR 173.605
DOT Packaging Exceptions: 49 CFR 173.605

IMO Shipping Name: 1,1,1-Trichloromethane
IMO Hazard Class: 6.1
IMO Label: Saint Andrew's Cross (X)*
IMDG Packaging Group: III

*Harmful-Stow away from Foodstuffs (Materials of Class 6.1 Packaging Group III).

References: 1, 38, 84-94, 116, 117, 120, 122.

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Material Safety Data Sheets Collection:

Sheet No. 708
Vinylidene Chloride
MTG-2.700057

Issued: 4/90

Section 1. Material Identification

Vinylidene Chloride Description: Prepared from ethylene chloride. Also prepared from vinyl chloride by successive chlorination and dehydrochlorination steps. Used primarily as a co-monomer in producing vinylidene copolymers (Saran®, Velon®) for films and coatings. Also used in producing methyl chloroform, vinyl chloride resins, plastics, chloracetyl chloride; in adhesives; as a component of synthetic fibers; a chemical intermediate in vinylidene fluoride synthesis; and for 1,1,1-trichloroethane. A common constituent in our environment, measurable quantities of vinylidene chloride are found in poorly ventilated areas with a high concentration of plastics. It is a notable contaminant in recycled air environments such as nuclear submarines and spacecraft.
Other Designations: CAS No. 0075-35-4; $C_2H_2Cl_2$; 1,1-DCE; 1,1-dichloroethene; *asym*-dichloroethylene; VDC; vinylidene dichloride.
Manufacturer: Contact your supplier or distributor. Consult the latest *Chemicalweek Buyers' Guide*[73] for a suppliers list.
Comment: At temperatures above 32 °F/0 °C and especially in the presence of oxygen or other suitable catalysts, vinylidene chloride polymerizes to a plastic. Therefore, commercial products may contain small proportions of inhibitors to preserve the monomer.

R 3
I 4
S 2
K 4

NFPA

HMIS
H 2
F 4
R 2
PPG*
* Sec. 8

Section 2. Ingredients and Occupational Exposure Limits

Vinylidene chloride, ca 100%

OSHA PEL
8-hr TWA: 1 ppm, 4 mg/m³

ACGIH TLVs, 1989-90
TLV-TWA: 5 ppm, 20 mg/m³
TLV-STEL: 20 ppm, 79 mg/m³

NIOSH REL, 1987
None established

Toxicity Data*
Mouse, skin, TD_{Lo}: 4840 mg/kg has tumorigenic effects on skin, appendages, lungs, thorax, and respiration
Rat, inhalation, LC_{50}: 6350 ppm/4 hr
Human, inhalation, TC_{Lo}: 25 ppm produces changes in behavior (general anesthetic), the liver, kidney, ureter, and bladder

* See NIOSH, *RTECS* (YZ8061000), for additional mutative, reproductive, tumorigenic, and toxicity data.

Section 3. Physical Data

Boiling Point: 89.1 °F/31.7 °C at 760 mm Hg
Melting Point: -188.5 °F/-122.5 °C
Vapor Pressure: 591 mm Hg at 77 °F/25 °C
Vapor Density (Air = 1): 3.4

Molecular Weight: 96.94 g/mol
Specific Gravity (H_2O = 1 at 39 °F/4 °C): 1.2129 at 68 °F/20 °C
Water Solubility: Sparingly soluble (0.04 % wt/vol in water at 68 °F/20 °C)

Appearance and Odor: Colorless, volatile liquid with a mild, sweet odor that resembles chloroform. Most persons can detect vinylidene chloride at 1000 ppm, but others can detect it at less than 500 ppm. Neither odor is adequate to warn of excessive exposure.

Section 4. Fire and Explosion Data

Flash Point: -19 °F/-28 °C	Autoignition Temperature: 1058 °F/570 °C	LEL: 5.6% v/v	UEL: 11.4% v/v

Extinguishing Media: Use dry chemical, alcohol foam, or carbon dioxide. Use water to cool fire-exposed containers.
Unusual Fire or Explosion Hazards: Vinylidene chloride is a very flammable and volatile liquid with a burning rate of 2.7 mm/min. This material is a very dangerous fire hazard and moderately explosive when exposed to heat or flame. It may explode spontaneously since the vapor forms explosive mixtures with air. At elevated temperatures, polymerization may take place and containers may rupture.
Special Fire-fighting Procedures: Since vinylidene chloride may be poisonous if inhaled or absorbed through the skin, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode with a fully encapsulating suit. Keep unnecessary people away from the hazard area. Vapors may travel to an ignition source and flash back. Be aware of runoff from fire control methods. Do not release to sewers or waterways.

Section 5. Reactivity Data

Stability/Polymerization: Vinylidene chloride is self-reactive. If stored between -40 °F/-40 °C and 77 °F/25 °C in air without an inhibitor, this material rapidly absorbs oxygen and forms a violently explosive peroxide. The heat of polymerization is -185 cal/g (inhibited). When unstable, vinylidene chloride decomposes into chlorine, hydrogen chloride, phosgene, and formaldehyde. Hazardous polymerization can occur if exposed to sunlight, air, copper, aluminum, or heat.
Chemical Incompatibilities: This material reacts violently with chlorosulfonic acid, nitric acid, and oleum; and vigorously with oxidizing materials.
Hazardous Products of Decomposition: Thermal oxidative decomposition of vinylidene chloride can produce highly toxic fumes of chlorine (Cl_2) and hydrogen chloride (HCl).

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Section 6. Health Hazard Data

Carcinogenicity: Neither the NTP, IARC, nor OSHA lists vinylidene chloride as a carcinogen, although the ACGIH suggests it is a suspected carcinogen. Various animal studies suggest a high rate of cancer in species-specific testing; application to humans does not appear valid.
Summary of Risks: Vinylidene chloride is an irritant to the skin, eyes, and mucous membranes, although any inhibitor in vinylidene chloride may partly cause the irritation. VDC is narcotic at concentrations greater than 4000 ppm, and has caused liver and kidney injury in experimental animals. Solutions containing the inhibitor MEHQ (monomethyl ether of hydroquinone) may cause leucoderma (white skin) and serious eye injury.
Medical Conditions Aggravated by Long-Term Exposure: None reported.
Target Organs: Skin, eyes, central nervous system, liver, and kidneys.
Primary Entry Routes: Inhalation.
Acute Effects: Inhalation of VDC causes narcosis and respiratory irritation. Concentrations of 4000 ppm lead to symptoms of drunkenness and eventually unconsciousness if the exposure continues. In monkey studies, exposure to 200 ppm caused acute liver injury with a mechanism similar to carbon tetrachloride. Animal studies indicate acute kidney changes in high-level exposures. Eye contact may cause conjunctivitis, transient corneal injury, and iritis. VDC also causes skin and mucous membrane irritation.
Chronic Effects: With chronic inhalation, vinylidene chloride may cause hepatic and renal dysfunction. In monkey studies, long-term inhalation at a 48-ppm level caused liver and kidney damage and death.
FIRST AID
Eyes: Flush immediately, including under the eyelids, gently but thoroughly with flooding amounts of running water for at least 15 min.
Skin: *Quickly* remove contaminated clothing. After rinsing affected skin with flooding amounts of water, wash it with soap and water.
Inhalation: Remove exposed person to fresh air and support breathing as needed.
Ingestion: Never give anything by mouth to an unconscious or convulsing person. If ingested, have a *conscious* person drink 1 to 2 glasses of water, then induce repeated vomiting until vomit is clear.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Physician's Note: Solutions containing increased MEHQ concentrations are caustic and should not be removed by emesis. There is no specific treatment for VDC intoxication, but if significant amounts have been ingested, monitor the patient for liver and kidney failure.

Section 7. Spill, Leak, and Disposal Procedures

Spill/Leak: *Design and practice a vinylidene chloride spill control and countermeasure plan (SCCP).* Notify safety personnel, evacuate all unnecessary personnel from hazard area, remove all heat and ignition sources, and ventilate area. Cleanup personnel should protect against inhalation and skin and eye contact. For lab spills, absorb the spill with paper towels and place in a hood to allow liquid to evaporate. For large spills, absorb bulk spill with cement powder, fly ash, sawdust, or commercial sorbents. Place waste in appropriate disposal containers. Follow applicable OSHA regulations (29 CFR 1910.120).
Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.
EPA Designations
RCRA Hazardous Waste (40 CFR 261.33): Not listed
Listed as a CERCLA Hazardous Substance* (40 CFR 302.4), Reportable Quantity (RQ): 5000 lb (2270 kg) [* per Clean Water Act, Sec. 31 (b)(4), Sec. 307(a); per RCRA, Sec. 3001]
SARA Extremely Hazardous Substance (40 CFR 355): Not listed
Listed as a SARA Toxic Chemical (40 CFR 372.65)
OSHA Designations
Air Contaminant (29 CFR 1910.1000, Subpart Z): Not listed

Section 8. Special Protection Data

Goggles: Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133).
Respirator: Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. Respiratory canisters containing alkaline materials should not be used because dichloro acetylene can be formed. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.
Warning: Air-purifying respirators do *not* protect workers in oxygen-deficient atmospheres.
Other: Wear impervious gloves, boots, aprons, and gauntlets to prevent skin contact. Rubber gloves are recommended.
Ventilation: Provide general and local explosion-proof ventilation systems to maintain airborne concentrations below the OSHA PEL and ACGIH TLVs (Sec. 2). Local explosion-proof exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source.[103]
Safety Stations: Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.
Contaminated Equipment: Never wear contact lenses in the work area: soft lenses may absorb, and all lenses concentrate, irritants. Remove this material from your shoes and equipment. Launder contaminated clothing before wearing.
Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9. Special Precautions and Comments

Storage Requirements: Store vinylidene chloride in tanks with nickel, glass, or baked phenolic linings at 14 °F/-10 °C in the absence of light, air, water, and other polymerization initiators under a nitrogen blanket (at 10-psi pressure and an oxygen content less than 100 ppm). Outside or detached storage is preferable. If stored inside, store in a standard flammable liquids storage cabinet separate from oxidizing materials and incompatible materials (Sec. 5).

Engineering Controls: VDC requires special handling, precautions, and employee training. Do not handle VDC without adequate ventilation and personal protective gear. Limit exposures to vinylidene chloride by improving housekeeping procedures. Keep VDC away from all heat and ignition sources. All engineering systems should be of maximum explosion-proof design, electrically grounded, and bonded.

Transportation Data (49 CFR 172.101, .102)

DOT Shipping Name: Vinylidene chloride, inhibited
DOT Hazard Class: Flammable liquid
ID No.: UN1303
DOT Label: Flammable liquid
DOT Packaging Requirements: 173.119
DOT Packaging Exceptions: 173.118

IMO Shipping Name: Vinylidene chloride, inhibited
IMO Hazard Class: 3.1
IMO Label: Flammable liquid
IMDG Packaging Group: I
ID No.: UN1303

MSDS Collection **References:** 7, 26, 38, 53, 73, 84, 85, 87, 89, 100, 103, 124, 126, 127, 129, 134, 136
Prepared by: MJ Allison, BS; **Industrial Hygiene Review:** DJ Wilson, CIH; **Medical Review:** W Silverman, MD MS

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Section 1. Material Identification

1,2-Dichloroethylene Description: An industrial solvent composed of 60% cis- and 40% trans-isomers. Both isomers, cis and trans, are made by partial chlorination of acetylene. Used as a general solvent for organic materials, lacquers, dye extraction, thermoplastics, organic synthesis, and perfumes. The trans-isomer is more widely used in industry than either the cis-isomer or the mixture. Toxicity also varies between the two isomers.

Other Designations: CAS No. 0540-59-0; $C_2H_2Cl_2$; acetylene dichloride; *cis*-1,2-dichloroethylene; *sym*-dichloroethylene; *trans*-1,2-dichloroethylene, dioform.

Manufacturer: Contact your supplier or distributor. Consult the latest *Chemicalweek Buyers' Guide*[73] for a suppliers list.

R 1
I 2
S 2
K 1

NFPA

HMIS
H 2
F 3
R 1
PPG*
* Sec. 8

Section 2. Ingredients and Occupational Exposure Limits

1,2-Dichloroethylene, ca 100%

OSHA PEL
8-hr TWA: 790 mg/m³, 200 ppm

ACGIH TLV, 1989-90
TLV-TWA: 790 mg/m³, 200 ppm

NIOSH REL, 1987
790 mg/m³, 200 ppm

Toxicity Data*
Rat, oral, LD_{50}: 770 mg/kg; toxic effects not yet reviewed
Frog, inhalation, TC_{Lo}: 117 mg/m³ inhaled for 1 hr affects the peripheral nerve and sensation (flaccid paralysis without anesthesia); behavior (excitement); lungs, thorax, or respiration (respiratory depression)

* See NIOSH, *RTECS* (KV9360000), for additional toxicity data.

Section 3. Physical Data

Boiling Point: 119 °F/48 °C
Melting Point: -56 to -115 °F/-49 to -82 °C/
Vapor Pressure: 180 to 264 torr at 68 °F/20 °C
Vapor Density (Air = 1): 3.4

Molecular Weight: 96.95 g/mol
Specific Gravity (H_2O = 1 at 39 °F/4 °C): 1.27 at 77 °F/25 °C
Water Solubility: Insoluble

Appearance and Odor: A colorless, low-boiling liquid with a pleasant odor.

Section 4. Fire and Explosion Data

Flash Point: 37 °F/2.8 °C, CC	Autoignition Temperature: 860 °F/460 °C	LEL: 5.6% v/v	UEL: 12.8% v/v

Extinguishing Media: Use dry chemical, CO_2, halon, water spray, or standard foam. Water may be ineffective unless used to blanket the fire.

Unusual Fire or Explosion Hazards: This material's vapors are a dangerous fire hazard and moderate explosion hazard when exposed to any heat or ignition source or oxidizer.

Special Fire-fighting Procedures: Since fire may produce toxic fumes, wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode and a fully encapsulating suit. Vapors may travel to heat or ignition sources and flash back. Stay upwind and out of low areas. Be aware of runoff from fire control methods. Do not release to sewers or waterways.

Section 5. Reactivity Data

Stability/Polymerization: This material is stable at room temperature in closed containers under normal storage and handling conditions. Hazardous polymerization cannot occur.

Chemical Incompatibilities: This material is incompatible with alkalies, nitrogen tetraoxide, difluoromethylene, strong oxidizers, and dihypofluorite. When in contact with copper or copper alloys or by reaction with potassium hydroxide, explosive chloroacetylene may be released.

Conditions to Avoid: Addition of hot liquid to cold 1,2-dichloroethylene may cause sudden emission of vapor that could flash back to an ignition source.

Hazardous Products of Decomposition: Thermal oxidative decomposition of 1,2-dichloroethylene can produce highly toxic fumes of chlorine (Cl^-).

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Section 6. Health Hazard Data

Carcinogenicity: Neither the NTP, IARC, nor OSHA lists 1,2-dichloroethylene as a carcinogen.
Summary of Risks: 1,2-Dichloroethylene's most important effect is its irritation of the central nervous system (CNS) and narcosis. This material is toxic by inhalation, ingestion, and skin contact. It is also irritating to the eyes. The trans-isomer at 2200 ppm causes nausea, vertigo, and burning of the eyes. The trans-isomer is twice as potent as the cis-isomer. If renal effects occur, they are transient.
Medical Conditions Aggravated by Long-Term Exposure: None reported.
Target Organs: Central nervous system, eyes, respiratory system.
Primary Entry Routes: Inhalation, ingestion, skin and eye contact.
Acute Effects: Inhalation of 1,2-dichloroethylene causes narcosis, respiratory tract irritation, nausea, vomiting, tremor, weakness, central nervous depression, and epigastric (the abdomen's upper midregion) cramps. Contact with the liquid causes eye and skin (on prolonged contact) irritation. Ingestion causes slight depression to deep narcosis.
Chronic Effects: None reported.
FIRST AID
Eyes: Flush immediately, including under the eyelids, gently but thoroughly with flooding amounts of running water for at least 15 min.
Skin: *Quickly* remove contaminated clothing. After rinsing affected skin with flooding amounts of water, wash it with soap and water.
Inhalation: Remove exposed person to fresh air and support breathing as needed. Have trained personnel administer 100% oxygen, preferably with humidification.
Ingestion: Never give anything by mouth to an unconscious or convulsing person. If ingested, have a *conscious* person drink 1 to 2 glasses of water, then induce repeated vomiting until vomit is clear.
After first aid, get appropriate in-plant, paramedic, or community medical support.
Physician's Note: Intravenous injections of calcium gluconate may relieve cramps and vomiting. Treat central nervous system effects symptomatically.

Section 7. Spill, Leak, and Disposal Procedures

Spill/Leak: *Design and practice a 1,2-dichloroethylene spill control and countermeasure plan (SCCP).* Notify safety personnel, remove all heat and ignition sources, evacuate hazard area, and provide adequate ventilation. Cleanup personnel should protect against vapor inhalation and skin or eye contact. Absorb small spills on paper towels. After evaporating the 1,2-dichloroethylene from these paper towels in a fume hood, burn the paper in a suitable location away from combustible material. Collect and atomize large quantities in a suitable combustion chamber equipped with an appropriate effluent gas cleaning device. Follow applicable OSHA regulations (29 CFR 1910.120).
Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.
EPA Designations
Listed as a RCRA Hazardous Waste (40 CFR 261.33)
Listed as a CERCLA Hazardous Substance* (40 CFR 302.4), Reportable Quantity (RQ): 100 lb (45.4 kg) [* per RCRA, Sec. 3001, per Clean Water Act, Sec. 307(a)]†
SARA Extremely Hazardous Substance (40 CFR 355): Not listed
Listed as a SARA Toxic Chemical (40 CFR 372.65)
OSHA Designations
Listed as an Air Contaminant (29 CFR 1910.1000, Table Z-1)
† Listed as 1,2-*trans*-dichloroethylene.

Section 8. Special Protection Data

Goggles: Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133).
Respirator: Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a NIOSH-approved respirator. For emergency or nonroutine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA.
Warning: Air-purifying respirators do *not* protect workers in oxygen-deficient atmospheres.
Other: Wear impervious gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. 1,2-dichloroethylene attacks some forms of plastics, rubber, and coatings.
Ventilation: Provide general and local explosion-proof ventilation systems to maintain airborne concentrations below the OSHA PEL and ACGIH TLV (Sec. 2). Local exhaust ventilation is preferred since it prevents contaminant dispersion into the work area by controlling it at its source.[103]
Safety Stations: Make available in the work area emergency eyewash stations, safety/quick-drench showers, and washing facilities.
Contaminated Equipment: Never wear contact lenses in the work area: soft lenses may absorb, and all lenses concentrate, irritants. Remove this material from your shoes and equipment. Launder contaminated clothing before wearing.
Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9. Special Precautions and Comments

Storage Requirements: Store in tightly closed containers in a cool, well-ventilated area away from all incompatible materials (Sec. 5) and oxidizing materials. Outside or detached storage is preferred. If stored inside, place containers in a standard flammable liquids storage cabinet or room. Protect containers from physical damage.
Engineering Controls: Avoid vapor inhalation and skin and eye contact. Use only with adequate ventilation and appropriate personal protective gear. Institute a respiratory protection program that includes regular training, maintenance, inspection, and evaluation. 1,2-dichloroethylene is a dangerous fire hazard. All engineering systems should be of maximum explosion-proof design and electrically grounded and bonded. Provide preplacement questionnaires which emphasize detecting a history of chronic respiratory disease.
Transportation Data (49 CFR 172.101, .102): Not listed

MSDS Collection **References:** 7, 26, 38, 73, 84, 85, 87, 88, 100, 101, 103, 109, 126, 127, 136, 137
Prepared by: MJ Allison, BS; **Industrial Hygiene Review:** DJ Wilson, CIH; **Medical Review:** MJ Hardies, MD F7

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Material Safety Data Sheet

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GENIUM PUBLISHING CORP.

No. 359
ETHYLENE DICHLORIDE
(Formerly 1,2-Dichloroethane)
(Revision C)
Issued: November 1978
Revised: August 1987

SECTION 1. MATERIAL IDENTIFICATION

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CHEMICAL NAME: ETHYLENE DICHLORIDE (Changed to reflect common industrial practice)

DESCRIPTION (Origin/Uses): Made from acetylene and HCl. Used as a degreaser, a scavenger in leaded gasoline, as an intermediate in the manufacture of vinyl chloride, in paint removers, in wetting and penetration agents, in ore flotation processes, as a fumigant, and as a solvent for fats, oils, waxes, and gums.

OTHER DESIGNATIONS: 1,2-Dichloroethane; *sym*-Dichloroethane; Dutch Liquid; Dutch Oil; EDC; Ethane Dichloride; Ethylene Chloride; 1,2-Ethylene Dichloride; Glycol Dichloride; $C_2H_4Cl_2$; NIOSH *RTECS* KI0525000; CAS #0107-06-2

MANUFACTURERS/SUPPLIERS: Available from several suppliers, including:
Dow Chemical USA, 2020 Dow Center, Midland, MI 48640; Telephone: (517) 636-1000

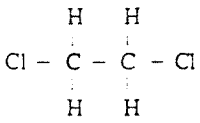
COMMENTS: Ethylene dichloride is a flammable, toxic liquid.

HMIS	
H	1
F	3
R	0
PPE*	
R	1
I	4
S	2
K	4

* See Sect. 8

SECTION 2. INGREDIENTS AND HAZARDS

Ingredients	%	HAZARD DATA
Ethylene Dichloride, CAS #0107-06-2; NIOSH *RTECS* #KI0525000	100	ACGIH Values 1987-88 TLV-TWA: 10 ppm, 40 mg/m^3 OSHA PEL* 1986-87 8-Hr TWA: 50 ppm; Ceiling: 100 ppm (15 Min.) NIOSH REL 1986-87 10-Hr TWA: 1 ppm Ceiling: 2 ppm (15 Min.) Toxicity Data Man, Inhalation, TC_{Lo}: 4000 ppm/1 Hr Human, Oral, TD_{Lo}: 428 mg/kg Man, Oral, TD_{Lo}: 892 mg/kg Man, Oral, LD_{Lo}: 714 mg/kg Rat, Oral, LD_{50}: 670 mg/kg



*The maximum allowable peak concentration (above the ceiling level value) of ethylene dichloride is 200 ppm for 5 minutes in any 3-hour period.

COMMENTS: Additional data concerning toxic doses and tumorigenic, reproductive, and mutagenic effects is listed (with references) in the NIOSH *RTECS* 1983-84 supplement, pages 865-66.

SECTION 3. PHYSICAL DATA

Boiling Point ... 182.3°F (83.5°C)
Vapor Pressure ... 87 Torr at 77°F (25°C)
Water Solubility ... Soluble in about 120 Parts Water
Vapor Density (Air = 1) ... 3.4
Evaporation Rate (n-BuAc = 1) ... Not Listed
Specific Gravity ... 1.2569 at 69°F (20°C)
Freezing Point ... -31.9°F (-35.5°C)
Molecular Weight ... 98.96 Grams/Mole

Appearance and odor: Colorless, clear liquid. Sweet, chloroformlike odor is typical of chlorinated hydrocarbons. The recognition threshold (100% of test panel) for ethylene dichloride is 40 ppm. Odor detection probably indicates an excessive exposure to vapor. High volatility and flammability, coupled with its toxicity and carcinogenic potential, make this material a major health hazard.

COMMENTS: Ethylene dichloride is miscible with alcohol, chloroform, and ether.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	Flammability Limits in Air	LOWER	UPPER
See Below	775°F (413°C)	% by Volume	6.2	15.9

EXTINGUISHING MEDIA: Use chemical, carbon dioxide, alcohol foam, water spray/fog, or dry sand to fight fires involving ethylene dichloride. Direct water sprays may be ineffective extinguishing agents, but they may be successfully used to cool fire-exposed containers. Use a smothering effect to extinguish fires involving this material. UNUSUAL FIRE/EXPLOSION HAZARDS: Ethylene dichloride is a dangerous fire and explosion hazard when exposed to sources of ignition such as heat, open flames, sparks, etc. Its vapors are heavier than air and can flow along surfaces to distant, low-lying sources of ignition and flash back. If it is safe to do so, remove this material from the fire area. Ethylene dichloride burns with a smoky flame.

SPECIAL FIRE-FIGHTING PROCEDURES: Wear a self-contained breathing apparatus with a full facepiece operated in a pressure-demand or another positive-pressure mode.

COMMENTS: Flash Point and Method: 56°F (13°C) CC; 65°F (18°C) OC.

OSHA Flammability Class (29 CFR 1910.106): IB. DOT Flammability Class (49 CFR 173.115): Flammable Liquid

SECTION 5. REACTIVITY DATA

Ethylene dichloride is stable. Hazardous polymerization cannot occur.

CHEMICAL INCOMPATIBILITIES include strong oxidizing agents. Explosions have occurred with mixtures of this material and liquid ammonia or dimethylaminopropylamine. Finely divided aluminum or magnesium metal may be hazardous in contact with ethylene dichloride.

CONDITIONS TO AVOID: Eliminate sources of ignition such as excessive heat, open flames, or electrical sparks, particularly in low-lying areas, because the explosive, heavier-than-air vapors will concentrate there.

PRODUCTS OF HAZARDOUS DECOMPOSITION can include vinyl chloride, chloride fumes, and phosgene. Phosgene is an extremely poisonous gas. Products of thermal-oxidative degradation (i.e., fire conditions) must be treated with appropriate caution.

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No. 359 8/87 ETHYLENE DICHLORIDE

SECTION 6. HEALTH HAZARD INFORMATION

Ethylene dichloride is listed as an anticipated human carcinogen by the NTP and as a probable human carcinogen (Group 2B), by the IARC. It was found to be an animal-positive carcinogen by the IARC. NCI reported positive results (mouse, rat) from its carcinogenesis bioassay. SUMMARY OF RISKS: Ethylene dichloride is considered to be one of the more toxic of the common chlorinated hydrocarbons. Deaths from accidental ingestion of this material have been reported. Inhalation of vapors reportedly caused three fatalities. Excessive inhalation of ethylene dichloride vapors can cause respiratory irritation, intoxication, narcotic and anesthetic effects, vomiting, dizziness, depression, and diarrhea. The hepatoxic (injurious to liver) effects of this material are significant. The systemic effects from overexposure can appear in the liver, kidneys, digestive tract, blood, lungs, adrenal glands, and the central nervous system. Tests on animals have revealed reproductive failure and fetal resorption. There may be increased risk to nursing infants of exposed mothers. TARGET ORGANS: Central nervous system, eyes, kidneys, liver, heart, adrenal glands, and skin. PRIMARY ENTRY: Inhalation, absorption through skin, oral, or eye contact. ACUTE EFFECTS: Skin contact causes irritation, defatting, and, if repeated or prolonged, burning. Eye contact causes irritation and serious injury (clouding of the cornea) if it is not removed promptly. CHRONIC EFFECTS: Injuries to the liver (hepatoxicity) and kidneys, weight loss, low blood pressure, jaundice, oliguria (reduced excretion of urine), or anemia. MEDICAL CONDITIONS AGGRAVATED BY LONG-TERM EXPOSURE: Persons taking anticoagulants could experience an increase in tendency to bleed. Persons taking insulin face an increased risk of lowered blood sugar. FIRST AID: Be prepared to restrain a hyperactive victim. EYE CONTACT: Flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. Get medical help.* SKIN CONTACT: Immediately flush the affected area with water. Wash thoroughly with soap and water. Remove and launder contaminated clothing before wearing it again; clean material from shoes and equipment. Get medical help.* INHALATION: Remove victim to fresh air; restore and/or support his breathing as needed. Get medical help.* INGESTION: Never give anything by mouth to someone who is unconscious or convulsing. Rinse victim's mouth with water. Oxygen and artificial respiration may be needed. Get medical help.* * GET MEDICAL ASSISTANCE = IN PLANT, PARAMEDIC, COMMUNITY. Get prompt medical assistance for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

SPILL/LEAK: Before using ethylene dichloride, it is essential that proper emergency procedures be established and made known to all personnel involved in handling it. Notify safety personnel of ethylene dichloride spills or leaks and implement containment procedures. Remove and eliminate all possible sources of ignition such as heat, sparks, and open flames from the area. Cleanup personnel should use protection against inhalation of vapors and contact with liquid. Contain spills by using an absorbent material such as dry sand or vermiculite. Use nonsparking tools to mix waste material thoroughly with absorbent and place it in an appropriate container for disposal. Flush trace residues with large amounts of water. Do not flush waste to sewers or open waterways. WASTE DISPOSAL: Consider reclamation, recycling, or destruction rather than disposal in a landfill. Waste may be burned in an approved incinerator equipped with an afterburner and a scrubber. Follow Federal, state, and local regulations.

Ethylene dichloride is designated as a hazardous substance by the EPA (40 CFR 116.4). Ethylene dichloride is reported in the 1983 EPA TSCA Inventory.

EPA Hazardous Waste Number (40 CFR 261.33): U077

EPA Reportable Quantity (40 CFR 117.3): 5000 lbs (2270 kgs)

Aquatic Toxicity Rating, TLm 96: 1000 - 100 ppm

SECTION 8. SPECIAL PROTECTION INFORMATION

GOGGLES: Always wear protective eyeglasses or chemical safety goggles. Ethylene dichloride is particularly harmful to the eyes, and direct contact results in corneal opacity (permanent clouding of the eye). GLOVES: Wear impervious rubber gloves to prevent skin contact. RESPIRATOR: Use a NIOSH-approved respirator per the NIOSH *Pocket Guide to Chemical Hazards* (Genium ref. 88) for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow the respirator guidelines in 29 CFR 1910.134. Any detectable concentration of ethylene dichloride requires an SCBA, full facepiece, and pressure-demand/positive-pressure modes. Warning: Air-purifying respirators will not protect workers from oxygen-deficient atmospheres. OTHER: Wear rubber boots, aprons, and other protective clothing suitable for use conditions to prevent skin contact. Remove contaminated clothing and launder it before wearing it again. Discard contaminated shoes. VENTILATION: Provide maximum explosion-proof local fume exhaust ventilation systems to maintain the airborne concentrations of ethylene dichloride vapors below the exposure limits cited in section 2. Install properly designed hoods that maintain a minimum face velocity of 100 lfm (linear feet per minute). SAFETY STATIONS: Make eyewash stations, washing facilities, and safety showers available in areas of use and handling. SPECIAL CONSIDERATIONS: Vapors are heavier than air and will collect in low-lying areas. Eliminate sources of ignition in these areas and again provide good ventilation there. COMMENTS: Practice good personal hygiene. Keep materials off of your clothes and equipment. Avoid transferring this material from hands to mouth while eating, drinking, or smoking. Immediately remove ethylene dichloride-saturated clothing to avoid flammability and health hazards. Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them.

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

STORAGE SEGREGATION: Store ethylene dichloride in tightly closed containers in a cool, dry, well-ventilated area away from sources of ignition. Protect containers from physical damage and from exposure to excessive heat. Avoid direct physical contact with strong acids, bases, oxidizing agents, and reducing agents. SPECIAL HANDLING/STORAGE: Use nonsparking tools. Outside or detached storage is preferred. Store and handle ethylene dichloride in accordance with the regulations concerning OSHA class IB flammable liquids. ENGINEERING CONTROLS: During transfer operations involving ethylene dichloride, the liquid and its vapors must not be exposed to nearby sources of ignition from engineering systems that are not explosion proof. Preplan emergency response procedures.

TRANSPORTATION DATA (per 49 CFR 172.101-2):

DOT Hazard Class: Flammable Liquid

DOT Label: Flammable Liquid

IMO Class: 3.2

DOT Shipping Name: Ethylene Dichloride

DOT ID No. UN 1184

IMO Label: Flammable Liquid, Poison

References: 1-9, 12, 19, 21, 26, 43, 47, 73, 87-102. CK

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Approvals JO. Accocco

Indust. Hygiene/Safety DW 11-18-87

Medical Review Gerd Goldsmith 11-30-87

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Material Safety Data Sheet

From Genium's Reference Collection
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GENIUM PUBLISHING CORP.

No. 315

CHLOROFORM
(Revision D)
Issued: August 1979
Revised: April 1988

SECTION 1. MATERIAL IDENTIFICATION 25

Material Name: CHLOROFORM

Description (Origin/Uses): Used as a solvent for fats, oils, rubber, alkaloids, waxes, and resins; as a cleansing agent.

Other Designations: Trichloromethane; $CHCl_3$; NIOSH *RTECS* No. FS9100000; CAS No. 0067-66-3

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

HMIS	
H 2	
F 0	R 1
R 0	I 3
PPG*	S 2
*See sect. 8	K 0

SECTION 2. INGREDIENTS AND HAZARDS

	%	EXPOSURE LIMITS
Chloroform, CAS No. 0067-66-3	Ca 100	OSHA PEL Ceiling: 50 ppm, 240 mg/m³ ACGIH TLV, 1987-88 TLV-TWA: 10 ppm, 50 mg/m³ NIOSH REL Ceiling: 2 ppm, 9.78 mg/m³ Toxicity Data* Human, Oral, LD_{Lo}: 140 mg/kg Rat, Oral, LD_{50}: 908 mg/kg
*See NIOSH, *RTECS*, for additional toxicity data with references to mutagenic, reproductive, tumorigenic, and irritative effects.		

SECTION 3. PHYSICAL DATA

Boiling Point: 142°F (61°C)
Melting Point: -82.3°F (-63.5°C)
Vapor Pressure: 158.4 Torrs at 68°F (20°C)
Vapor Density (Air = 1): 4.13

Water Solubility (%): 0.822 ml of $CHCl_3$ per 100 ml of H_2O at 68°F (20°C)
% Volatile by Volume: 100
Molecular Weight: 119 Grams/Mole
Specific Gravity (H_2O = 1): 1.484 at 68°F (20°C)

Appearance and Odor: A heavy, colorless, clear, volatile liquid; characteristic, pleasant, ethereal, sweet odor (recognition threshold: 0.3 mg/m³); sweet taste.

SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temperature	Flammability Limits in Air	LOWER	UPPER
*	*	% by Volume	*	*

Extinguishing Media: *Chloroform does not burn. Use an agent that will put out the surrounding fire.

Unusual Fire or Explosion Hazards: None reported.

Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode.

SECTION 5. REACTIVITY DATA

Chloroform is stable if kept in closed containers and protected from air and sunlight. It does not undergo hazardous polymerization; however, even when stabilized with ethanol, this material develops acidity from prolonged exposure to air and light.

Chemical Incompatibilities: This material is incompatible with strong alkalies.

Conditions to Avoid: Avoid prolonged exposure to air and light and to strong alkalies.

Hazardous Products of Decomposition: Toxic and corrosive gases like hydrochloric acid (HCl), chlorine (Cl_2), carbon monoxide (CO), and oxides of chlorine (ClO_2) can be produced during fires.

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No. 315 CHLOROFORM 4/88

SECTION 6. HEALTH HAZARD INFORMATION

Chloroform is listed as a suspected human carcinogen by ACGIH.

Summary of Risks: Exposure to this material affects the central nervous system (anesthesia); heart (arrhythmia, ventricular tachycardia, bradycardia); liver (necrosis, hepatoma); kidney (necrosis); and it is an embryonic toxin. Fatalities are associated with cardiovascular depression and ventricular fibrillation.
Medical Conditions Aggravated by Long-Term Exposure: Ailments of the heart, liver, and kidneys may be worsened by exposure to chloroform. **Target Organs:** Liver, kidneys, heart, skin, eyes. **Primary Entry:** Skin contact, inhalation.
Acute Effects: Dizziness, mental dullness, nausea, headache, fatigue, and anesthesia. **Chronic Effects:** Possible cancer.
FIRST AID
Eyes: Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes.
Skin: Immediately wash the affected area with soap and water. **Inhalation:** Remove the exposed person to fresh air; restore and/or support his or her breathing as needed.
Ingestion: Never give anything by mouth to someone who is unconscious or convulsing. If the exposed person is responsive, give him or her several glasses of milk or water to drink and induce vomiting. Repeat if large quantities were ingested.
Comments: Workers who are regularly exposed to chloroform require preplacement and periodic medical exams emphasizing kidney, liver, skin, and central nervous system functions. Carefully evaluate each exposure that produces a noticeable effect to determine the extent to which factors like alcohol or drugs have affected it.

GET MEDICAL HELP (IN PLANT, PARAMEDIC, COMMUNITY) FOR ALL EXPOSURES. Seek prompt medical assistance for further treatment, observation, and support after first aid.

SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

Spill/Leak: Notify safety personnel of a chloroform spill or leak. Provide ventilation. Cleanup personnel need protection against contact with and inhalation of vapor (see sect. 8). Chloroform vapor is heavier than air and will collect in low-lying areas. Contain large spills and collect waste or absorb it with an inert material such as sand, earth, or vermiculite. Place waste liquid or absorbent into closable containers for disposal. Keep waste out of sewers, watersheds, and waterways.
Waste Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow Federal, state, and local regulations.
OSHA Designations
Air Contaminant (29 CFR 1910.1000 Subpart Z)
EPA Designations (40 CFR 302.4)
RCRA Hazardous Waste, No. U044
CERCLA Hazardous Substance, Reportable Quantity: 5000 lbs (2270 kg)

SECTION 8. SPECIAL PROTECTION INFORMATION

Goggles: Always wear protective eyeglasses or chemical safety goggles. Where splashing is possible, wear a full face shield as a supplementary protective measure. Follow the eye- and face-protection guidelines in 29 CFR 1910.133. **Respirator:** Wear a NIOSH-approved respirator per the *NIOSH Pocket Guide to Chemical Hazards* for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow the respirator guidelines in 29 CFR 1910.134. For emergency or nonroutine use (e.g., cleaning reactor vessels or storage tanks), wear an SCBA with a full facepiece operated in the pressure-demand or positive-pressure mode. **Warning:** Air-purifying respirators will *not* protect workers in oxygen-deficient atmospheres. **Other:** To prevent contact with skin, wear impervious gloves, boots, aprons, gauntlets, etc., as required by the specific work environment. **Ventilation:** Install and operate general and local ventilation systems that are powerful enough to maintain airborne levels of chloroform below the OSHA PEL standard cited in section 2.
Safety Stations: Make eyewash stations, washing facilities, and safety showers available in use and handling areas. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do *not* wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from shoes and equipment. **Comments:** Practice good personal hygiene; always wash thoroughly after using this material. Keep it off of your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do *not* eat, drink, or smoke in any work area. Avoid inhalation of vapor!

SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

Storage/Segregation: Store chloroform in closed containers away from light and alkalies.

Special Handling/Storage: Protect containers from physical damage. Do not transfer chloroform through plastic or rubber hoses or pipes.

Transportation Data (49 CFR 172.101-2)

DOT Shipping Name: Chloroform	DOT Label: None	IMO Label: Poison
DOT Class: ORM-A	DOT ID No. UN1888	IMO Class: 6.1

References: 1, 2, 12, 73, 84-94, 100, 103.

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SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019

16 July 1999

Mr. Dennis Munhall, Task Monitor
U.S. Environmental Protection Agency
Emergency and Remedial Response Division
290 Broadway; 18th Floor
New York, NY 10007

EPA CONTRACT NO: 68-W5-0019
TDD NO: 02-99-06-0019
DOCUMENT CONTROL NO: START-02-T-03675
SUBJECT: SITE QA PROJECT PLAN - MONROE TOWNSHIP GROUNDWATER CONTAMINATION

Dear Mr. Munhall:

Enclosed please find the site Site Quality Assurance (QA) Project Plan details the HRS sensitivity analysis and describes the proposed sampling plan for the Monroe Township Groundwater Contamination site located in Monroe Township, Gloucester County, New Jersey. Your approval of this plan is requested. We anticipate conducting the field sampling during the week of 26 July 1999.

If you have any questions, please do not hesitate to call me at (732) 225-6116.

Very truly yours,

ROY F. WESTON, INC.

Diane D. Minsavage
Project Manager

Enclosure

cc: TDD File
W. Scott Butterfield, w/o att.
Joseph M. Soroka, QAO

In Association with Resource Applications, Inc., R.E. Sarriera Associates, Tetra Tech EM, Inc., C.C. Johnson & Malhotra, P.C., and GRB Environmental Services, Inc.

WESTON

SITE QA PROJECT PLAN

MONROE TOWNSHIP GROUNDWATER CONTAMINATION
MONROE TOWNSHIP, GLOUCESTER COUNTY, NEW JERSEY

Prepared by

Superfund Technical Assessment and Response Team
Roy F. Weston, Inc.
Federal Programs Division
Edison, New Jersey 08837

Prepared for

U.S. Environmental Protection Agency
Region II - Response and Prevention Branch
Edison, New Jersey 08837

DCN #: START-02-F-03675
TDD #: 02-99-06-0019
EPA Contract No.: 68-W5-0019

Approved by:

START

Diane D. Minsavage
Project Manager

Date: 10 J.1. 1999

START

Joseph M. Soroka, START
Quality Assurance Officer

Date: 7/16/99

EPA

Dennis W. Munhall
Task Monitor

Date: 7/22/99

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The following elements are provided in the START Generic Quality Assurance Project Plan (QAPP) and are included by reference:

QA REPORTS TO MANAGEMENT
PREVENTIVE MAINTENANCE PROCEDURES AND SCHEDULES
RECORDS MANAGEMENT SYSTEM
LOGBOOK PROGRAM
QUALITY-RELATED DOCUMENTS
INSPECTION/ACCEPTANCE REQUIREMENTS FOR SUPPLIES AND CONSUMABLES

LIST OF ATTACHMENTS

ATTACHMENT A: Site Map

ATTACHMENT B: Monroe Township Groundwater Contamination - PREScore Sheets

ATTACHMENT C: Potable Water Sampling OP

1.0 INTRODUCTION

Presented herein is the site Site Quality Assurance (QA) Project Plan (QAPP) for the sampling event to be conducted at the Monroe Township Groundwater Contamination site by the Region II Superfund Technical Assessment and Response Team (START). The site sampling plan has been developed at the request of the United States Environmental Protection Agency (U.S. EPA) in accordance with the START Generic Quality Assurance Project Plan (QAPP).

The sampling strategy listed within this plan emphasize the collection of samples required to evaluate certain pathways of concern to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Program. This Sampling QAPP provides a description of the Monroe Township Groundwater Contamination site and an evaluation of site conditions to determine if further action is warranted for the site. The analytical data generated from the sampling effort will also be utilized to provide additional analytical data for the Hazard Ranking System (HRS) evaluation of the site and to aid the U.S. EPA On-Scene Coordinators (OSCs) in determining the site's eligibility for EPA Removal Action activities.

This plan is based on information currently available and may be modified on site in light of field screening results and other acquired information. All deviations from the Sampling QAPP will be noted in the Sampling Trip Report.

2.0 PROJECT DESCRIPTION AND SENSITIVITY ANALYSIS

The Monroe Township Groundwater Contamination site consists of contamination in private residential and commercial wells in several areas located within Monroe Township, Gloucester County, New Jersey. These areas include the vicinity of the Crayon Box Nursery School, the vicinity of the Hughes residence (on South Black Horse Pike), and Winslow Road (in the vicinity of the Carrigan residence). A Site Location Map, which identifies the areas of concern, is presented in Figure 1 (Attachment A).

Groundwater samples have been collected from the Monroe Township Municipal Utilities Authority (MTMUA) since 1976. The samples have been variously analyzed for mercury, metals, and volatile organic compounds (VOCs). Mercury was detected at elevated levels in MTMUA well Nos. 4 and 5; MTMUA well No. 4 has been abandoned. Tetrachloroethene (PCE) has been detected in groundwater samples collected from MTMUA well Nos. 5, 6, 7, and 8. In January 1997, based on exceedances of the maximum contaminant level (MCL) for PCE in water from well No. 5, the New Jersey Department of Environmental Protection (NJDEP) directed MTMUA to treat the water from well No. 5 and/or develop and/or use alternate sources of drinking water .

Beginning in 1993, the Gloucester County Health Department (GCHD) collected numerous groundwater samples from additional wells in Monroe Township. Most of the samples were analyzed

for mercury; 42 samples (collected from 23 wells) were analyzed for VOCs. Mercury has been detected in groundwater samples collected from areas throughout the township; mercury was detected in groundwater samples collected from a cluster of homes located in the vicinity of Crystal Lake. The NJDEP is funding treatment systems and/or connections to the municipal water system for the residences located around Crystal Lake through the spill fund. PCE was detected in groundwater samples collected from 10 wells, including two municipal wells. Several of these residents have applied to the NJDEP spill fund to pay for treatment systems.

The U.S. Geological Survey (USGS) collected groundwater samples from 13 observation/monitoring wells, 6 MTMUA wells, and 1 municipal well in Washington Township between 1996 and 1998. These samples were analyzed for VOCs. Analytical results indicate the presence of PCE and several breakdown products of PCE (i.e., trichloroethene [TCE], 1,1-dichloroethene [DCE], trans-1,2-dichloroethene, and cis-1,2-dichloroethene) in samples collected from four of the MTMUA wells and the Washington Township well. Other VOCs detected in the USGS samples include 1,1,1-trichloroethane, chloroform, 1,2-dichloroethane (DCA), trichlorofluroromethane, bromoform, bromodichloromethane, dibromochloromethane, benzene, sec-butylbenzene, and tert-butyl methyl ether. Some of the concentrations detected exceeded prevailing state or federal MCLs.

At this time, there are no confirmed sources associated with the widespread groundwater contamination; however, there are currently several potential sources which may have contributed to the regional groundwater contamination.

2.1 Evaluation of Existing Information

The overall HRS score before further sampling for the Monroe Township Groundwater Contamination site is 0.00. Existing data from residential well samples collected by the GCHD and USGS indicate the presence of VOCs and mercury. However, the data does not currently meet EPA data validation guidelines.

2.2 Hazard Assessment

An evaluation of previous analytical data from samples collected from residential drinking water wells indicates that the likelihood of establishing an observed release to the groundwater pathway is high and likelihood of a release to the other pathways is low. Therefore, only the groundwater pathway is currently being evaluated to determine whether remedial action under the CERCLA is warranted.

Sources - At this time, there are no confirmed sources of groundwater contamination; therefore, the site is currently being evaluated as a contaminated groundwater plume. Monitoring wells have not been installed in the vicinity of the potential sources of groundwater contamination. Samples from the near-by private wells shall be analyzed for VOCs, metals, pH, and chlorides. If analytical data from these samples confirms that these sources have contributed to the regional groundwater contamination, the HRS scoring strategy will be amended to include each source. Additionally, a

focused investigation (including the use of a direct push technology to collect subsurface soil samples) may be conducted.

MTG-3.100008

Groundwater Pathway - There is a high likelihood that an observed release of contaminants to groundwater has occurred. A review of analytical data from private well samples collected by the GCHD indicates the presence of PCE at concentrations ranging from nondetect to 914 parts per billion (ppb) and mercury at concentrations ranging from nondetect to 21 ppb.

Surface Water Pathway - Based on a review of analytical data from private well samples collected by the GCHD, it appears that there is a contaminated groundwater plume with an unknown source. Since the contaminated groundwater plume is confined to the subsurface, there is no apparent overland runoff pathway to surface water; therefore, the likelihood of documenting an observed release to surface water is low.

Soil Exposure Pathway - The site is currently being evaluated as a contaminated groundwater plume with no known source. A review of available background information indicates that no surface soil samples (depth: 0-2 feet) have been collected. Therefore, there is no observed contamination to soil.

Air Pathway - The site is currently being evaluated as a contaminated groundwater plume with no documented source. An observed release to air, and the likelihood of release to air is believed to be very low.

2.3 Sensitivity Analysis - Monroe Township Groundwater Contamination

A sensitivity analysis was performed to determine the impact of certain variables on the overall HRS scoring. The groundwater pathway was considered, since previous analytical data indicates that a contaminated groundwater plume exists and a majority of the target area derives its drinking water from privately-owned wells. Thus the groundwater pathway held the most significant potential for affecting the overall site score. Mercury has been detected at elevated levels throughout several counties located in southern New Jersey. Since the mercury is wide-spread and is not currently known to be associated with the PCE in the groundwater, the mercury will not be used to evaluate the site. The sensitivity analysis will be based on the presence of PCE in groundwater (only). The sensitivity analysis currently indicates that documenting Level I actual contamination of PCE to at least 81 residents would increase the overall site score to greater than 28.5. Based on 1990 U.S. CENSUS population data for Gloucester County (2.87 persons per occupied housing unit), this equates to Level I contamination to approximately 29 homes. The PREscore sheets, showing this scenario, are presented in Attachment B. It should be noted that this sensitivity analysis did not include a potential groundwater target population. The Level I actual contamination population required for an overall site score of 28.5 will likely decrease as potential groundwater target data are obtained by Region II START. Additionally, the overall site score is based on the assumption that there is a single PCE plume.

3.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA TM, Dennis Munhall, will provide overall direction to the staff concerning project sampling needs, objectives, and schedule. The Project Manager (PM), Diane Minsavage, will be the primary point of contact with the TM. The PM is responsible for the development and completion of the Sampling QAPP, project team organization, and supervision of all project tasks, including reporting and deliverables. The Site QC Coordinator will be responsible for ensuring field adherence to the Sampling QAPP and recording of any deviations. The START Analytical Services Coordinator, Smita Sumbaly, will be the primary project team site contact with the EPA Contract Laboratory Program (CLP) coordinator and the subcontracted laboratory, if necessary.

Analyses for VOCs and metals shall be performed under the EPA CLP. START will arrange for the pH and chlorides analyses. START personnel will transfer custody of the samples for shipment to the appropriate laboratories. CLP data will be validated prior to receipt at START. The laboratory will provide raw data for the pH and chloride analyses to the START Analytical Services Group for data validation.

The following sampling personnel will work on this project:

Personnel	Responsibility
Diane Minsavage	Project Manager, Field Coordinator
Gerald Gilliland	Sample Management Officer (SMO)
Kiersten Dorneman	Site QA/QC, Sampler
Harry Allen	Site Health and Safety Coordinator (SHSC), Sampler
Melissa Kaplan	Data Management, Sampler

The following laboratories will provide the following analyses:

Lab Name/Location	Sample Type	Parameters
Organic CLP Lab - TBD[1]	Aqueous	TCL VOCs (14 day turnaround [to EPA])
Inorganic CLP Lab - TBD	Aqueous	TAL metals (14 day turnaround [to EPA])
Water Quality Parameters Lab - TBD	Aqueous	pH and chlorides (standard turnaround)

1) TBD - To be determined

Quick turnaround time (14 days for CLP data) for results are to be requested in order to allow timely completion of the evaluation and potential remediation.

4.0 DATA USE OBJECTIVES

The objective of this Integrated Assessment is to provide sufficient documentation for source identification/attribution and actual contamination of groundwater targets (i.e., residential wells). The analytical data from the sampling event will also be used to aid the EPA OSC in determining the site's eligibility for EPA Removal Action Activities. Analytical results will be compared with the MCL (1.6 ppb for PCE) and removal action level (RAL) (70 ppb for PCE). Prior sampling of residential wells in the area indicate the VOCs at concentrations up to 914 ppb. Current sensitivity analyses demonstrate that actual contamination to a population of at least 81 residents (approximately 29 households) would result in an overall HRS site score above 28.5. It should be noted that the number of residents required to achieve this score will likely decrease as potential groundwater target information (i.e., within 4 miles of the site) is received by START. Data will also be evaluated to assess potential risks to human health and the environment from exposure to hazardous substances attributable to the site.

4.1 Quality Assurance Objectives

The overall Quality Assurance (QA) objective for chemical measurement data associated with this sampling event is to provide analytical results that are legally defensible in a court of law. The QA program will incorporate Quality Control (QC) procedures for field sampling, chain of custody, laboratory analyses, and reporting to assure generation of sound analytical results.

The EPA TM has specified the use of the CLP for the TCL VOCs and TAL metals analyses for this project (i.e., critical level of QA [QA-2]). Details of this QA level are provided below.

The EPA TM has specified a Level 1 QA objective (QA-1) for the water quality analyses (i.e., pH and chlorides). Details of this QA level are provided below.

The following requirements apply to the respective QA Objectives and parameters identified.

The QA Protocols for a Level 1 QA objective sampling event are applicable to all sample matrices and include:

1. Sample documentation in the form of field logbooks, appropriate field data sheets, and chain of custody records (chain of custody records are optional for field screening locations).

2. Calibration of all monitoring and/or field-portable analytical equipment prior to collection and analyses of samples with results and/or performance check procedures/methods summarized and documented in a field, personal, and/or instrument log notebook.

3. Field or laboratory determined method detection limits (MDLs) will be recorded along with corresponding analytical sample results, where appropriate.

The QA Protocols for a Level 2 QA objective sampling event are applicable to all sample matrices and include:

1. Sample documentation in the form of field logbooks, appropriate field data sheets, and chain of custody records (chain of custody records are optional for field screening locations).

2. Calibration of all monitoring and/or field-portable analytical equipment prior to collection and analyses of samples with results and/or performance check procedures/methods summarized and documented in a field, personal, and/or instrument log notebook.

3. Field or laboratory determined method detection limits (MDLs) will be recorded along with corresponding analytical sample results, where appropriate.

4. Analytical holding times as determined from the time of sample collection through analysis. These will be documented in the field logbook or by the laboratory in the final data deliverable package.

5. Initial and continuous instrument calibration data.

6. QC blank results (rinsate, trip, method, preparation, instrument, etc.), as applicable.

7. Collection and analysis of blind field duplicate and MS/MSD QC samples to provide a quantitative measure of the analytical precision and accuracy, as applicable.

8. Use of the following QC procedure for QC analyses and data validation:

   Definitive identification - confirm the identification of analytes on 100% of the "critical" samples, via an EPA-approved method; provide documentation such as gas chromatograms, mass spectra, etc.

The objective of this project/event applies to the following parameters:

Table 1: Quality Assurance Objectives

QA Parameters	Matrix	Intended Use of Data	QA Objective
TCL VOA	Aqueous	document contamination of private wells and waste source identification	QA-2 (CLP)
TAL metals	Aqueous	document contamination of private wells and waste source identification	QA-2 (CLP)
pH	Aqueous	Provide information to (NJ) USGS	QA-1
Chlorides	Aqueous	Provide information to (NJ) USGS	QA-1

A Field Sampling Summary is contained in Table 2 and a QA/QC Analysis and Objectives Summary is contained in Table 3. Section 5.1, Sampling Design, provides information on analyses to be performed on the individual samples.

TABLE 2:

FIELD SAMPLING SUMMARY

Analytical Parameters	Matrix	Container Size	Preservative	Holding Time[1]	Subtotal Samples	Trip Blanks[3]	Rinsate Blanks[2]	Duplicate Samples[3]	MS/MSD Samples[3]	Total Field Samples
VOA	Aqueous	2 - 40 mL VOA vials	Cool to 4°C, HCl to pH<2	7 day, if unpreserved 14 day, if preserved	150	5	0	8	8	163
TAL metals	Aqueous	1 - 1 Liter glass or polyethylene	Cool to 4°C, HNO3 to pH<2	6 months, 28 days for Hg	150	0	0	8	8	158
pH	Aqueous	1 - > 200 mL glass	Cool to 4°C	ASAP						
Chlorides		or polyethylene		28 days	150	0	0	0	0	150

[1] Holding time from date of sampling.

[2] Only required if non-dedicated sampling equipment to be used. NR - not required, dedicated sampling equipment to be used.

[3] Not required for QA-1 (screening)

MTG-3.100013

TABLE 3

QA/QC Analysis and Objectives Summary

Analytical Parameters	Matrix	Analytical Method Reference	QA/QC Quantitation Limits	QA Objective
VOA	Aqueous	CLP OLMO 3.3 (low concentration)	As per method	QA-2
TAL metals	Aqueous	CLP ILMO 4.0	As per method	QA-2
pH	Aqueous	MCAWW Method 150.1	As per method	QA-1
Chlorides	Aqueous	MCAWW Method 325.1	As per method	QA-1

Note: CLP-format deliverables required for all data packages.

MTG-3.100014

5.0 APPROACH AND SAMPLING PROCEDURES

The following sampling activities will be conducted at the Monroe Township Groundwater Contamination Site:

- Groundwater Sampling (private wells)
- CLP-Laboratory analyses for TCL VOAs and TAL metals
- Non-CLP Laboratory Analysis for pH and chlorides

5.1 Sampling Design

Prior to sampling activities, Region II START will review records at the Gloucester County Tax Board in an effort to identify the owners of buildings (residences or commercial enterprises) located within the areas of concern. START will compile a list of the property owners and the locations of the properties and compare it to a list of buildings (residences and commercial enterprises) currently served by the MTMUA to determine the location of private wells in the areas of concern. In addition, analytical data from previous well samples (collected by the MTMUA, GCHD, and the USGS) will be reviewed and compiled into a database. This database will be utilized to manage collected data pertinent to evaluation of the extent of groundwater contamination.

Region II START will also collect groundwater samples from private wells where previous sampling by the GCHD has indicated Level I concentrations of VOCs. These wells will be sampled to document Level I actual contamination within the groundwater pathway under the HRS. In addition, Region II START will collect private residential well water samples from residential wells which the GCHD has not sampled. At this time, it is estimated that approximately 150 private wells will be sampled. The analytical results from these samples will aid the EPA TM and OSC in establishing the extent of VOC contamination. In addition, this data will enable the OSC to make decisions relevant to removal activities to be conducted at the site. It should be noted that additional samples may be collected if deemed necessary while in the field.

The field program will include the collection of groundwater samples from private wells. All sampling activities will be performed by the Region II START, under the direction of the EPA TM. Groundwater samples will be analyzed for Target Compound List (TCL) volatile organic compounds and Target Analyte List (TAL) metals through the USEPA Contract Laboratory Program (CLP). Additionally, the samples will also be sent to the procured laboratory for pH and chloride analyses.

5.2 Schedule of Activities

Proposed Start Date	Activity	End Date
26 July 1999	Private Well Sampling	30 July 1999

5.3 Sampling Equipment

Groundwater samples will be collected from private wells. The water will be collected directly into the appropriate sample bottles; therefore, no sampling equipment will be used.

5.4 Sample Identification System

MTG-3.100016

Each sample collected by Region II START will be designated by a code which will identify the site. The code will be a site-specific project tracking number. The code for the Monroe Township Groundwater Contamination site is MGW-9907. The media type will follow the numeric code. A hyphen will separate the site code and media type. Specific media types are as follows:

TW - Tap (Private Well) Water
TB - Trip Blank

After the media type, the sequential sample numbers will be listed; sample numbers will be identified as to their location area on the site (and/or the block and lot Nos.). A duplicate sample will be identified in the same manner as other samples and will be distinguished and documented in the field logbook. Similarly, MS/MSDs will also be distinguished and documented in the field logbook.

5.5 Standard Operating Procedures (SOPs)

5.5.1 Sample Documentation

All sample documents will be completed legibly, in ink. If errors are made, the error will be crossed out with a single line, initialed and dated.

Field Logbook

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. The sampling team or individual performing a particular sampling activity is required to maintain a field logbook. The logbook shall be filled out at the location of sample collection immediately after sampling. All entries will be dated and signed by the individuals making the entries, and should include (at a minimum) the following:

1. Site name and project number.
2. Name(s) of personnel on site.
3. Dates and times of all entries (military time preferred).
4. Descriptions of all site activities, site entry and exit times.
5. Noteworthy events and discussions.
6. Weather conditions.
7. Site observations.

8. Sample no(s). and sample location identification and description*.
9. Subcontractor information and names of on-site personnel.
10. Date and time of sample collections, along with chain of custody information.
11. Record of photographs, if applicable.
12. Site sketches.

The description of the sample location will be noted in such a manner as to allow the reader to reproduce the location in the field at a later date.

Sample Labels

Sample labels will clearly identify the particular sample, and should include the following:

1. Sample identification number.
2. CLP No., if appropriate.
3. Sample collection date and time.
4. Sample preservation.
5. Analytical parameters.

Additionally, the CLP case No. shall be noted on samples analyzed through the CLP. Sample labels will be written in indelible ink and securely affixed to the sample container.

Custody Seals

Custody seals demonstrate that a sample container has not been tampered with, or opened. The individual in possession of the sample(s), the SMO, will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook.

5.5.2 Sampling SOPs

The following Sampling SOPs will be used for this project:

Decontamination

Decontamination of sampling equipment will not be performed. The samples will be collected (directly) in the appropriate sample bottles; therefore, sampling equipment will not be used to collect the potable water samples.

Potable Water Sampling

Potable water sampling activities will be conducted in accordance with guidelines outlined in Weston Sampling SP No. 16-11-012 Potable Water Sampling (Attachment C).

Samples will be obtained from a faucet in each home due to the anticipated difficulty in gaining access to sealed domestic wells. If water treatment systems are in use, samples will be obtained when possible before the treatment device, as well as before any aerator device, garden hose or other attachment.

The following procedures apply to the collection of residential well groundwater samples:

1. Wear protective gear as specified in the Health and Safety Plan. Samplers shall don new outer sampling gloves prior to sampling at each location.
2. Inspect the well including pump, storage tanks, and any treatment systems present.
3. Sample access point should be chosen as close to the well head as possible prior to the water entering any storage tank or treatment systems.
4. If the volume of purged water cannot be determined, the well will be evacuated for a minimum of 15 minutes. If the volume can be calculated, a minimum of 3 to 5 well volumes should be purged unless the well is in continuous use. If the well is used for industrial production, the pumping rate should be noted as such, and the tap for sampling purged for 15 minutes. An outside faucet may be used for purging.
5. Record sample No., date, time, CLP Nos., flow rate, treatment type (and location of unit, if present), location sample collected, depth of well, lot and block No(s)., residents name, address (and mailing address, if different from address), and the sampler(s) name in the field logbook. Also, note in the logbook if the sample is a QA/QC sample (e.g., duplicate or matrix spike/matrix spike duplicate [MS/MSD]).
6. Samples will be obtained by collecting the water directly from the access point into the sample container.
7. The preservation procedure shall be as follows:
   a) VOAs - Determine the amount of 1:1 HCl preservative required to adjust the pH of the sample to less than 2 in an extra 40 mL glass vial. If effervescence occurs when the bottle is tapped, volatile samples will be submitted without preservative and noted as such on the respective Traffic Report. Add the determined volume of acid to the empty 40 mL glass vials prior to sampling. Fill each container with sample to just overflowing, so that no air bubbles are trapped inside.
   b) Other parameters - Fill each container and preserve immediately as required in Table 2. When adjusting the pH for sample preservation, pour a minimal portion of sample onto broad range pH paper to verify if the appropriate pH level has been obtained.
8. Place samples in cooler and chill with ice. Samples will be hand-delivered, picked up (by the laboratory), or shipped within 24 hours of collection to the designated laboratories.
9. Complete sample labels, custody seals, and chain of custody forms.

This sampling design is based on information currently available and may be modified on site in

light of field screening results and other acquired information. All deviations from the sampling plan will be noted in the Sampling Trip Report.

5.5.3 Sample Handling and Shipment

Samples will be packaged and shipped according to the U.S. EPA User's Guide to the Contract Laboratory Program (January 1991). Chain of custody forms, sample labels, custody seals, and other sample documents will be completed as specified in the above reference manual. All entries will be made in permanent ink. If errors are made when completing any of these forms, the error will be crossed out with a single line, initialed, and dated by the sampler. Each environmental sample will be properly identified and sealed in a polyethylene bag. The bag shall then be placed in a plastic cooler which has also been lined with a large polyethylene bag. When required, samples shall be packed with sufficient ice (sealed in polyethylene bags) to cool the samples to 4°C. Sufficient non-combustible, adsorbent cushioning material shall be placed in the cooler so as to minimize the possibility of container breakage. All sample documents will be sealed in a plastic bag and affixed to the underside of each cooler lid. The large plastic bag shall then be sealed and the container closed. The lid will be sealed and custody seals and strapping tape shall then be affixed to the outer packaging so that any sign of tampering is easily visible. All packaging will conform to International Air Transport Association (IATA) regulations for overnight carriers. Sample shipment will conform to Roy F. Weston, Inc., Guidelines for Classifying Field Sample Shipments and the most current IATA Dangerous Goods Regulations. All samples will either be hand-delivered or shipped via common carriers to the laboratory within 24 hours of collection. Information relating to the shipment of samples, including the airbill number, sample quantity, and the sample types, will be reported to the USEPA Sample Management Office on the day of or morning after shipment.

5.6 Sample Containers

Sample bottles will be obtained from qualified vendors via a competitive bid process and will meet all guidelines specified in OSWER Directive 9240.0-05A, Specifications and Guidance for Contaminant-Free Sample Containers (July 1989).

5.7 Disposal of PPE and contaminated sampling materials

All used PPE and disposable sampling equipment will be disposed of at the EPA facility in appropriate trash receptacles. **No equipment will be disposed on site.**

6.0 SAMPLE CUSTODY

The SMO will prepare and maintain appropriate chain of custody records from the time the sample is delivered (to the SMO) to its final deposition. USEPA CLP Organic and Inorganic Traffic Reports and Chain of Custody Records must be used for samples analyzed through the CLP. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a locked container sealed with a custody seal. Specific information regarding custody of the samples projected to be collected on the weekend will be noted in the field logbook.

The chain of custody record should include (at minimum) the following:

1. Sample identification number and CLP No(s), as applicable.
2. Sample information (e.g., matrix, concentration, type, preservation).
3. Analysis(es).
4. Sample date and time.
5. Name(s) and signature(s) of sampler(s).
6. Signature(s) of any individual(s) with control over samples.

Additionally, the CLP case No., site name, location, CERCLIS ID No., region No., laboratory, carrier, and airbill No. must be reported on the chain of custody reports for all samples analyzed through the CLP. A separate chain of custody form must accompany each cooler for each daily shipment. The chain of custody form must address all samples in that cooler, but not address samples in any other cooler. This practice maintains the chain of custody for all samples in case of mis-shipment.

7.0 FIELD INSTRUMENT CALIBRATION AND PREVENTIVE MAINTENANCE

The sampling team is responsible for assuring that a calibration/maintenance log will be brought into the field and maintained for each measuring device. Each log will include at a minimum, where applicable:

- name of device and/or instrument calibrated
- device/instrument serial and/or ID number
- frequency of calibration
- date of calibration
- results of calibration

- name of person performing the calibration
- identification of the calibrant (PID, FID, pH meter)

Equipment to be used each day will be calibrated prior to the commencement of daily activities.

8.0 ANALYTICAL METHODS

Analytical methods to be utilized in the analyses of samples collected during this sampling event are detailed in Table 3.

9.0 DATA REDUCTION, VALIDATION AND REPORTING

9.1 Deliverables

The START PM, Diane Minsavage, will maintain contact with the EPA TM, Dennis Munhall, to keep him informed about the technical and financial progress of this project. This communication will commence with the issuance of the work assignment and project scoping meeting. Activities under this project will be reported in status and trip reports and other deliverables (e.g., analytical reports, final reports) described herein. Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

Trip Report

A trip report will be prepared to provide a detailed accounting of what occurred during each sampling mobilization. The trip report will be prepared within one week of the last day of each sampling mobilization. Information will be provided on time of major events, dates, and personnel on site (including affiliations).

Maps/Figures

Maps depicting site layout, potential contaminant source areas, and sample locations will be included in the trip report, as appropriate.

Analytical Report

An analytical report will be prepared for samples analyzed under this plan. Information regarding the analytical methods or procedures employed, sample results, QA/QC results, chain of custody documentation, laboratory correspondence, and raw data will be provided within this deliverable.

Data Review

A review of the data generated under this plan will be undertaken. The assessment of data

acceptability or useability will be provided separately, or as part of the analytical report.

9.2 Data Validation

QA-1 data need only be evaluated for calibration and detection limits criterion.

Analytical results obtained though the CLP will be validated in accordance with the most current USEPA Region 2 data validation guidelines under a separate EPA contract.

10.0 FIELD QA/QC CHECK SAMPLES AND FREQUENCY

This section details the Quality Assurance/Quality Control (QA/QC) requirements for field activities performed during the sampling effort.

QA/QC samples will include the collection of one field duplicate and one MS/MSD sample for each matrix (water) at a ratio of 1 per 20 samples (for QA-2 [e.g., CLP]). The analysis of CLP TCL/TAL parameters for the MS/MSD sample will involve the collection of triple sample volume for aqueous samples. The extra sample volume will be submitted to allow the laboratory to perform matrix spike sample analysis. This analysis provides information about the effect of sample matrix on digestion and measurement methodology. Field duplicate samples provide an indication of analytical variability and analytical error (e.g., reproducibility) and will not be identified to the laboratory.

A trip blank will be collected for events involving aqueous sampling for VOCs. A trip blank is an aliquot of deionized (DI) demonstrated analyte-free water which is prepared in the field prior to the initiation of field work and sealed in 40-mL glass vials with teflon-lined septum caps. Analytical results of the trip blank sample are utilized during sample data validation to determine if any cross contamination has occurred between samples during shipment/storage, or if on-site atmospheric contaminants are seeping into the sample vials. These sealed bottles will be placed in a plastic cooler and will accompany field personnel to the sampling locations.

The distilled deionized (DI) water utilized for the trip blanks will be certified as such. A copy of this certificate will be kept on site and another in the site-specific project file. The criteria to be

demonstrated as analyte-free will be consistent with that specified in the U.S. EPA Region II CERCLA Quality Assurance Manual (October 1989), and is as follows:

MTG-3.100023

Purgeable organics < 10 ppb
Inorganics < CRDL

where the CRQL is represented by the Contract Required Quantitation Limit and the CRDL is represented by the Contract Required Detection Limit in the most recent CLP Statement of Work. For specific common laboratory contaminants such as methylene chloride, acetone, toluene, and 2-butanone, the allowable limits are three times the respective CRQLs.

11.0 SYSTEM AUDIT

The Field QA/QC Officer will observe sampling operations and review subsequent analytical results to ensure compliance with the QA/QC requirements of the project/sampling event.

12.0 CORRECTIVE ACTION

All provisions will be taken in the field and laboratory to ensure that any problems that may develop will be dealt with as quickly as possible to ensure the continuity of the project/sampling events. Any deviations from this sampling plan will be noted in the final report.

ATTACHMENT A

SITE MAP

ATTACHMENT A

Figure 1
Site Location Map

This page replaces the original page which contains information that EPA considers to be confidential. The complete document is located at the EPA Region II Removal Records Center, 2890 Woodbridge Avenue, Edison, NJ 08837.

ATTACHMENT B

MONROE TOWNSHIP GROUNDWATER CONTAMINATION
PRESCORE SCORE SHEETS
PROJECTED (assumes Level I actual contamination to 81 residents)

ATTACHMENT B

MONROE TOWNSHIP GROUNDWATER CONTAMINATION
PRESCORE SCORE SHEETS

Page 1

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ATTACHMENT B

MONROE TOWNSHIP GROUNDWATER CONTAMINATION
PRESCORE SCORE SHEETS

Page 2

This page replaces the original page which contains information that EPA considers to be confidential. The complete document is located at the EPA Region II Removal Records Center, 2890 Woodbridge Avenue, Edison, NJ 08837.

ATTACHMENT C

SAMPLING OPS

POTABLE WATER SAMPLING

THE APPROVAL SIGNATURES ARE KEPT ON FILE
WITH WESTON'S POLICIES AND PRACTICES GROUP
OF THE QUALITY ASSURANCE/FINANCE DIVISION

REVISION NUMBER: 00

Initiated by:	D.L. Jones
	R.B. Biggs
Legal Review:	D.B. Bauer
Approved by:	P.J. Marks
Authorized by:	A.M. Henry

Important Notice:

This document has been prepared as a default procedure to assist Roy F. Weston, Inc. (WESTON) personnel with the performance of specific task and procedures when other guidance documents or regulatory procedures are not applicable or are non-existent. It is the sole responsibility of WESTON personnel performing procedures in this operating practice to determine if other guidance documents or regulatory procedures exist and are to be followed instead of or in conjunction with this operating practice. Other guidance or regulatory documents can include, but are not limited to Federal, State, and Local codes, policies, client or WESTON proposals, work plans, field sampling plans, quality assurance project plans, and any other applicable document. This document is not to be utilized by WESTON personnel as a substitute for thorough understanding of the subject matter or as a substitute for applicable training.

1.0 PURPOSE

Roy F. Weston, Inc. (WESTON) has adopted New Jersey Department of Environmental Protection and Energy (NJDEPE) standard for potable water sampling and domestic well sampling (see attachment).

2.0 INTERPRETATION

If there are questions regarding the interpretation or the applicability of items in this operating practice, the Project Manager or Technical Manager should be consulted. In the absence of either of those, contact your Section Manager.

3.0 REFERENCES

New Jersey Department of Environmental Protection and Energy (NJDEPE) Field Sampling Procedures Manual, May 1992, pages 181-186.

Measurement of the thickness of the floating layer may be accomplished by using a water indicator paste/gel with a weighted steel tape to determine the depth to the top of the floating layer and to the water surface. The difference between these two readings is the thickness of the floating layer. Measurement of the thickness of the floating layer may also be accomplished by using an interface probe or clear Teflon bailer, if the product thickness is less than the length of the bailer. Electric water level sounders will not work properly for these determinations.

Prior to the purging of ground water from the well, a sample of the floating layer may be obtained using a bailer which fills from the bottom. Care should be taken to lower the bailer just through the floating layer but not significantly down into the underlying ground water. Samples should be analyzed to determine the chemical composition of the LNAPL and its physical properties (e.g., specific gravity, water solubility, equilibrium vapor pressure of the liquid and Henry's Law Constant, etc.). After following typical evacuation procedures discussed previously in this section, a sample of formation water may be obtained from the well.

g. Sampling for Dense, Non-Aqueous Phase Liquids (DNAPLs)

DNAPLs include chlorinated solvents and other chemicals which have specific gravities greater than water. They are likely to be present in aquifers as a separate phase because of low solubility in water. DNAPL chemicals tend to migrate downward through the unsaturated zone and the saturated zone due to their high density. If the volume of DNAPL chemical introduced into the subsurface is larger than the retention capacity of the vadose and saturated zones, a portion of the DNAPL will spread out as a layer of free liquid on the bottom of the aquifer or on lower permeability beds within the aquifer.

Measurement of the thickness of DNAPLs (and LNAPLs) must be performed prior to purging (evacuating) the well. Measurement of the DNAPL may be accomplished by using a water indicator paste/gel with a weighted steel tape (if no LNAPL is present) to determine the depth of the top of the DNAPL and the bottom of the well. The difference between these two measurements is the thickness of the DNAPL in the well. An interface probe may also be used to measure DNAPL in the well. An interface probe may also be used to measure DNAPL thickness.

Prior to purging a monitor well, a sample of the DNAPL may be obtained using a dual check valve bailer or a bladder pump. If both LNAPLs and DNAPLs are present in a well it may be necessary to purge the well of one casing volume of water prior to sampling the DNAPL provided that efforts are made not to disturb the DNAPL in the bottom of the well. This can be accomplished by setting the pump intake of the submersible or suction-lift pump several feet above the DNAPL.

Samples should be analyzed to determine the chemical composition of the DNAPL and its physical properties (e.g., specific gravity, water solubility, equilibrium vapor pressure of the liquid and Henry's Law Constant, etc.). After the well is purged, a sample of the ground water may be obtained for laboratory analysis.

h. Sampling Domestic Wells

(See also, J. "POTABLE WATER SAMPLING" - 2. "INDIVIDUAL WATER SUPPLY SYSTEMS")

An important step in sampling a domestic well is to obtain as much information as possible from the homeowner. This should include: depth of the well, well yield, formation in which the well is completed screen depth and length, well construction material, diameter of casing and when and by whom the well was installed. This information should be verified if possible by obtaining drilling logs, etc. With this information, determine the number of gallons to be evacuated (see section 5. "Sampling Procedures" b. "Field Measurements").

When collecting a sample from an operating domestic well, it is essential to evacuate the plumbing and water storage tank. Running the water for a minimum of fifteen minutes before collection is a good rule of thumb, however, longer is desirable. Listen for the pump or the electric circuit to the pump to come on, indicating that the plumbing is being evacuated. Inquire as to whether any treatment units are installed on the system. Softening, iron removal, turbidity removal, disinfection, pH adjustment are often used; these may give misleading analyses depending on the parameters of interest. Home carbon filters for the removal of organics are also increasingly popular. Basement and outside faucets may by-pass such treated water (note: sample cold water faucet).

A brief inspection of the system should be performed to locate the well, pump, storage tanks and any treatment systems. Samples should be taken as close to the pumping well as possible and prior to any storage tanks or treatment systems. If a sample must be taken following a treatment unit, the type, size and purpose of the unit should be noted on samples sheets and in the field logbook.

Home faucets, particularly kitchen faucets, usually have a screen installed on the discharge. The screen must be removed prior to sampling for bacteria, or for volatile organics, since the screen tends to aerate the water and some organics may be lost. Also, when sampling for bacteria, do not take a sample from a swivel faucet since the joint may harbor a significant bacterial population.

Note: Homeowners' plumbing systems should not be tampered with in any way, except for removal of the faucet screen with permission of the homeowner.

For long term monitoring projects which utilize domestic wells, a specific tap or faucet should be designated as the target sample access point for accurate reproducibility of future samples.

i. Sampling Industrial Wells

When sampling industrial wells, it is desirable to sample as close to the well source as possible. Samples should be taken directly from the well head whenever possible. This will eliminate treatment interferences, possible changes in quality within the lines, mixing of water from other wells, etc.

Large capacity wells which are "on-line" during the visit can be sampled immediately. Wells which are "off-line", must be pumped to waste prior to sampling. Fifteen minutes or more is suggested. Access to municipal well systems well houses, etc. requires the assistance of a water department employee. Prior notification is essential.

I. SAMPLING OF MUNICIPAL AND INDUSTRIAL WASTEWATERS

Sampling of municipal and industrial wastewaters is performed for a number of reasons: to determine compliance with Federal, State or local standards, to verify reported self-monitoring data, to [illegible] determining discharger or user fees, to characterize wastewater strength, to verify the sampling locations and monitoring points of regulated parties, and to assist in determining the sources of prohibited or restricted wastes. The most difficult type of sampling to perform is the collection of background information for future use; sometimes the correct information will be obtained, sometimes it will be missed. The collection of background information is critical. Information that may be gathered includes flow, totalizer readings, pH, TSS, treatment plant configuration and operating status.

When sampling wastewaters, one must take into consideration that good sample results are dependent on a number of factors, including sample representativeness, proper sampling technique and proper preservation. A location for sample collection should be chosen where uniform wastewater quality and thorough mixing exist. Wastewater influent samples should be collected at a point prior to any recycle, supernatant or return lines; wastewater effluent samples should be collected after the final treatment process. Take into consideration that the representativeness of samples may depend on timing; for example, influent samples collected at a municipal treatment plant with a substantial collection system may represent discharges into the system that occurred hours ago. In addition, be cognizant that sampling locations present safety hazards, ranging from confined spaces, heights, unsteady equipment or surroundings, to airborne pollutants, biological hazards that may include infectious disease agents, ticks, poison ivy and snakes to chemical hazards such as corrosive liquids, heavy metals and potentially explosive atmospheres.

Samples may be collected as grabs or composites, depending on the purpose of the sampling, regulatory requirements or site conditions. Grab samples are single samples collected at neither a set time or flow. It may be advantageous to collect grab samples if wastewater flow is not continuous, if the wastewater's character varies or is not consistent, or if there is a need or desire to determine if a composite sample of the wastewater would obscure extreme conditions of the waste. In addition, some parameters, specifically dissolved oxygen or other dissolved gases, total and fecal coliform and other bacteria, pH, temperature, oil and grease and petroleum hydrocarbons, purgeable organics, and available and residual chlorine sulfite may only be collected as grab samples.

Composite samples may be collected in six different manners depending on sample volumes collected and at what frequency sample collection occurs. Composite samples may be collected as follows: constant sample volume/consistent time intervals, constant sample volume/time interval between samples is proportional to wastewater flow, constant time intervals/sample volume is proportional to the wastewater flow rate at the time of sample collection, constant time interval/sample volume is proportional to total wastewater flow since the last sample was collected; continuous sample collection or pumping rate, and continuous sample rate is proportional to wastewater flow. If flow rates at the time of sample collection are within (+/-) fifteen percent of the average flow, sample compositing based on constant sample volumes and constant time intervals is generally representative, however, the method is not considered to be the most representative for highly variable flow or concentration conditions. During sample compositing, a minimum of eight individual samples should be collected, if at all possible, and each individual aliquot should be a minimum of 100 milliliters. During six hour composites, a faciltiy should collect an aliquot at least once each half hour.

Composite sampling may be conducted manually or by the use of an automatic sampler. The most common automatic samplers use either a vacuum pump or a peristaltic pump to draw the sample into the unit. A unit with a vacuum pump may be able to draw the sample at a higher velocity and from a cross-section of the wastestream, however it may also bias the solids concentration in the collected sample if the unit in use operates by filling a reservoir and then wasting excess sample material before draining the remainder to the sample container. A unit with a peristaltic pump discharges a measured sample volume into the sample container, so less solids separation and associated sample bias should occur. However, peristaltic pump units generally sample from only one point in the wastestream. Automatic samplers operating with a suction lift and without a detachable gathering system are practically limited to operation at heads at or under 25 feet due to internal friction losses and atmospheric pressure. Automatic samplers should be capable of rapidly purging the intake system prior to and immediately after collection of an aliquot. The transport lines for the units should also be at least 0.64 centimeters (0.25 inches) in diameter to prevent clogging. It should be recognized that the transport lines may build up growths which may periodically slough off and contaminate sample material if left uncleaned or unnoticed. Samplers should have an intake velocity of between two and five feet (0.6 to 1.5 meters) per second. Units with an intake velocity under two feet per second may leave solids behind in the tubing, while those with intake velocities over this range may draw in large pieces of suspended material; either case may yield erratic analytical results. One reference consulted recommended determining the suspended solids concentrations obtained from an automatic sampler and comparing it with a mean of a minimum of six simultaneously collected manual grab samples. The obtained ratio (automatic:grab) for a municipal treatment plant influent should be 1.6 to 2.0 and for a municipal treatment plant effluent should be 0.9 to 1.3. Samples should be kept near 4° C during compositing; if the sampler does not have an integrated refrigeration unit or ice compartment, it may be placed on ice in an ice chest that has been laid on its end. Standard Methods for the Examination of Water and Wastewater recommends the addition of chemical preservatives at the start of composite sample collection, so that all sample portions are preserved as soon as they are collected.

Units to be used for collecting samples to be analyzed for trace organics must be free of Tygon tubing, which may be a source of phthalate ester contamination, and of other sources of contamination such as plastic or rubber compounds. The collection of a field blank may include the automatic sampling equipment.

When sampling wastewater, any equipment coming in contact with the sample material must be clean (see Chapter 2). It is preferable to collect samples directly into the containers in which they will be submitted for analysis, if at all possible. If a bucket or sampling device is to be used for collecting samples that will be analyzed for metals, do not use a metal device. Some parameters, such as oil and grease, petroleum hydrocarbons, volatile organics, and base neutral/acid extractable organics should not be collected except in the final sample container, if at all possible. Any device or bottle coming into contact with the sample material should be rinsed with the liquid two or three times unless the bottle is pre-preserved, contains a dechlorinating agent, has been rinsed with acid, acetone or hexane, or unless the sample is to be analyzed for oil and grease, petroleum hydrocarbons or for microbiological parameters. Sampling devices should face upstream, and samples should be collected centrally (at a 0.4 to 0.6 depth from the bottom of the wastestream and in the center of the channel). Collecting samples at this depth avoids skimming the surface of the wastestream, where concentration of lighter-than-water materials will highest, and lowers the possibility of sampling bed

loads in situations where solids separation is a concern.

When sampling from a valve or a faucet, flush the sampling line first, taking into consideration the line diameter, length of pipe to be flushed and velocity of flow. When sampling wastestreams that are under pressure, regulate the flow rate in the sampling line to not less than 500 milliliters per minute after first flushing the line at a rate high enough to remove sediment and gas pockets. If it is believed that dissolved gases will be released from solution due to the drop in pressure, a notation should be made. If samples are to be collected from a wastestream that is at an elevated temperature, they must be collected through a cooling coil.

The importance of the use of proper containers and proper sampling and preservation techniques cannot be overly stressed. A material with a pH of 6.5 standard units, or less, and a low buffer capacity may experience a significant pH change if shaken. In addition, samples stored in plastic containers may experience a change in pH due to the permeability of the container walls to gases like carbon dioxide. With a change in the carbon dioxide, pH, and alkalinity balance, calcium carbonate may precipitate out and the concentrations of total hardness and calcium may drop. A change in the concentrations of carbon dioxide and dissolved oxygen and in pH and temperature may change the concentrations of inorganic parameters such as manganese, iron, alkalinity and hardness. If air contact will change the concentration or characteristics of a constituent, it is recommended that the sample bottle be completely filled and secured from air contact. If the sample will require mixing, if the sample will be completely consumed during analysis (such as oil and grease and petroleum hydrocarbons), or if microbiological parameters are to be analyzed, the bottle will not be able to be completely filled. If a preservative has already been added to the bottle, do not overfill the container. Containers should be completely filled for the following analyses: purgeable organics, hydrogen sulfide, free and residual chlorine, pH, hardness, ammonia, dissolved oxygen and oxygen demands, sulfite, acidity, alkalinity, ferrous iron, and for most organics. For samples requiring shipment, allow a one to ten percent airspace for thermal expansion except VO, BOS and DO. This airspace will most likely not compensate for accidental sample freezing, however.

Microbiological activity may be responsible for changes in the nitrate/nitrite/ammonia concentrations of a wastewater, may reduce phenol concentration, may cause the reduction of sulfate to sulfide, reduce biochemical oxygen demand, and reduce residual chlorine to chloride. Due to oxidation, sulfite, sulfide, iodide, cyanide and ferrous iron concentrations may decrease. Hexavalent chromium may be reduced to chromic ion. Color, odor and turbidity may change in quality. Silica, sodium and boron may be leached out of glass containers. Some cations may be lost by adsorption onto, or in ion exchange with, the glass walls of sample containers.

Individuals who are required to chose dilutions for biochemical oxygen demand or coliform bacteria analyses, may find the following tables to be helpful:

Suggested Biochemical Oxygen Demand Dilutions

Sample Type	Dilutions
Raw Sewage	1-2-5%
Secondary Effluent	5-10-25% or 2-5-10%
Tertiary Effluent	5-10-25%

Suggested Coliform Dilutions

Sample Type	Dilutions
Raw Sewage	10^{-4}, 10^{-5}, 10^{-6}
Disinfected Effluent	1, 10^{-1}, 10^{-2}

Dilutions	MPN Range	
10, 1, 10^{-1}	2.0	1,600
1, 10^{-1}, 10^{-2}	20	16,000
10^{-1}, 10^{-2}, 10^{-3}	200	160,000
10^{-2}, 10^{-3} 10^{-4}	2,000	1,600,000
10^{-3}, 10^{-4}, 10^{-5}	20,000	16,000,000
10^{-4}, 10^{-5}, 10^{-6}	200,000	160,000,000

J. POTABLE WATER SAMPLING

1. PUBLIC COMMUNITY WATER SYSTEM: DEFINITION

A system for provision to the public of piped water for human consumption, if such system has at least 15 service connections or regularly serve at least 25 individuals at least 60 days out of the year.

Source (Raw water) Sample

i. Ground Water

Samples from a well supply should be collected as close to the well head as possible (before any treatment) preferably from a designated raw water sample tap. The sampler is cautioned to remember that well pumps and casings can contribute to sample contamination. If a well pump has not run for an extended period of time prior to sampling, the water collected may not be representative of actual water quality. The sample may be collected immediately (after flushing the sample tap) if the well has been running continuously. If the pump has turned off or is running intermittently, run the pump for a minimum of 30 minutes.

ii. Surface Water

Samples collected from a surface water supply are to be collected before the water receives any treatment and should be representative of the water entering the intake structure. The actual sampling location might be after the low lift pumps or at the intake structure. This sample is NOT to be collected along the banks of a river, lake, or reservoir.

Plant Delivered (Finished Water) Sample

This sample is to be collected at a location following all water treatment and is to be representative of the finished product leaving the treatment facility. Only proper spigots are to be used and they must be flushed prior to sampling.

c. Point of Entry Sample

This sample is to be collected at a point of entry into the water distribution system representative of a particular source after the application of any treatment.

In many cases this may be a plant delivered sample (if no other sample tap is available) or a meter pit sample tap where water bulk purchased from another water supply enters a distribution system.

d. System Sample

A system sample is a sample collected from the water distribution system. A FIRST DRAW sample is water that immediately comes out when a tap is first opened. This type of sample is useful when evaluating whether plumbing materials are contributing lead or other contaminants to the water supply. A FLUSHED SAMPLE is collected after the piping has been evacuated and should be representative of the water flowing in the public water main.

When collecting a FLUSHED sample, allow the spigot to run long enough to obtain a representative sample. A good rule-of-thumb is to allow the water to flow until the water in the service line (the pipe that carries tap water from the public water main to a home or building) has been replaced at least twice. A convenient flow for sampling is usually about a half-gallon per minute. (to estimate flow, use a gallon jug and watch it fill. For a flow of a half-gallon per minute, the jug should be half full in one minute or completely full in two minutes). Since 50 feet of 3/4 inch service line pipe contains over one gallon (3.8 liters), 4 or 5 minutes of running time would be necessary to replace the water in the line twice.

Samples should not normally be collected from fire hydrants, drinking fountains, or from spigots that contain aerators or screens. If aerators or screens are present, they should be removed with care. Do not sample from taps that are surrounded by excessive foliage (leaves, flowers) or taps that are dirty, corroded, or are leaking. Never collect a sample from a hose or any other attachment to a faucet. Be sure that the sample container does not touch the faucet.

2. Individual Water Supply Systems (Public Non-Community/Non-Public/Domestic Wells)

An important step when sampling these types of supplies is to conduct an initial survey to get a general overview of the water system and its operation, and how the configuration of the system relates to the type of sample (raw water, finished/treated water, or an intermediate sampling point) that you want to collect. Some important considerations are:

- Well driller and date drilled
- Construction of well and casing depth
- Well and pump location
- Well depth and pump capacity (if available)
- Storage tank capacity
- Treatment or conditioning units (if any)
- Plumbing arrangement
- Possible sample collection points
- Distance of well to any septic systems or underground storage tanks

Prior to sampling an individual water supply system it is essential to evacuate all standing water from the well, storage tank,and plumbing (unless a first draw sample is desired - See "System Sample"). A good rule-of-thumb is to flush for 15 minutes prior to sampling. Listen for the pump to turn on. This is a good indicator that the tank and plumbing are being evacuated. Opening additional faucets, flushing toilets, etc., will use more water and shorten the waiting time.

Should a raw water sample be desired, sample as close to the well head as possible and prior to the storage tank or any treatment system. Sometimes basement or outside faucets may be the best sampling point for this type of sample.

If the kitchen faucet is used, the aerator should be removed (for more information see H 5.h. Sampling Domestic Wells).

K. BIOLOGICAL

1. PHYTOPLANKTON SAMPLING

a. Sample Site Location

Locate sampling stations as near as possible to those selected for chemical and bacteriological sampling to ensure maximum correlation of findings. These locations will depend upon the physical nature of the water body. In streams or rivers, stations should be established both upstream and downstream of a pollution source or major tributary. Stations should also be set up on either side of the river so as to account for unequal lateral mixing. Slow moving sections of streams generally contain more phytoplankton than slower moving segments. If there are any lakes, reservoirs, or backwater areas (i.e., potential phytoplanton sources) upstream of sampling stations, notes on their nature and location should be included in the sampling log.

Sampling stations in lakes, reservoirs, estuaries and the ocean should be located along grid networks or transect lines, aligned so as to provide the most representative sampling. Points of interest should include intake and discharge areas, constrictions within the water body, and major bays and tributaries off of the main basin. In tidal areas, the effects of tidal oscillation should also be taken into account when determining sampling frequency. When locating stations for a "red tide" survey in estuarine or coastal waters, note where and when the blooms tend to occur.

b. Sampling Depth

Rivers, streams, shallow bays and coastal waters are usually well mixed so that only subsurface sampling is necessary. In lakes, reservoirs, as well as deeper coastal waters, plankton composition and density may vary with depth; thus sampling should be done at several depths determined by the depth of the thermocline, the euphotic zone if applicable, and overall the depth at the station. In shallow areas (1-2 meters) subsurface samples (to a depth of 1M) are usually sufficient. In deeper lakes and reservoirs, samples should be taken at intervals of 5M or less to the thermocline. In estuarine and coastal waters 2-10M deep, subsuface, mid-depth and near bottom samples are recommended. Offshore, in marine waters, samples should be collected at intervals of 5M or less to the bottom of the thermocline, and near the bottom where depletion of oxygen by decaying blooms is critical; larger sample volumes of at least one liter are needed because these waters are typically low in productivity.

c. Sampling Procedure

Sample size, preservation and storage is dependent upon certain variables. Refer to Appendix 2-1 for details.

If analysis is limited to species composition clear polyethylene or glass bottles may be used. If chlorophyll analyses is requested, amber bottles are recommended. Clear or translucent glass or plastic bottles may be used provided they are covered with aluminum foil so as to shield out light.

Freshwater samples for species composition analysis should be preserved with a solution of neutralized formalin (5 ml neutralized buffer with formalin/100 ml of sample); estuarine and marine samples are to be preserved with Lugol's solution (60 g KI + 40 g iodine crystals in 1,000 ml distilled water) at a rate of one (1) drop Lugol's solution to 100 ml of sample adding more periodically to maintain the color of weak tea. In special studies glutaraldehyde may be used (6 drops/25 ml of sample). All preserved samples should be stored in the dark immediately so as to prevent the degradation of the phytoplankton, or the preservative if Lugol's solution is used.

MTG-3.200001

RECORD OF COMMUNICATION

TO: Smita Sumbaly

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: Sept 3, 1999

SUBJECT: QUALITY ASSURED DATA

MESSAGE

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

Monroe Twp. GW Contamination
Case # 27237
SDG # MBTC49 Sentin Inorg 20 waters

*Additional SDG's To Follow

REPLY BY: _____

SIGNATURE: Janet Trotter DATE: 7 September 1999

DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file

RECEIVED
SEP 7 1999

MTG-3.200002

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

RECEIVED
SEP 0 2 1999

DATE: AUG. 19, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE MONROE TWP. GW CONTAM.	CASE# 27237/SDG # MBTC49
CONTRACTOR STARTW	#SAMPLES MATRIX
PHASE IA	
LAB SENTIN	20 WATER
TURN-AROUND-TIME 14 DAYS	FRACTION TAL ONLY
CERCLIS ID # NJD980769699	SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	8-16-99
John Bulich	8-19-99	C MAlone	8/26/99
C MAlone	8-31-99	J Bulich (DCR)	8-31-99
J Bulich (DCR)	8/31/99	Hanif Sheikh	8/31/99
Hanif Sheikh	9/2/99	DCR J Bulich	9/2/99

(over for instructions) revised 3/99

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

Case #	27237	Site:	Monroe Twp. G.W. Contamination	Soil:	00
SDG #	MBTC49	Lab:	Sentinel	Water:	20
Contractor:	STARTW/TA	Reviewer:	C. M. Alaimo/ESAT	Other:	0

A.2.1. Validation flags- The following flags have been applied in red by the data validator and must be considered by the data user.

J - This flag indicates the result qualified as estimated.

Red-Line - A red-line drawn through a sample result indicates unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0

A.2.2. The data assessment is given below and on the attached sheets.

This package consists of twenty (20) aqueous samples collected from the Monroe Twp Groundwater Contamination site on 07/26/99 for TAL metals analysis. QC was performed on sample MBTC49. All holding times were met.

MATRIX SPIKE RECOVERY

For Sb (61.9%), the matrix spike recovery fell between 30-74% when the initial sample results were less than 4x the spike amount, therefore all associated data were estimated.

J—> Sb in MBTC49—>66, MBTC68 & MBTC70.

ICP SERIAL DILUTION

For Ba, Ca, K & Na, the %Ds were >10% but less than 100% when the initial sample value was ≥ 10xIDL therefore the associated data ≥ CRDL (or 10xIDL when 10xIDL ≥ CRDL) were estimated. For Al, the %D was ≥100% when the initial sample value was ≥ 10xIDL therefore the associated data ≥ CRDL (or 10xIDL when 10xIDL ≥ CRDL) were rejected.

J—>Ba in MBTC68
J—>Ca in MBTC51, MBTC58 & MBTC62
J—>K in MBTC56
J—>Na in MBTC50, MBTC53—>63, MBTC68 & MBTC70.
R—>Al in MBTC54, MBTC58, MBTC59 & MBTC62.

A.2.3. Contract-Problems/Non-Compliance
NONE

MMB Reviewer:_____ Date:_____
Signature

Contractor Reviewer: C M Adams Date: 8/30/99
Signature

Verified by:_____ Date:_____
Signature

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SMO Report)

Date: Jan. 1992
Number: HW-2
Revision: 11

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste Site Contract Laboratory Data Package

SDG # MBTC4

CASE NO. 2737

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

CMA
Reviewer's Initial

8/30/91
Date

DPO MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
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9. USEPA Region XI (ESD)
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Laucks Testing Labs, Century Testing Labs (For VOA Only), Weyerhauser Co., Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
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FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
Box 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. Box 818
Alexandria, VA 22313

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT Region II

CASE NO. 27237 SITE Monroe Twp GW Contamination

LABORATORY Sentinel NO. OF SAMPLES/ MATRIX 20 W

SDG# MBTC49 REVIEWER (IF NOT ESD)

SOW# ILM 4.0 REVIEWER'S NAME CM Alaimo

DPO: ACTION FYI COMPLETION DATE 8/30/94

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES	O	N/A	O	N/A
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION	O-Z			
10.	SAMPLE VERIFICATION	O			
11.	OTHER QC				
12.	OVERALL ASSESSMENT	O-X			

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.6: CLP Data Assessment Summary Form (Inorganics)

MTG-3.200008

Date: Feb. 1990
Number: HW-2
Revision: 10

SDG # MBTC49

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: TAL Date: 8/30/99 Case #: 27237

Site: Monroe Twp GW Contamination Lab Name: Sentinel

Reviewer's Initials: CMA Number of Samples: 20w

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejectio
ICP											4		440	4
Flame AA														
Furnace AA														
Mercury													20	0
Total											4		460	4
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

ICP						20					19		440	39
Flame AA														
Furnace AA														
Mercury											~~19~~		20	0
Total						20					19		460	39
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC49
MONROE TWP GROUND WATER CONTAM
SENTIN

Number of Soil Samples : 0
Number of Water Samples : 20

Sample Number :	MBTC49		MBTC49D		MBTC49S		MBTC50		MBTC51	
Sampling Location :	MGC-9907-TW01		MGC-9907-TW01		MGC-9907-TW01		MGC-9907-TW02		MGC-9907-TW03	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/26/1999		07/26/1999		07/26/1999		07/26/1999		07/26/1999	
Time Sampled :	13:25		13:25		13:25		13:17		13:05	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	172	B	206		2260		70.4	B	36.1	B
ANTIMONY	3.0	UJ	3.0	UJ	310		3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	37.9		3.0	U	3.0	U
BARIUM	31.9	B	37.6		2180		151	B	36.4	B
BERYLLIUM	0.40	U	0.40	U	49.8		0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	51.4		0.50	U	0.50	U
CALCIUM	1530	B	1760				2950	B	7660	J
CHROMIUM	1.0	U	1.0	U	207		1.0	U	1.0	U
COBALT	2.2	U	2.2	U	517		2.2	U	2.2	U
COPPER	21.5	B	24.3		280		725		77.2	
IRON	117		123		1130		1180		45.6	B
LEAD	2.5	B	1.7		21.9		62.1		1.7	U
MAGNESIUM	1210	B	1420				4200	B	708	B
MANGANESE	5.7	B	7.7		527		24.1		5.9	B
MERCURY	0.10	U	0.10	U	1.1		0.10	U	0.10	U
NICKEL	3.9	B	2.9		514		6.0	B	2.7	B
POTASSIUM	864	B	993				3950	B	547	B
SELENIUM	2.3	U	2.3	U	7.7		2.3	U	2.3	U
SILVER	1.4	U	1.4	U	51.0		1.4	U	1.4	U
SODIUM	3640	B	4220				10600	J	1480	B
THALLIUM	3.3	U	3.3	U	50.3		3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	515		1.4	U	1.4	U
ZINC	17.1	B	19.6		540		130		20.1	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Page ____ of ____

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC49
MONROE TWP GROUND WATER CONTAM
SENTIN

Sample Number :	MBTC52		MBTC53		MBTC54		MBTC55		MBTC56	
Sampling Location :	MGC-9907-TW04		MGC-9907-TW05		MGC-9907-TW06		MGC-9907-TW07		MGC-9907-TW08	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/26/1999		07/26/1999		07/26/1999		07/26/1999		07/26/1999	
Time Sampled :	13:45		13:55		13:20		14:15		14:08	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	12.0	U	93.3	B	203	R	64.7	B	38.0	B
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	42.5	B	103	B	96.1	B	1.1	B	169	B
BERYLLIUM	0.40	U	0.40	U	0.41	B	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	1330	B	2180	B	1560	B	316	B	2360	B
CHROMIUM	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
COBALT	2.2	U	2.2	U	2.3	B	2.2	U	2.2	U
COPPER	92.8		120		306		159		186	
IRON	91.5	B	63.0	B	383		18.8	U	30.5	B
LEAD	4.3		2.6	B	7.9		2.2	B	6.3	
MAGNESIUM	1410	B	3850	B	2060	B	126	B	5740	
MANGANESE	12.4	B	19.3		15.2		0.63	B	24.9	
MERCURY	0.10	U	0.73		0.58		3.3		0.10	U
NICKEL	2.8	B	2.9	B	4.0	B	2.5	U	2.8	B
POTASSIUM	924	B	2400	B	1540	B	555	B	5640	J
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	3090	B	8970	J	8420	J	64800	J	16300	J
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	18.7	B	7.2	B	79.4		7.8	B	7.2	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC49
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200011

Sample Number :	MBTC57		MBTC58		MBTC59		MBTC60		MBTC61	
Sampling Location :	MGC-9907-TW09		MGC-9907-TW10		MGC-9907-TW11		MGC-9907-TW12		MGC-9907-TW-13	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/26/1999		07/26/1999		07/26/1999		07/26/1999		07/26/1999	
Time Sampled :	13:55		14:40		14:40		13:17		15:20	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	191	B	327	R	386	R	180	B	128	B
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	82.7	B	90.3	B	29.8	B	146	B	20.8	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	1.4	B	0.50	U	0.50	U
CALCIUM	2350	B	5710	J	4110	B	2790	B	378	B
CHROMIUM	1.0	U	1.0	U	1.1	B	1.1	B	1.0	U
COBALT	3.8	B	3.9	B	2.3	B	2.2	U	2.2	U
COPPER	285		77.8		176		892		37.6	
IRON	62.0	B	81.2	B	100		946		1400	
LEAD	13.6		1.7	U	2.8	B	62.6		5.4	
MAGNESIUM	2670	B	1990	B	1610	B	4010	B	688	B
MANGANESE	16.5		43.3		8.7	B	21.9		4.7	B
MERCURY	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
NICKEL	10.1	B	3.3	B	6.6	B	6.1	B	2.5	U
POTASSIUM	1830	B	3300	B	1140	B	3860	B	583	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	9360	J	27900	J	5220	J	10500	J	5450	J
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	77.8		32.0		33.9		111		32.3	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC49
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200012

Sample Number :	MBTC62		MBTC63		MBTC64		MBTC65		MBTC66	
Sampling Location :	MGC-9907-TW14		MGC-9907-TW15		MGC-9907-TW16		MGC-9907-TW17		MGC-9907-TW18	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/26/1999		07/26/1999		07/26/1999		07/26/1999		07/26/1999	
Time Sampled :	15:05		15:10		15:35		16:20		16:40	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	253	R	150	B	89.7	B	44.9	B	33.8	B
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	196	B	187	B	16.2	B	7.8	B	18.9	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	5990	J	2030	B	252	B	671	B	277	B
CHROMIUM	1.2	B	1.0	U	1.4	B	1.0	U	1.0	U
COBALT	3.0	B	2.2	U	2.2	U	2.2	U	2.2	U
COPPER	39.4		256		662		16.2	B	87.2	
IRON	151		72.6	B	359		28.4	B	19.5	B
LEAD	1.7	U	17.3		6.9		1.7	U	1.7	U
MAGNESIUM	2770	B	5390		417	B	227	B	338	B
MANGANESE	72.1		34.4		5.1	B	0.98	B	1.5	B
MERCURY	0.56		1.6		0.10	U	0.10	U	0.10	U
NICKEL	4.7	B	5.3	B	4.5	B	2.5	U	2.5	U
POTASSIUM	3000	B	4100	B	483	B	568	B	474	B
SELENIUM	2.5	B	2.3	U	2.3	U	2.3	U	2.7	B
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	8360	J	10500	J	1230	B	1120	B	1200	B
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	17.6	B	21.2		33.3		205		56.8	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
SDG : MBTC49
Site : MONROE TWP GROUND WATER CONTAM
Lab. : SENTIN
Reviewer :
Date :

MTG-3.200013

Sample Number :	MBTC68		MBTC70		MBTC49A		IDL			
Sampling Location :	MGC-9907-TW20		MGC-9907-TW22		MGC-9907-TW01					
Matrix :	Water		Water		Water		Water			
Units :	ug/L		ug/L		ug/L		ug/L			
Date Sampled :	07/26/1999		07/26/1999		07/26/1999					
Time Sampled :	16:36		17:00		13:25					
%Solids :	0.0		0.0		0.0					
Dilution Factor :	1.0		1.0		1.0		1.0			
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	81.0	B	59.9	B			12.0			
ANTIMONY	3.0	UJ	3.0	UJ	117	J	3.0			
ARSENIC	3.0	U	3.0	U			3.0			
BARIUM	260		0.70	U			0.70			
BERYLLIUM	0.40	U	0.40	U			0.40			
CADMIUM	0.50	U	0.50	U			0.50			
CALCIUM	869	B	105	B			12.6			
CHROMIUM	1.0	B	1.0	U			1.0			
COBALT	2.2	U	2.2	U			2.2			
COPPER	253		154				2.5			
IRON	33.9	B	34.4	B			18.8			
LEAD	5.0		1.7	U			1.7			
MAGNESIUM	2520	B	19.5	B			14.4			
MANGANESE	20.1		0.60	U			0.60			
MERCURY	0.10	U	0.10	U			0.10			
NICKEL	4.7	B	3.4	B			2.5			
POTASSIUM	1940	B	130	B			22.9			
SELENIUM	2.3	U	2.3	U			2.3			
SILVER	1.4	U	1.4	U			1.4			
SODIUM	6330	J	30500	J			153			
THALLIUM	3.3	U	3.3	U			3.3			
VANADIUM	1.4	U	1.4	U			1.4			
ZINC	17.8	B	7.5	B			2.4			
CYANIDE	N/A		N/A		N/A		N/A			

Case # 2...

SDG: MBTC49

MTG-3.200015

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: _____ DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1/31/92
Robert Runyon, Chief
Monitoring Management Branch

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technica Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses c Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5 Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6 Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a the reviews completed to include: a. date of start of case

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and office in Las Vegas are given in Appendix A-4.

2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carr Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 Data Completeness
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines c October 1, 1989.

6.0 SMO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample stor times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 Record of Communication - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 Rounding off numbers - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[✓]	___	___
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[✓]	___	___
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[✓]	___	___
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[✓]	___	___
Legible?	[✓]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[✓]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	___	___
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[✓]	___	___
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]	___	___
(b) Form I's?	[✓]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		Yes	No	N/A
A.1.6	Form I to IX			
A.1.6.1	Are all the Form I through Form IX labeled with:			
	Laboratory name?	[/]		
	Case/SAS number?	[/]		
	EPA sample No.?	[/]		
	SDG No.?	[/]		
	Contract No.?	[/]		
	Correct units?	[/]		
	Matrix?	[/]		

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2	Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
	(NOTE: Check all forms against raw data.)			
	(a) all analytes analyzed by ICP?	[/]		
	(b) all analytes analyzed by GFAA?	[ ]		/
	(c) all analytes analyzed by AA Flame?	[ ]		/
	(d) Mercury?	[/]		
	(e) Cyanide?	[ ]		/

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	Raw Data			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[✓]	—	—
	Digestion Log for furnace AA Form XIII present?	[ ]	—	✓
	Distillation Log for mercury Form XIII present?	[✓]	—	—
	Distillation Log for cyanides Form XIII present?	[ ]	—	✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[✓]	—	—
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[ ]	—	✓
	Are preparation dates present on sample preparation logs/bench sheets?	[✓]	—	—
A.1.7.2	Measurement read out record present? ICP	[✓]	—	—
	Flame AA	[ ]	—	✓
	Furnace AA	[ ]	—	—
	Mercury	[✓]	—	—
	Cyanides	[ ]	—	✓
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[✓]	—	—
	Legible?	[✓]	—	—
	Properly Labeled?	[✓]	—	—

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

Title: Evaluation of Metals for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract
Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.8	Holding Times - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[/]	___
	Cyanide distillation (14 days). . . . . exceeded?	___	[ ]	/
	Other Metals analysis (6 months). . . . exceeded?	___	[/]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[/]	___
	Cyanides Analysis <12?	___	[ ]	/
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	Form I (Final Data)			
A.1.9.1	Are all Form I's present and complete?	[/]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[/]	___	/
	Are soil sample results for each parameter corrected for percent solids?	[/]	___	/
	Are all "less than IDL" values properly coded with "U"?	[/]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[✓]		

ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.

A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]		
	Was a brief physical description of samples given on Form I's?	[✓]		
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		[✓]	

ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".

A.1.10 Calibration

A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]		
	Is record of 5 point calibration present for Hg analysis?	[✓]		
	Is record of 4 point calibration present for:			
	Flame AA?	[ ]		[✓]
	Furnace AA?	[ ]		[✓]
	Cyanides?	[ ]		[✓]
	Is one calibration standard at the CRDL level for all AA [illegible] and cyanides analyses?	[✓]		

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/A
A.1.10.2 Is correlation coefficient less than 0.995 for:			
Mercury Analysis?	___	[✓]	___
Cyanide Analysis?	___	[___]	___
Atomic Absorption Analysis?	___	[___]	___

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values? [___] ___ ___

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 Form II A (Initial and Continuing Calibration Verification) -

A.1.11.1 Present and complete for every metal and cyanide? [✓] ___ ___

Present and complete for AA and ICP when both are used for the same analyte? [___] ___ ___

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows.
Are all calibration standards (initial and continuing) within control limits:

Metals- 90-110%R? [✓] ___ ___

Hg - 80-120%R? [✓] ___ ___

Cyanides- 85-115%R? [___] ___ ___

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	—	—
Was ICV for cyanides distilled?	[—]	—	✓
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 Form II B (CRDL Standards for AA and ICP) -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals?	[✓]	—	—
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[—]	—	✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	—	—
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[✓]	___	___
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[___]	✓	___
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[___]	___	✓
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	Form III (Initial and Continuing Calibration Blanks)			
A.1.13.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[✓]	___	

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL>CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[/]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[/]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[/]	___	___
	each batch of digested samples?	[/]	___	___
	each matrix type?	[/]	___	___
	both AA and ICP when both are used for the same analyte?	[ ]	___	___
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[/]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	/
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[/]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[/]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	Form IV (ICP Interference Check Sample)			
A.1.15.1	Present and complete?	[/]	___	___
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[/]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[/]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	___

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[✓]	—	—
	each matrix type?	[✓]	—	—
	each conc. range (i.e. low, med., high)?	[✓]	—	—
	For both AA and ICP when both are used for the same analyte?	[ ]	—	✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	—	[✓]	—
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[ ]	✓	
	If no, is sample concentration greater than or equal to four times spike concentration?	[ ]	✓	

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[✓]	—	—
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			
A.1.16.4 Aqueous			
Are any spike recoveries:			
(a) less than 30%?	—	[✓]	—
(b) between 30-74%?	—	[—]	—
(c) between 126-150%?	—	[—]	—
(d) greater than 150%?	—	[—]	—
ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".			
A.1.16.5 Soil/Sediment			
Are any spike recoveries:			
(a) less than 10%?	—	[—]	—
(b) between 10-74%?	—	[—]	—
(c) between 126-200%?	—	[—]	—
(d) greater than 200%?	—	[—]	—

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	Form VI (Lab Duplicates)			
A.1.17.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[✓]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	✓
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? ___ [/] ___

Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? ___ [/] ___

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :

> 100%? ___ [ ] /

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :

> 2x*CRDL? ___ [ ] /

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	Field Duplicates			
A.1.18.1	Were field duplicates analyzed?	[ ]	✓	
	ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.			
	NOTE: 1. Do not calculate RPD when both values are less than IDL. 2. Flag all associated data only for field duplicate pair.			
A.1.18.2	Aqueous			
	Circle all values on self prepared Form VI for field duplicates that are: RPD > 50%, or Difference > CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?		[ ]	✓
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?		[ ]	
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

A.1.18.3 Soil/Sediment

Circle all values on self prepared Form VI for field duplicates that are:

RPD >100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) :

>100%? ___ [___] ✓

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL):

>2x *CRDL? ___ [___] ___

ACTION: If yes, flag the associated data as estimated.

A.1.19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

A.1.19.1 Was one LCS prepared and analyzed for:

each SDG? [✓] ___ ___

each batch samples digested/distilled? [___] ___ ___

both AA and ICP when both are used for the same analyte? [___] ___ ___

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.19.2	Aqueous LCS			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[/]	___
	between 50% and 79%?	___	[/]	___
	between 121% and 150%?	___	[/]	___
	greater than 150%?	___	[/]	___
	ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			
A.1.19.3	Solid LCS			
	NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).			
	2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
	Is LCS "Found" value higher than the control limits on Form VII?	___	[ ]	/
	ACTION: If yes, qualify all associated positive data as estimated.			
	Is LCS "Found" value lower than the Control limits on Form VII?	___	[ ]	/
	ACTION: If yes, qualify all associated data as estimated.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.20	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for: each SDG?	[/]	—	—
	each matrix type?	[/]	—	—
	each concentration range (i.e. low, med.)?	[/]	—	—
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	—	[/]	—
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[/]	—	—
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	/	[ ]	—
	≥ 100%?	—	[ ]	—

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	Furnace Atomic Absorbtion (AA) QC Analysis			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[ ]	___	✓
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[ ]	___	✓
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[ ]	___	✓
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[ ]	✓
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	Form VIII (Method of Standard Addition Results)			
A.1.22.1	Present?	[ ]		✓
	If no, is any Form I result coded with "S" or a "+"?		[ ]	
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?		[ ]	✓
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?		[ ]	✓
	Is coefficient of correlation for MSA less than 0.995?		[ ]	
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?		[ ]	✓
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[ ]		✓
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[___] ✓	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___] ✓	___
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	___ ✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	___ ✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	___ ✓

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[ ]		✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 Form X, XI, XII (Verification of Instrumental Parameters).

A.1.25.1 Is verification report present for:			
Instrument Detection Limits (quarterly)?	[✓]		
ICP Interelement Correction Factors (annually)?	[✓]		
ICP Linear Ranges (quarterly)?	[✓]		

ACTION: If no, contact TPO of the lab.

A.1.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[✓]		
all the instruments used?	[✓]		
For both AA and ICP when both are used for the same analyte?	[ ]		✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?		[✓]	
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[ ]		

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

A.1.25.3 Form XI (Linear Ranges)

A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[/]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[/]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	/

ACTION: If no, flag the result reported on Form I as estimated(J).

A.1.26 Percent Solids of Sediments

A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[___]	/
< 10%?	___	[___]	/

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

Holding Time Report

SDG NO: MBTC49 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTC49.ASF

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	16704	2.0	2.6
Mercury	28	0	2.0	50.0
Cyanide	14	0	12.0	1.0

No problems found for this qualification.

Calibration Report

SDG NO: MBTC49
CASE NO: 27237

LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTC49.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

Matrix Spike Report

SDG NO: MBTC49
CASE NO: 27237

LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTC49.ASF

MATRIX SPIKE CRITERIA

Inorganic

Percent Recovery Limits

Upper	125.0
Lower	75.0
Extreme lower	30.0

DC-268: The following inorganic samples [illegible] matrix spike recovery which is low, indicating [illegible] may be biased low.
Hits are qualified "J" and non-[illegible]

Antimony
MBTC49, MBTC49A, MBTC49D, MBTC50,
MBTC53, MBTC54, MBTC55, MBTC56, [illegible]
MBTC59, MBTC60, MBTC61, MBTC62, [illegible]
MBTC65, MBTC66, MBTC68, MBTC70

LCS Report

SDG NO: MBTC49
CASE NO: 27237

LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTC49.ASF

No problems found for this qualification.

Sample Result Verification Report

SDG NO: MBTC49
CASE NO: 27237

LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTC49.ASF

No problems found for this qualification.

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTC49	23162S
MBTC49D	23162S2
MBTC49S	23162DS
MBTC50	23163S
MBTC51	23164S
MBTC52	23165S
MBTC53	23166S
MBTC54	23167S
MBTC55	23168S
MBTC56	23169S
MBTC57	23170S
MBTC58	23171S
MBTC59	23172S
MBTC60	23173S
MBTC61	23174S
MBTC62	23175S
MBTC63	23176S
MBTC64	23177S
MBTC65	23178S
MBTC66	23179S

Were ICP interelement corrections applied?	Yes/No	YES
Were ICP background corrections applied?	Yes/No	YES
If yes-were raw data generated before application of background corrections?	Yes/No	NO

Comments: Calcium is elevated due to possible matrix interference. The cooler temperature measured 3.5°C.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: Brad Isaac

Date: 8/9/99 Title: QA Chem

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTC68	23180S
MBTC70	23181S

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: BARilgue

Date: 8/9/95 Title: QA Lab

2

MTG-3.200051

EPA SAMPLE NO.

MBTC49

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23162S

Level (low/med): LOW Date Received: 07/27/99

% 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	172	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	31.9	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1530	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	21.5	B		P
7439-89-6	Iron	117			P
7439-92-1	Lead	2.5	B		P
7439-95-4	Magnesium	1210	B		P
7439-96-5	Manganese	5.7	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.9	B		P
7440-09-7	Potassium	864	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	3640	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	17.1	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

3

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC50

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23163S

Level (low/med): LOW Date Received: 07/27/99

% 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	70.4	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	151	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2950	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	725			P
7439-89-6	Iron	1180			P
7439-92-1	Lead	62.1			P
7439-95-4	Magnesium	4200	B		P
7439-96-5	Manganese	24.1			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	6.0	B		P
7440-09-7	Potassium	3950	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	10600			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	130			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200053

EPA SAMPLE NO.

MBTC51

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23164S

Level (low/med): LOW Date Received: 07/27/99

% 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	36.1	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	36.4	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	7660		E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	77.2			P
7439-89-6	Iron	45.6	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	708	B		P
7439-96-5	Manganese	5.9	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.7	B		P
7440-09-7	Potassium	547	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1480	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	20.1			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
MBTC52

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23165S

Level (low/med): LOW Date Received: 07/27/99

% 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	12.0	U		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	42.5	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1330	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	92.8			P
7439-89-6	Iron	91.5	B		P
7439-92-1	Lead	4.3			P
7439-95-4	Magnesium	1410	B		P
7439-96-5	Manganese	12.4	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.8	B		P
7440-09-7	Potassium	924	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	3090	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	18.7	B		P
	Cyanide				NR

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Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

6

MTG-3.200055

EPA SAMPLE NO.

MBTC53

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23166S

Level (low/med): LOW Date Received: 07/27/99

% 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	93.3	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	103	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2180	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	120			P
7439-89-6	Iron	63.0	B		P
7439-92-1	Lead	2.6	B		P
7439-95-4	Magnesium	3850	B		P
7439-96-5	Manganese	19.3			P
7439-97-6	Mercury	0.73			CV
7440-02-0	Nickel	2.9	B		P
7440-09-7	Potassium	2400	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	8970			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	7.2	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC54

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23167S

Level (low/med): LOW Date Received: 07/27/99

% 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	~~203~~			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	96.1	B		P
7440-41-7	Beryllium	0.41	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1560	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.3	B		P
7440-50-8	Copper	306			P
7439-89-6	Iron	383			P
7439-92-1	Lead	7.9			P
7439-95-4	Magnesium	2060	B		P
7439-96-5	Manganese	15.2			P
7439-97-6	Mercury	0.58			CV
7440-02-0	Nickel	4.0	B		P
7440-09-7	Potassium	1540	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	8420			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	79.4			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200057

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC55

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23168S

Level (low/med): LOW Date Received: 07/27/99

% 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	64.7	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	1.1	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	316	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	159			P
7439-89-6	Iron	18.8	U		P
7439-92-1	Lead	2.2	B		P
7439-95-4	Magnesium	126	B		P
7439-96-5	Manganese	0.63	B		P
7439-97-6	Mercury	3.3			CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	555	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	64800			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	7.8	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC56

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23169S

Level (low/med): LOW Date Received: 07/27/99

% 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	38.0	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	169	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2360	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	186			P
7439-89-6	Iron	30.5	B		P
7439-92-1	Lead	6.3			P
7439-95-4	Magnesium	5740			P
7439-96-5	Manganese	24.9			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.8	B		P
7440-09-7	Potassium	5640			P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	16300			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	7.2	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC57

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23170S

Level (low/med): LOW Date Received: 07/27/99

% 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	191	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	82.7	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2350	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	3.8	B		P
7440-50-8	Copper	285			P
7439-89-6	Iron	62.0	B		P
7439-92-1	Lead	13.6			P
7439-95-4	Magnesium	2670	B		P
7439-96-5	Manganese	16.5			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	10.1	B		P
7440-09-7	Potassium	1830	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	9360			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	77.8			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC58

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23171S

Level (low/med): LOW Date Received: 07/27/99

% 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	~~327~~			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	90.3	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	5710		E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	3.9	B		P
7440-50-8	Copper	77.8			P
7439-89-6	Iron	81.2	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	1990	B		P
7439-96-5	Manganese	43.3			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.3	B		P
7440-09-7	Potassium	3300	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	27900			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	32.0			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200061

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC59

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23172S

Level (low/med): LOW Date Received: 07/27/99

% 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	~~386~~			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	29.8	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	1.4	B		P
7440-70-2	Calcium	4110	B	E	P
7440-47-3	Chromium	1.1	B		P
7440-48-4	Cobalt	2.3	B		P
7440-50-8	Copper	176			P
7439-89-6	Iron	100			P
7439-92-1	Lead	2.8	B		P
7439-95-4	Magnesium	1610	B		P
7439-96-5	Manganese	8.7	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	6.8	B		P
7440-09-7	Potassium	1140	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	5220			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	33.9			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC60

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23173S

Level (low/med): LOW Date Received: 07/27/99

% 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	180	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	146	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2790	B	E	P
7440-47-3	Chromium	1.1	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	692			P
7439-89-6	Iron	946			P
7439-92-1	Lead	62.6			P
7439-95-4	Magnesium	4010	B		P
7439-96-5	Manganese	21.9			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	6.1	B		P
7440-09-7	Potassium	3860	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	10500			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	111			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200063

EPA SAMPLE NO.

MBTC61

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23174S

Level (low/med): LOW Date Received: 07/27/99

% 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	128	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	20.8	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	378	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	37.8			P
7439-89-6	Iron	1400			P
7439-92-1	Lead	5.4			P
7439-95-4	Magnesium	688	B		P
7439-96-5	Manganese	4.7	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	583	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	5450			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	32.3			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
MBTC62

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23175S

Level (low/med): LOW Date Received: 07/27/99

% 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	~~253~~			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	196	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	5990		E	P
7440-47-3	Chromium	1.2	B		P
7440-48-4	Cobalt	3.0	B		P
7440-50-8	Copper	39.4			P
7439-89-6	Iron	151			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	2770	B		P
7439-96-5	Manganese	72.1			P
7439-97-6	Mercury	0.56			CV
7440-02-0	Nickel	4.7	B		P
7440-09-7	Potassium	3000	B		P
7782-49-2	Selenium	2.5	B		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	8360			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	17.6	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC63

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23176S

Level (low/med): LOW Date Received: 07/27/99

% 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	150	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	187	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2030	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	256			P
7439-89-6	Iron	72.6	B		P
7439-92-1	Lead	17.3			P
7439-95-4	Magnesium	5390			P
7439-96-5	Manganese	34.4			P
7439-97-6	Mercury	1.6			CV
7440-02-0	Nickel	5.3	B		P
7440-09-7	Potassium	4100	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	10500			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	21.2			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

17

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC64

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23177S

Level (low/med): LOW Date Received: 07/27/99

% 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	89.7	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	16.2	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	252	B	E	P
7440-47-3	Chromium	1.4	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	662			P
7439-89-6	Iron	359			P
7439-92-1	Lead	6.9			P
7439-95-4	Magnesium	417	B		P
7439-96-5	Manganese	5.1	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	4.5	B		P
7440-09-7	Potassium	483	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1230	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	33.3			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200067

EPA SAMPLE NO.

MBTC65

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23178S

Level (low/med): LOW Date Received: 07/27/99

% 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	44.9	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	7.8	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	671	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	16.2	B		P
7439-89-6	Iron	28.4	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	227	B		P
7439-96-5	Manganese	0.98	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	568	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1120	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	205			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC66

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23179S

Level (low/med): LOW Date Received: 07/27/99

% 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	33.8	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	18.9	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	277	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	87.2			P
7439-89-6	Iron	19.5	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	338	B		P
7439-96-5	Manganese	1.5	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	474	B		P
7782-49-2	Selenium	2.7	B		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1200	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	56.8			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC68

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23180S

Level (low/med): LOW Date Received: 07/27/99

% 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	81.0	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	260			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	869	B	E	P
7440-47-3	Chromium	1.0	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	253			P
7439-89-6	Iron	33.9	B		P
7439-92-1	Lead	5.0			P
7439-95-4	Magnesium	2520	B		P
7439-96-5	Manganese	20.1			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	4.7	B		P
7440-09-7	Potassium	1940	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	6330			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	17.8	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC70

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC49

Matrix (soil/water): WATER Lab Sample ID: 23181S

Level (low/med): LOW Date Received: 07/27/99

% 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	59.9	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	0.70	U		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	105	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	154			P
7439-89-6	Iron	34.4	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	19.5	B		P
7439-96-5	Manganese	0.60	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.4	B		P
7440-09-7	Potassium	130	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	30500			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	7.5	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Sentinel Contract No.: 68-D5-0169

Lab Code: Sentin Case No.: 27237

Full Sample Analysis Price in Contract: _____

SDG No./First Sample in SDG: MBTC49 Sample Receipt Date: 7/27/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: MBTC70 Sample Receipt Date: 7/27/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBTC49	11	MBTC59
2	50	12	60
3	51	13	61
4	52	14	62
5	53	15	63
6	54	16	64
7	55	17	65
8	56	18	66
9	57	19	68
10	58	20	70

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Amanda B. Hassett 7/27/99
Signature Date

149

MTG-3.200073

RECORD OF COMMUNICATION

TO: Smita Sumbaly

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: Sept. 1, 1999

SUBJECT: QUALITY ASSURED DATA

MESSAGE

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

Monroe Twp. GW Contamination
Case # 27237
SDG # MBTD 26 Sentin Inorg 20 Water
SDG # MBTC 89 Sentin Inorg 20 Water
* Additional SDG's To follow

REPLY BY:

SIGNATURE: [signature] DATE: 9 September 1999

DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file

RECEIVED
SEP 2 1999

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

RECEIVED
AUG 30 1999

DATE: Aug. 13, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

MTG-3.200074

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE Monroe Twp. G.W. Contam.	CASE# 27237/SDG# MBTD26
CONTRACTOR StartW	#SAMPLES MATRIX
PHASE IA	
LAB Sentin	20 WATER
TURN-AROUND-TIME 14 DAYS	FRACTION TAL ONLY
CERCLIS ID # NJD980769699	SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
John Balicky	8-13-99	John Balicky	8-12-99
CS	8/27/99	CS	8/24/99
Hanif Sheikh	8/30/99	Hanif Sheikh	8/27/99
		DCR	8/30/99

RECEIVED
SEP 2 1999

(over for instructions) revised 3/99

STANDARD OPERATING PROCEDURE Page 1 of 7

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

CASE: 27237	SITE: MONROE TWP GW	SOIL:
SDG: MBTD26	LAB: SENTINEL	WATER: 20
CONTRACTOR: STARTW	REVIEWER: C. STANCA	OTHER:

A.2.1. Validation flags -The following flags have been applied in red by the data validator and must be considered by the data user.

J -This flag indicates the result qualified as **estimated.**

Red-Line - A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data -The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers -The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0

A.2.2. The data assessment is given below and on the attached sheets.

This case consists of twenty (20) aqueous samples collected at the Monroe TWP GW site on 07/28 - 07/29/99 for TAL Metals analysis according to the USEPA CLP SOW No. ILM04.0. Matrix spike, laboratory duplicate and serial dilution analyses were performed on sample MBTD49. No field QC samples were collected for this SDG.

CSF

Sample tags are not present.

CRDL STANDARD

The CRDL standard recoveries fell outside the control limits of 80 - 120% for Hg (%R =70.0). All associated Hg results within the affected range of True Value ± CRDL should be considered estimated and flagged "J". The following action has been taken:

"J": Hg in MBTD28, 31 ---> 39, 41, 42, 44 ---> 49.

A.2.2. (continuation)

MATRIX SPIKE

The matrix spike recovery was outside the control limits of 75 - 125% when sample concentration was less than 4 X spike concentration for Sb (%R = 60.4). If the spike recovery is low the results in the associated samples are biased low and the true values may be greater than the values reported. All associated Sb results should be considered estimated and flagged "J". The following action has been taken:

"J": Sb in MBTD26, 28, 31 ---> 39, 41 ---> 49.

ICP SERIAL DILUTION

The ICP serial dilution analysis yielded percent differences greater than 10 but less than 100 for Ca (%D =12.2), Mn (%D =30.6), Zn (%D =30.0) and greater than 100 for Al (%D = 159.5) when the initial concentration was equal to or greater than 10 X IDL. All associated Ca, Mn, and Zn results greater or equal to CRDL or 10 X IDL, whichever is greater, should be considered estimated and flagged "J". All associated Al results greater or equal to CRDL or 10 X IDL, whichever is greater, should be rejected. The following action has been taken:

"J": Ca in MBTD33, -43, -47, -49.
Mn in MBTD26, -28, -31 --->34, -41, -43, -44, -46, -47, -49.
Zn in MBTD26, -31, -34, -35, -36, -38, -41, -43, -45, -48, -49.

"R": Al in MBTD26, -31, -33, -34, -38, -39, -41, -42, -44, -45, -47.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

A.2.3. Contract-Problems/Non-Compliance

1. Form 2B: The CRA True and Found values for Hg, second run, were missing. The omission was corrected by the validator.
2. The recorded temperature (7°C) of one cooler was slightly outside the acceptable range of 2°C ± 4°C No action was taken.

MMB Reviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: 8/26/99
Signature

Verified by: _____ Date: _____
Signature

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SOW Report)

Date: Jan. 1992
Number: HW-2
Revision: 11

CONTRACT NON-COMPLIANCE
(SOW REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 27237

The hardcopied (laboratory name) _____
norganic data package received at Region II has been reviewed and the quality assurance and erformance data summarized. The data reviewed included:
D Sample No.: _____

nc. & Matrix: _____

ontract No. (_____) requires that specific analytical work be done and hat associated reports be provided by the contractor to the Region, ESD-IV, and SMO. The riteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

ere of non-compliance with the above contract are described below.

ments: _____

CS
Reviewer's Initial

8/27/99
Date

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.4: Mailing List for Data Reviewers

Date: Jan
Number:
Revisi

DPO MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-4312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York,
E3I, Skinner, TMA

2. USEPA Region II ESD
Woodbridge Avenue
Edison, NJ 08837
Lisa Gatton Vidulich
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco
ETC, Gadson, EMS, Gaison, ICM

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Hitman, JTC, MACX, VERSAR,
ITAS, Weston, MMES, EA Engineering,
Subject Tech., KEYPA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
CompuChem, EPS, ESE, PBS&J,
Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
(312) 353-9087
IL, IN, MI, MN, OH, WI
NLE, TAI/ENG

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
Houston, TX 77074
David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, EIS, Glochem
Research, Inc., SPL Inc., SWRI,
Allied, KEYTX, EIRA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3881
IO, KS, NE, MO
Wilson, Kansas City Scientific
Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
Box 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSMRI, RMAL, Data Chem., Charef

9. USEPA Region XI (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
(415) 974-0924
AZ, CA, HI, NV, American Samoa,
Guam Trust Territories of Pacific
Islands, Wake Island
ALL CAL Weston, S-Cubed, IT_CA,
Vegas

10. USEPA Region X Laboratory
P.O. Box 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Laucks Testing Labs, Century Testing
Labs (For VOA Only), Weyerhauser Co.,
Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-220)
USEPA
401 "M" Street S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
Box 93478
Las Vegas, NV 89119

13. Sample Management Office

CLP DATA ASSESSMENT SUMMARY FORM

TYPE OF REVIEW: INORGANIC **DATE:** 8/27/99 **CASE #:** 27237

SITE: MONROE TWP GW **LAB NAME:** SENTINEL, INC.

REVIEWER'S INITIALS: CS **NUMBER OF SAMPLES:** 20 WATER

ANALYTES REJECTED DUE TO EXCEEDING REVIEW CRITERIA:*

	Holding Time	CRDL	Prep Blank	Field Blank	Inter-ference	Spike Recov.	Det. Limit	LCS	Serial Dil.	MSA	Total Analytes	Rejections
ICP									11		440	11
Flame AA												
Furnace AA												
Mercury											20	0
Cyanide												
Total									11		460	11

ANALYTES FLAGGED AS ESTIMATED (J) DUE TO EXCEEDING CRITERIA FOR:*

	Holding Time	CRDL	Prep Blan	% Solids	Preser vation	Spike Recov.	Dup Lab	Dup Field	Det. Limit	LCS	Serial Dilution	MSA	Total Analytes	Estimation
ICP						20					28		440	48
Flame AA														
Furnace AA														
Mercury		18											20	18
Cyanide														
Total		18				20					28		460	66

Note: Asterisk (*) indicates additional exceedances of review criteria.

STANDARD OPERATING PROCEDURES
Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment
Inorganic Analysis

Region II

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO.: 27237

SITE: MONROE TWP GW

LABORATORY: SENTINEL, INC.

NO. OF SAMPLES/MATRIX: 20 WATER

SDG#: MBTD26

REVIEWER (IF NOT ESD):

SOW#: ILM04.0

REVIEWER'S NAME: C. STANCA

DPO: ACTION FYI

COMPLETION DATE: 8/27/99

DATA ASSESSMENT SUMMARY

	ICP	AA	MERCURY	CYANIDE
Holding Times	O		O	
Calibration	O		O	
Blanks	O		O	
ICS	O		N/A	N/A
LCS	O		N/A	N/A
Duplicate Analysis	O		O	
Matrix Spike	O		O	
MSA	N/A		N/A	N/A
Serial Dilution	Z		N/A	N/A
Sample Verification	O		O	
Other QC	O		O	
Overall Assessment	M		O	

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.
ACTION ITEMS:
AREAS OF CONCERN:
NOTABLE PERFORMANCE:

CADRE VALIDATION

Percent Moisture Report

SDG NO: **MBTD26** LABORATORY: **SENTINEL INC.**

CASE NO: **27237** AGENCY INPUT FILE: **MBTD26.ASF**

PERCENT MOISTURE LIMITS

	Primary	Expanded
INORG	50%	90%

No problems found for this qualification.

Holding Time Report

SDG NO: **MBTD26** LABORATORY: **SENTINEL INC.**

CASE NO: **27237** AGENCY INPUT FILE: **MBTD26.ASF**

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	16704	2.0	2.6
Mercury	28	0	2.0	50.0
Cyanide	14	0	12.0	1.0

DC-271: The following inorganic samples had no sampling date.
Qualification was performed using the Verified Time of
Sample Receipt (VTSR).
Hits and non-detects are not flagged.

MBTD48

Calibration Report

SDG NO: MBTD26
CASE NO: 27237
LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTD26.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

Matrix Spike Report

SDG NO: MBTD26 LABORATORY: SENTINEL INC.
CASE NO: 27237 AGENCY INPUT FILE: MBTD26.ASF

MATRIX SPIKE CRITERIA

Inorganic

Percent Recovery Limits

Upper	125.0
Lower	75.0
Extreme lower	30.0

DC-268: The following inorganic samples are associated with a matrix spike recovery which is low, indicating that sample results may be biased low.
Hits are qualified "J" and non-detects are qualified "UJ".

Antimony

MBTD26, MBTD28, MBTD31, MBTD32, MBTD33, MBTD34
MBTD35, MBTD36, MBTD37, MBTD38, MBTD39, MBTD41
MBTD42, MBTD43, MBTD44, MBTD45, MBTD46, MBTD47
MBTD48, MBTD49, MBTD49A, MBTD49D

LCS Report

SDG NO: MBTD26
CASE NO: 27237
LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTD26.ASF

No problems found for this qualification.

Sample Result Verification Report

SDG NO: MBTD26 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTD26.ASF

No problems found for this qualification.

MONROE TWP.

CASE # 27237
SDG # MBTD26

MTG-3.200089

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: [signature] DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

REVIEWED BY: [signature] DATE: 1-31-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: [signature] DATE: 1/31/92
Robert Runyon, Chief
Monitoring Management Branch

2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a log the reviews completed to include: a. date of start of case rev

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 Data Completeness
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 SMO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 Record of Communication - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 Rounding off numbers - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[✓]	___	___
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[✓]	___	___
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[✓]	___	___
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[✓]	___	___
Legible?	[✓]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[✓]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	___	___
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[✓]	___	___
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]	___	___
(b) Form I's?	[✓]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

A.1.6 Form I to IX		Yes	No	N/A
A.1.6.1 Are all the Form I through Form IX labeled with:				
	Laboratory name?	[✓]	___	___
	Case/SAS number?	[✓]	___	___
	EPA sample No.?	[✓]	___	___
	SDG No.?	[✓]	___	___
	Contract No.?	[✓]	___	___
	Correct units?	[✓]	___	___
	Matrix?	[✓]	___	___

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:				
(NOTE: Check all forms against raw data.)				
	(a) all analytes analyzed by ICP?	[✓]	___	___
	(b) all analytes analyzed by GFAA?	[ ]	___	✓
	(c) all analytes analyzed by AA Flame?	[ ]	___	✓
	(d) Mercury?	[✓]	___	___
	(e) Cyanide?	[ ]	___	✓

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.7	Raw Data			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[✓]	___	___
	Digestion Log for furnace AA Form XIII present?	[___]	___	✓
	Distillation Log for mercury Form XIII present?	[✓]	___	___
	Distillation Log for cyanides Form XIII present?	[___]	___	✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[✓]	___	___
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[___]	___	✓
	Are preparation dates present on sample preparation logs/bench sheets?	[✓]	___	___
A.1.7.2	Measurement read out record present? ICP	[✓]	___	___
	Flame AA	[___]	___	✓
	Furnace AA	[___]	___	✓
	Mercury	[✓]	___	___
	Cyanides	[___]	___	✓
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[✓]	___	___
	Legible?	[✓]	___	___
	Properly Labeled?	[✓]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

Title: Evaluation of Metals for the Contract Laboratory Program
Appendix A.1: "Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.8	Holding Times - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[ ]	___
	Cyanide distillation (14 days). . . . . exceeded?	___	[ ]	___
	Other Metals analysis (6 months). . . . exceeded?	___	[ ]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[ ]	___
	Cyanides Analysis <12?	___	[ ]	___
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	Form I (Final Data)			
A.1.9.1	Are all Form I's present and complete?	[ ]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[ ]	___	✓
	Are soil sample results for each parameter corrected for percent solids?	[ ]	___	___
	Are all "less than IDL" values properly coded with "U"?	[ ]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[✓]		

ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.

A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]		
	Was a brief physical description of samples given on Form I's?	[✓]		
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		[✓]	

ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".

A.1.10 Calibration

A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]		
	Is record of 5 point calibration present for Hg analysis?	[✓]		
	Is record of 4 point calibration present for:			
	Flame AA?	[ ]		✓
	Furnace AA?	[ ]		✓
	Cyanides?	[ ]		✓
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[✓]		

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

	YES	NO	N/A
A.1.10.2 Is correlation coefficient less than 0.995 for:			
Mercury Analysis?	___	[___] ✓	___
Cyanide Analysis?	___	[___]	___ ✓
Atomic Absorption Analysis?	___	[___]	___ ✓

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[___]	___	___ ✓

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 Form II A (Initial and Continuing Calibration Verification)-

A.1.11.1 Present and complete for every metal and cyanide?	[___] ✓	___	___
Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	___ ✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
Metals- 90-110%R?	[___]	___	___
Hg - 80-120%R?	[___]	___	___
Cyanides- 85-115%R?	[___]	___	___ ✓

		YES	NO	N/A
	ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3	Was continuing calibration performed every 10 samples or every 2 hours?	[V]	___	___
	Was ICV for cyanides distilled?	[___]	___	V
	ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12	Form II B (CRDL Standards for AA and ICP) -			
A.1.12.1	Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[V]	___	___
	Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	V
	Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[V]	___	___
	ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[✓]	___	___
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[✓]	___	___
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[___]	___	✓
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	Form III (Initial and Continuing Calibration Blanks)			
A.1.13.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[√]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[___]	___	√
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[√]	___	___
	each batch of digested samples?	[√]	___	___
	each matrix type?	[√]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	√
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[✓]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[✓]	___
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[___]	___	✓
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[✓]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	Form IV (ICP Interference Check Sample)			
A.1.15.1	Present and complete?	[✓]	___	___
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which Al, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[✓]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	✓

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	✓	___

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	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[ ]	___	___
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 Aqueous

Are any spike recoveries:

(a) less than 30%?	___	[ ]	___
(b) between 30-74%?	___	[ ]	___
(c) between 126-150%?	___	[ ]	___
(d) greater than 150%?	___	[ ]	___

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?	___	[ ]	___
(b) between 10-74%?	___	[ ]	___
(c) between 126-200%?	___	[ ]	___
(d) greater than 200%?	___	[ ]	___

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	Form VI (Lab Duplicates)			
A.1.17.1	Present and complete for: each SDG?	[√]	—	—
	each matrix type?	[√]	—	—
	each concentration range (i.e. low, med., high)?	[√]	—	—
	both AA and ICP when both are used for the same analyte?	[ ]	—	√
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	—	[√]	—
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[√]	—	—
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[ ]	—	√
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

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YES NO N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? ___ [✓] ___

Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? ___ [✓] ___

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :

> 100%? ___ [ ] ___

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :

> 2x*CRDL? ___ [ ] ___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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	YES	NO	N/A

ACTION: If yes, flag the associated data as estimated.

A.1.18 Field Duplicates

A.1.18.1 Were field duplicates analyzed? [ ] [ ]

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? [ ] [ ] V

Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? [ ] [ ] V

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

A.1.18.3 Soil/Sediment

Circle all values on self prepared Form VI for field duplicates that are:

RPD >100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) :

>100%? ___ [___] ___ ✓

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL):

>2x *CRDL? ___ [___] ___ ✓

ACTION: If yes, flag the associated data as estimated.

A.1.19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

A.1.19.1 Was one LCS prepared and analyzed for:

each SDG? [✓] ___ ___

each batch samples digested/distilled? [✓] ___ ___

both AA and ICP when both are used for the same analyte? [___] ___ ✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

A.1.19.2 Aqueous LCS

Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.

Is any LCS recovery:				
	less than 50%?	___	[✓]	___
	between 50% and 79%?	___	[✓]	___
	between 121% and 150%?	___	[✓]	___
	greater than 150%?	___	[✓]	___

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[ ]	✓

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[ ]	✓

ACTION: If yes, qualify all associated data as estimated.

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		YES	NO	N/A
A.1.20	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for: each SDG?	[ ]	___	___
	each matrix type?	[ ]	___	___
	each concentration range (i.e. low, med.)?	[ ]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[ ]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[ ]	___	___
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	___	[ ]	___
	≥ 100%?	___	[ ]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	Furnace Atomic Absorbtion (AA) QC Analysis			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[ ]		
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[ ]		
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[ ]		
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?		[ ]	
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

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		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	Form VIII (Method of Standard Addition Results)			
A.1.22.1	Present?	[ ]		
	If no, is any Form I result coded with "S" or a "+"?		[ ]	
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?		[ ]	
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?		[ ]	
	Is coefficient of correlation for MSA less than 0.995?		[ ]	
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?		[ ]	
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[ ]		
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

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		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[V]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___]	V
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[ ]		✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 Form X, XI, XII (Verification of Instrumental Parameters).

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[ ]		
ICP Interelement Correction Factors (annually)?	[ ]		
ICP Linear Ranges (quarterly)?	[ ]		

ACTION: If no, contact TPO of the lab.

A.1.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[ ]		
all the instruments used?	[ ]		
For both AA and ICP when both are used for the same analyte?	[ ]		✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?		[ ]	
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[ ]		

	YES	NO	N/A

Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.

A.1.25.3 Form XI (Linear Ranges)

A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[✓]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	✓

ACTION: If no, flag the result reported on Form I as estimated(J).

A.1.26 Percent Solids of Sediments

A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[___]	✓
< 10%?	___	[___]	✓

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

Case #: 27237 SDG : MBTD26
Site : MONROE TWP GROUND WATER CONTAM Number of Soil Samples : 0
Lab. : SENTIN Number of Water Samples : 20
Reviewer :
Date : MTG-3.200115

Sample Number :	MBTD26		MBTD28		MBTD31		MBTD32		MBTD33	
Sampling Location :	MGC-9907-TW78		MGC-9907-TW80		MGC-9907-TW83		MGC-9907-TW84		MGC-9907-TW85	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/28/1999		07/28/1999		07/28/1999		07/28/1999		07/29/1999	
Time Sampled :	18:15		17:45		18:00		18:45		10:45	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	274	R	92.6	B	778	R	69.4	B	435	R
ANTIMONY	60.0	U	60.0	U	60.0	U	60.0	U	60.0	U
ARSENIC	3.0	U	3.0	U	3.0	U	3.3	B	3.0	U
BARIUM	25.0	U	33.5	B	47.9	B	77.0	B	25.0	U
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	3460	B	1070	B	1830	B	2530	B	14800	J
CHROMIUM	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
COBALT	5.5	B	2.2	U	3.3	B	2.2	U	2.2	U
COPPER	7.6	B	2.5	U	5.0	B	4.2	B	2.5	U
IRON	400		397		215		429		53.8	B
LEAD	2.6	B	0.9	B	3.9		1.7	B	1.0	U
MAGNESIUM	4140	B	1740	B	1060	B	1870	B	3000	B
MANGANESE	7.2	B	2.6	B	6.5	B	17.6		1.0	U
MERCURY	13.8		0.10	UJ	0.10	UJ	0.10	UJ	0.10	UJ
NICKEL	8.5	B	2.5	U	4.7	B	2.5	U	2.5	U
POTASSIUM	2720	B	1930	B	1180	B	1430	B	2380	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	9900		6040	B	4320	B	3770	B	9800	
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	B
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	164	J	15.9	B	76.9	J	13.9	B	8.5	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27237 SDG : MBTD26
Site : MONROE TWP GROUND WATER CONTAM
Lab. : SENTIN
Reviewer :
Date :

MTG-3.200116

Sample Number :	MBTD34		MBTD35		MBTD36		MBTD37		MBTD38	
Sampling Location :	MGC-9907-TW86		MGC-9907-TW87		MGC-9907-TW88		MGC-9907-TW89		MGC-9907-TW90	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/29/1999		07/28/1999		07/28/1999		07/29/1999		07/29/1999	
Time Sampled :	11:15		20:15		20:20		13:15		14:25	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	435	R	78.9	B	50.3	B	54.0	B	443	R
ANTIMONY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	[illegible]	B	[illegible]	B	[illegible]	B	[illegible]	B	[illegible]	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	4050	B	203	B	230	B	663	B	491	B
CHROMIUM	[illegible]	U	[illegible]	U	[illegible]	U	[illegible]	U	[illegible]	U
COBALT	2.5	B	2.2	U	2.2	U	2.2	U	2.2	U
COPPER	425		228		208		421		[illegible]	U
IRON	181		631		389		560		216	
LEAD	14.8		3.9		[illegible]		6.2		[illegible]	U
MAGNESIUM	3350	B	406	B	321	B	371	B	332	B
MANGANESE	32.9	J	12.3	B	[illegible]	B	[illegible]	B	[illegible]	B
MERCURY	0.10	UJ	0.10	UJ	0.10	UJ	0.10	UJ	0.10	UJ
NICKEL	3.8	B	2.5	U	2.5	U	2.5	U	2.5	U
POTASSIUM	2350	B	676	B	613	B	470	B	1130	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	4700	B	1540	B	1430	B	1240	B	[illegible]	B
THALLIUM	3.3	U	3.3	U	3.3	B	3.3	U	3.3	U
VANADIUM	[illegible]	U	[illegible]	U	[illegible]	U	[illegible]	U	[illegible]	U
ZINC	32.8	J	24.6	J	25.3	J	4.3	B	23.2	J
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTD26
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200117

Sample Number :	MBTD39		MBTD41		MBTD42		MBTD43		MBTD44	
Sampling Location :	MGC-9907-TW91		MGC-9907-TW93		MGC-9907-TW94		MGC-9907-TW95		MGC-9907-TW96	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/28/1999		07/29/1999		07/29/1999		07/29/1999		07/29/1999	
Time Sampled :	17:15		10:57		11:33		14:05		11:05	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	573	R	216	R	282	R	173	B	202	R
ANTIMONY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
CALCIUM	851	B	1340	B	956	B	9060	J	2550	B
CHROMIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
COBALT	2.2	U	2.2	U	2.2	U	5.1	B	3.1	B
COPPER	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
IRON	546		2680		218		19.7	B	248	
LEAD	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MAGNESIUM	2200	B	386	B	474	B	4680	B	3370	B
MANGANESE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
MERCURY	0.10	UJ	0.10	UJ	0.10	UJ	18.4		0.10	UJ
NICKEL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
POTASSIUM	984	B	446	B	429	B	3160	B	1850	B
SELENIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
THALLIUM	3.3	U	3.3	U	3.3	U	3.4	B	3.3	U
VANADIUM	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ZINC	9.8	B	34.9	J	17.1	B	28.0	J	13.6	B
CYANIDE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Case #: 27237 SDG : MBTD26
Site : MONROE TWP GROUND WATER CONTAM
Lab. : SENTIN
Reviewer :
Date :

MTG-3.200118

Sample Number :	MBTD45		MBTD46		MBTD47		MBTD48		MBTD49	
Sampling Location :	MGC-9907-TW97		MGC-9907-TW98		MGC-9907-TW99		BLANK		MGC-9907-TW100	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/29/1999		07/29/1999		07/29/1999				07/29/1999	
Time Sampled :	11:25		12:05		14:00				17:45	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	215	R	118	B	537	R	133	B	156	B
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	110	B	351	B	189	B	55.5	B	307	B
BERYLLIUM	0.40	U	0.40	U	0.43	B	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	2440	B	858	B	6270	J	1080	B	6230	J
CHROMIUM	1.0	U	1.0	U	1.2	B	1.0	U	1.0	U
COBALT	2.2	U	2.2	U	3.2	B	2.2	U	2.2	U
COPPER	24.7	B	33.4	B	30.3	B	4.10	B	30.7	B
IRON	52.7	B	169		199		193		65.9	B
LEAD	7.2	B	3.5	B	12.4	B	2.8	B	4.7	B
MAGNESIUM	2410	B	1640	B	4290	B	429	B	3100	B
MANGANESE	14.1	B	30.7	B	56.3	B	6.2	B	20.7	B
MERCURY	0.10	UJ	0.10	UJ	0.39	J	0.10	UJ	0.32	J
NICKEL	3.2	B	2.5	U	2.8	B	2.5	U	2.5	U
POTASSIUM	1390	B	1040	B	8890		565	B	5360	
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	4180	B	4760	B	8970		1030	B	4000	B
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	26.4	J	12.8	B	13.2	B	55.8	J	28.0	J
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237 SDG : MBTD26
Site : MONROE TWP GROUND WATER CONTAM
Lab. : SENTIN
Reviewer :
Date :

MTG-3.200119

Sample Number :	MBTD49D		MBTD49S		MBTD49A		IDL			
Sampling Location :	MGC-9907-TW100		MGC-9907-TW100		MGC-9907-TW100					
Matrix :	Water		Water		Water		Water			
Units :	ug/L		ug/L		ug/L		ug/L			
Date Sampled :	07/29/1999		07/29/1999		07/29/1999					
Time Sampled :	17:45		17:45		17:45					
%Solids :	0.0		0.0		0.0					
Dilution Factor :	1.0		1.0		1.0		10.0			
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	141		2100				12.0			
ANTIMONY	3.0	U	302		1.8	U	3.0	U		
ARSENIC	3.0	U	39.8				3.0			
BARIUM	183		2270				0.70			
BERYLLIUM	0.40	U	49.8				0.40			
CADMIUM	0.50	U	50.6				0.50			
CALCIUM	5560						12.6			
CHROMIUM	1.0	U	200				1.0			
COBALT	2.2	U	507				2.2			
COPPER	2.72		537				2.5			
IRON	67.5		1030				18.8			
LEAD	3.7	U	219				1.7			
MAGNESIUM	2750						14.4			
MANGANESE	18.8		528				0.60			
MERCURY	0.31		1.2				0.10			
NICKEL	2.5	U	503				2.5			
POTASSIUM	4690						22.9			
SELENIUM	2.3	U	8.8				2.3			
SILVER	1.4	U	49.4				1.4			
SODIUM	35900						153			
THALLIUM	3.3	U	50.5				3.3			
VANADIUM	1.4	U	500				1.4			
ZINC	27.8		535				2.4			
CYANIDE	N/A		N/A		N/A		N/A			

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Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTD26	23306S
MBTD28	23307S
MBTD31	23308S
MBTD32	23309S
MBTD33	23310S
MBTD34	23311S
MBTD35	23312S
MBTD36	23313S
MBTD37	23314S
MBTD38	23315S
MBTD39	23316S
MBTD41	23317S
MBTD42	23318S
MBTD43	23319S
MBTD44	23320S
MBTD45	23321S
MBTD46	23322S
MBTD47	23323S
MBTD48	23330S
MBTD49	23324S

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: Calcium is estimated due to possible matrix interference. The cooler temperatures measured 2.0°C and +.0°C.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: BARIgue

Date: 8/7/99 Title: QA Officer

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTD49D	23324S2
MBTD49S	23324DS

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: BAIZ.1 Sue

Date: 8/7/99 Title: QA Officer

MTG-3.200123

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD26

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23306S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~274~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	211			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	3460	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	5.5	B		P
7440-50-8	Copper	746			P
7439-89-6	Iron	400			P
7439-92-1	Lead	27.4			P
7439-95-4	Magnesium	4140	B		P
7439-96-5	Manganese	77.2		J	P
7439-97-6	Mercury	13.8			CV
7440-02-0	Nickel	6.1	B		P
7440-09-7	Potassium	2720	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	9900			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	164		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200124

EPA SAMPLE NO.

MBTD28

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23307S

Level (low/med): LOW Date Received: 07/30/99

% 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	92.6	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	68.3	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1070	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	226			P
7439-89-6	Iron	397			P
7439-92-1	Lead	3.9			P
7439-95-4	Magnesium	1740	B		P
7439-96-5	Manganese	28.6			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1930	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	6040			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	15.9	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200125

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD31

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23308S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~778~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	47.9	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1830	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	3.3	B		P
7440-50-8	Copper	50.7			P
7439-89-6	Iron	215			P
7439-92-1	Lead	3.9			P
7439-95-4	Magnesium	1060	B		P
7439-96-5	Manganese	16.3		J	P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	4.7	B		P
7440-09-7	Potassium	1180	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	4320	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	76.9		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200126

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD32

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23309S

Level (low/med): LOW Date Received: 07/30/99

% 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	69.4	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.3	B		P
7440-39-3	Barium	77.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2530	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	442			P
7439-89-6	Iron	429			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	1870	B		P
7439-96-5	Manganese	17.9		J	P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1430	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	3770	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	13.9	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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MTG-3.200127

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD33

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23310S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~435~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	60.2	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	14800		E J	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	14.9	B		P
7439-89-6	Iron	53.8	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	3000	B		P
7439-96-5	Manganese	75.9		J	P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	2380	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	49800			P
7440-28-0	Thallium	3.3	B		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	8.5	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200128

EPA SAMPLE NO.

MBTD34

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23311S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~435~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	110	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	4050	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.5	B		P
7440-50-8	Copper	425			P
7439-89-6	Iron	181			P
7439-92-1	Lead	14.8			P
7439-95-4	Magnesium	3350	B		P
7439-96-5	Manganese	32.9		J	P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	3.8	B		P
7440-09-7	Potassium	2350	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	14700			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	32.8		J	P
_____	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

8

MTG-3.200129

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD35

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23312S

Level (low/med): LOW Date Received: 07/30/99

% 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	78.9	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	27.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	203	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	228			P
7439-89-6	Iron	631			P
7439-92-1	Lead	3.9			P
7439-95-4	Magnesium	406	B		P
7439-96-5	Manganese	12.3	B		P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	676	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1540	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	24.6		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200130

EPA SAMPLE NO.

MBTD36

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23313S

Level (low/med): LOW Date Received: 07/30/99

% 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	50.3	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	24.6	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	230	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	208			P
7439-89-6	Iron	389			P
7439-92-1	Lead	3.6			P
7439-95-4	Magnesium	321	B		P
7439-96-5	Manganese	8.5	B		P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	613	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1430	B		P
7440-28-0	Thallium	3.3	B		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	25.3		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200131

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD37

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23314S

Level (low/med): LOW Date Received: 07/30/99

% 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	54.0	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	8.7	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	663	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	42.1			P
7439-89-6	Iron	560			P
7439-92-1	Lead	6.2			P
7439-95-4	Magnesium	371	B		P
7439-96-5	Manganese	11.6	B		P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	470	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1240	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	4.3	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200132

EPA SAMPLE NO.

MBTD38

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23315S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~443~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	29.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	491	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	2.5	U		P
7439-89-6	Iron	216			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	332	B		P
7439-96-5	Manganese	9.7	B		P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1130	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	863	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	23.2		J	P
_____	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200133

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD39

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23316S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~573~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	22.7	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	851	B	E	P
7440-47-3	Chromium	3.5	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	421			P
7439-89-6	Iron	546			P
7439-92-1	Lead	2.2	B		P
7439-95-4	Magnesium	2200	B		P
7439-96-5	Manganese	7.5	B		P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	984	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1170	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	9.8	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200134

EPA SAMPLE NO.

MBTD41

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23317S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~216~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	5.9	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1340	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	2.5	U		P
7439-89-6	Iron	2680			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	386	B		P
7439-96-5	Manganese	26.1		J	P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	446	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	910	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	34.9		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200135

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD42

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23318S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~282~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	13.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	956	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	24.1	B		P
7439-89-6	Iron	218			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	474	B		P
7439-96-5	Manganese	10.5	B		P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	429	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1190	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	17.1	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200136

EPA SAMPLE NO.

MBTD43

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23319S

Level (low/med): LOW Date Received: 07/30/99

% 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	173	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	208			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	9060		E J	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	5.1	B		P
7440-50-8	Copper	23.4	B		P
7439-89-6	Iron	19.7	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	4680	B		P
7439-96-5	Manganese	50.1		J	P
7439-97-6	Mercury	18.4			CV
7440-02-0	Nickel	4.9	B		P
7440-09-7	Potassium	3160	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	50800			P
7440-28-0	Thallium	3.4	B		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	28.0		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200137

EPA SAMPLE NO.

MBTD44

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23320S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~202~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	156	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2550	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	3.1	B		P
7440-50-8	Copper	276			P
7439-89-6	Iron	248			P
7439-92-1	Lead	3.8			P
7439-95-4	Magnesium	3370	B		P
7439-96-5	Manganese	28.6		J	P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	3.7	B		P
7440-09-7	Potassium	1850	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	9280			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	13.6	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200138

EPA SAMPLE NO.

MBTD45

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23321S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~215~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	110	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2440	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	247			P
7439-89-6	Iron	52.7	B		P
7439-92-1	Lead	7.2			P
7439-95-4	Magnesium	2410	B		P
7439-96-5	Manganese	14.1	B		P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	3.2	B		P
7440-09-7	Potassium	1390	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	4180	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	26.4		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200139

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD46

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23322S

Level (low/med): LOW Date Received: 07/30/99

% 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	118	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	35.1	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	858	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	33.4			P
7439-89-6	Iron	169			P
7439-92-1	Lead	3.5			P
7439-95-4	Magnesium	1640	B		P
7439-96-5	Manganese	30.7		J	P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1040	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	4760	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	12.8	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200140

EPA SAMPLE NO.

MBTD47

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23323S

Level (low/med): LOW Date Received: 07/30/99

% 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	~~537~~			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	189	B		P
7440-41-7	Beryllium	0.43	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	6270		E J	P
7440-47-3	Chromium	1.2	B		P
7440-48-4	Cobalt	3.2	B		P
7440-50-8	Copper	303			P
7439-89-6	Iron	199			P
7439-92-1	Lead	12.4			P
7439-95-4	Magnesium	4290	B		P
7439-96-5	Manganese	56.3		J	P
7439-97-6	Mercury	0.39		J	CV
7440-02-0	Nickel	2.8	B		P
7440-09-7	Potassium	8890			P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	8970			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	13.2	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200141

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD48

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23330S

Level (low/med): LOW Date Received: 07/30/99

% 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	133	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	5.5	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1080	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	110			P
7439-89-6	Iron	193			P
7439-92-1	Lead	2.3	B		P
7439-95-4	Magnesium	429	B		P
7439-96-5	Manganese	6.2	B		P
7439-97-6	Mercury	0.10	U	J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	565	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1030	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	55.8		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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MTG-3.200142

EPA SAMPLE NO.

MBTD49

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD26

Matrix (soil/water): WATER Lab Sample ID: 23324S

Level (low/med): LOW Date Received: 07/30/99

% 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	156	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	206			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	6230		E J	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	307			P
7439-89-6	Iron	65.9	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	3100	B		P
7439-96-5	Manganese	20.7		J	P
7439-97-6	Mercury	0.32		J	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	5360			P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	41000			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	28.0		J	P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Sentinel Contract No.: 68-D5-0169

Lab Code: Sentin Case No.: 27237

Full Sample Analysis Price in Contract: _____

SDG No./First Sample in SDG: MBTD26 Sample Receipt Date: 7/30/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: MBTD49 Sample Receipt Date: 7/30/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBTD26	11	MBTD39
2	28	12	41
3	31	13	42
4	32	14	43
5	33	15	44
6	34	16	45
7	35	17	46
8	36	18	47
9	37	19	48
10	38	20	49

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Amanda B Gossett
Signature

7/30/99
Date

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TELEPHONE MEMORANDUM

MTG-3.200144

TO: Nicole

FROM: Amanda / Sentinel

DATE/TIME: 7/30/99

SUBJECT: Case # 27237
SDG # MBTD26

DESCRIPTION:
We rec'd sample # MBTD48 which does not appear on TR. The same goes for sample # MBTD39. Sample # MBTD40 was not rec'd. According to Station Location ID., MBTD39, is MBTD40 on TR.
I will use sample #s as they appear on sample bottle, if that's OK.

8/2 Procede w/ analysis for MBTD48 and note discrepancies for MBTD39 per Nicole.

Corrective Action Required: Notify Dynacorp.

Corrective Action Taken:

Signature: Amanda B Tolsett Date: 7/30/99

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RECORD OF COMMUNICATION

TO: Smitha Sumbaly

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: Sept 8, 1999

SUBJECT: QUALITY ASSURED DATA

MESSAGE

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

(1) Monroe Twp. GW Contamination
Case# 27237
SDG# MBTC99 Sentin Inorg 20 Water
SDG# MBTD50 Sentin Inorg 8 Water

* Last SDG's for this Case

REPLY BY: _____

SIGNATURE: Janis Hisarags DATE: 9 September 1999

DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

RECEIVED
SEP 03 1999

DATE: AUG. 19, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

MTG-3.200146

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE MONROE TWP. GW CONTAM. CASE# 27237/SDG#MBTC99

CONTRACTOR START W #SAMPLES MATRIX

PHASE IA

LAB SENTIN 20 WATER

TURN-AROUND-TIME 14 DAYS FRACTION TAL ONLY

CERCLIS ID # NJD980769699 SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	8-13-99
John Bulich	8-19-99	C. Staure	8/26/99
CS	9/01/99	J. Trutter	9/1/99
J. Trutter	9/1/99	Hanif Sheikh	9/1/99
Hanif Sheikh	9/3/99	DCR J Bulich	9/3/99

(over for instructions) revised 3/99

STANDARD OPERATING PROCEDURE Page 1 of 6

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

CASE: 27237	SITE: MONROE TWP GW	SOIL:
SDG: MBTC99	LAB: SENTINEL, INC.	WATER: 20
CONTRACTOR: STARTW	REVIEWER: C. STANCA	OTHER:

A.2.1. Validation flags -The following flags have been applied in red by the data validator and must be considered by the data user.

J -This flag indicates the result qualified as **estimated.**

Red-Line - A red-line drawn through a sample result indicates **unusable** value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data -The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers -The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0

A.2.2. The data assessment is given below and on the attached sheets.

This case consists of twenty (20) aqueous samples collected at the Monroe TWP GW site on 07/27 - 07/29/99 fo TAL Metals analysis according to the USEPA CLP SOW No. ILM04.0. Samples MBTD30/MBTD40 are the field duplicate pair for this sampling event. Matrix spike, laboratory duplicate and serial dilution analyses were performed on sample MBTD09.

CSF

Page 47a was inserted. Sample tags are not present.

MATRIX SPIKE

The matrix spike recovery was outside the control limits of 75 - 125% when sample concentration was less than X spike concentration for Sb (%R = 62.1). If the spike recovery is low the results in the associated samples a biased low and the true values may be greater than the values reported. All associated Sb results should be considered estimated and flagged "J". The following action has been taken:

A.2.2. (continuation)

"J": Sb in MBTC99, MBTD07 ---> 20, MBTD25, -27, -29, -30, -40.

ICP SERIAL DILUTION

The ICP serial dilution analysis yielded percent differences greater than 10 but less than 100 for Ba (%D =31.3) Cu (%D =34.6), Mg (%D = 27.4) and K (%D =53.7) and greater than 100 for Ca (%D =527.4) and Na (%D =202.2) when the initial concentration was equal to or greater than 10 X IDL. All associated Ba, Cu, Mg and K results greater or equal to CRDL or 10 X IDL, whichever is greater, should be considered estimated and flagged "J". All associated Ca and Na results greater or equal to CRDL or 10 X IDL, whichever is greater, should be rejected and flagged "R". The following action has been taken:

"J": Ba in MBTD16
Cu in MBTC99, MBTD07 ---> 11, MBTD13, -16, -17, -19, -20, -25, -27, -29, -30, -40.
Mg in MBTD13, -17.

"R": Ca in MBTD17, -19, -29.
Na in MBTD07, -10, -13, MBTD15 ---> 18, -20, -29.

A.2.3. Contract-Problems/Non-Compliance

None.

MMB Reviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: 9/01/99
Signature

Verified by: _____ Date: _____
Signature

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SOC Report)

Date: Jan. 1992
Number: HW-2
Revision: 11

CONTRACT NON-COMPLIANCE (SOC REPORT)

Regional Review of Uncontrolled Hazardous Waste Site Contract Laboratory Data Package

CASE NO._____

The hardcopied (laboratory name)_____ inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:

SDG Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, DSCL-IV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

CS
Reviewer's Initial

9/01/99
Date

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.4: Mailing List for Data Reviewers

DPO MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-4312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York
E3I, Skinner, TMA

2. USEPA Region II ESD
Woodbridge Avenue
Edison, NJ 08837
Lisa Gatton Vidulich
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco
ETC, Gadson, EMS, Gaison, ICM

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Center, Hitman, JTC, MACX, VERSAR
ITAS, Weston, MMES, EA Engineering
Subject Tech., KEYPA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
CompuChem, EPS, ESE, PBS&J,
Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
(312) 353-9087
IL, IN, MI, MN, OH, WI
NLE, TAI/ENG

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
Houston, TX 77074
David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, EIS, Glochem
Research, Inc., SPL Inc., SWRI,
Allied, KEYTX, EIRA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3881
IO, KS, NB, MO
Wilson, Kansas City Scientific
Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
Box 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSMRI, RMAL, Data Chem., Chard

9. USEPA Region XI (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
(415) 974-0924
AZ, CA, HI, NV, American Samoa,
Guam Trust Territories of Pacific
Islands, Wake Island
ALL, CAL, Weston, S-Cubed, IT_CA,
Vegas

10. USEPA Region X Laboratory
P.O. Box 549
Manchester, WA 98153
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Lauchs Testing Labs, Century Testing
Labs (For VOA Only), Weyerhauser Co.,
Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-220)
USEPA
401 "M" Street S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
Box 93478
Las Vegas, NV 89119

STANDARD OPERATING PROCEDURES

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.5: CLP Data Assessment Summary Form (Inorganics)

CLP DATA ASSESSMENT SUMMARY FORM

TYPE OF REVIEW: INORGANIC DATE: 09/01/99 CASE #: 27237

SITE: MONROE TWP GW LAB NAME: SENTINEL, INC.

REVIEWER'S INITIALS: CS NUMBER OF SAMPLES: 20 WATER

ANALYTES REJECTED DUE TO EXCEEDING REVIEW CRITERIA:*

	Holding Time	CRDL	Prep Blank	Field Blank	Inter-ference	Spike Recov	Det. Limit	LCS	Serial Dil	MSA	Total Analytes	Rejections
ICP									12		420	12
Flame AA												
Furnace AA												
Mercury											20	0
Cyanide												
Total									12		460	12

ANALYTES FLAGGED AS ESTIMATED (J) DUE TO EXCEEDING CRITERIA FOR:*

	Holding Time	CRDL	Prep Blan	% Solids	Preser vation	Spike Recov.	Dup Lab	Dup Field	Det. Limit	LCS	Serial Dilution	MSA	Total Analytes	Esti mation
ICP						20					19		440	39
Flame AA														
Furnace AA														
Mercury													20	0
Cyanide														
Total						20					19		460	39

Note: Asterisk (*) indicates additional exceedances of review criteria.

STANDARD OPERATING PROCEDURES
Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment
Inorganic Analysis

Region II

INORGANIC REGIONAL DATA ASSESSMENT

CASE NO.: 27237 SITE: MONROE TWP GW

LABORATORY: SENTINEL, INC. NO. OF SAMPLES/MATRIX: 20 WATER

SDG#: MBTC99 REVIEWER (IF NOT ESD):

SOW#: ILM04.0 REVIEWER'S NAME: C. STANCA

DPO: ACTION FYI COMPLETION DATE: 09/01/99

DATA ASSESSMENT SUMMARY

	ICP	AA	MERCURY	CYANIDE
Holding Times	O		O	
Calibration	O		O	
Blanks	O		O	
ICS	O		N/A	N/A
LCS	O		N/A	N/A
Duplicate Analysis	O		O	
Matrix Spike	O		O	
MSA	N/A		N/A	N/A
Serial Dilution	Z		N/A	N/A
Sample Verification	O		O	
Other QC	O		O	
Overall Assessment	M		O	

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.
ACTION ITEMS:
AREAS OF CONCERN:
NOTABLE PERFORMANCE:

EPA SAMPLE NO.
MBTD30 MBTD4

FIELD DUPLICATE

Lab name: SENTINEL, INC. Case No. : 27237 Contract: 68-D5-0169

Lab Code: SENTIN SDG No. : MBTC99

Matrix (Soil/Water): WATER Level (low/med.): LOW

% Solids Sample: 0 % Solids Duplicate: O

Concentration Units (ug/l or mg/kg dry weight): ug/l

	Action Limit	Sample Concentration	C	Duplicate Concentration	C	RPD	Difference	Q	M
Aluminum		103.0000	B	121.0000	B				P
Antimony		3.0000	U	3.0000	U				P
Arsenic		3.0000	U	3.0000	U				P
Barium		21.1000	B	23.0000	B				P
Beryllium		0.4000	U	0.4000	U				P
Cadmium		0.5000	U	0.5000	U				P
Calcium		239.0000	B	243.0000	B				P
Chromium		1.0000	U	1.0000	U				P
Cobalt		2.2000	U	2.2000	U				P
Copper	25	94.7000		88.9000			5.8		P
Iron	100	178.0000		169.0000			9.0		P
Lead	3	2.3000	B	3.8000			1.5		P
Magnesium		290.0000	B	312.0000	B				P
Manganese		11.8000	B	12.0000	B				P
Mercury		0.1000	U	0.1000	U				CV
Nickel		2.5000	U	2.5000	U				P
Potassium		449.0000	B	457.0000	B				P
Selenium		2.3000	U	2.3000	U				P
Silver		1.4000	U	1.4000	U				P
Sodium		1590.0000	B	1580.0000	B				P
Thallium		3.3000	U	3.3000	U				P
Vanadium		1.4000	U	1.4000	U				P
Zinc	20	30.9000		30.9000			0.0		P
Cyanide									NA

Percent Moisture Report

SDG NO: MBTC99 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTC99.ASF

PERCENT MOISTURE LIMITS

	Primary	Expanded
INORG	50%	90%

No problems found for this qualification.

Holding Time Report

SDG NO: MBTC99 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTC99.ASF

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	16704	2.0	2.6
Mercury	28	0	2.0	50.0
Cyanide	14	0	12.0	1.0

No problems found for this qualification.

Calibration Report

SDG NO: MBTC99 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTC99.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

Matrix Spike Report

SDG NO: MBTC99 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTC99.ASF

MATRIX SPIKE CRITERIA

Inorganic

Percent Recovery Limits

Upper	125.0
Lower	75.0
Extreme lower	30.0

DC-268: The following inorganic samples are associated with a matrix spike recovery which is low, indicating that sample results may be biased low.
Hits are qualified "J" and non-detects are qualified "UJ".

Antimony

MBTC99, MBTD07, MBTD08, MBTD09, MBTD09A, MBTD09D
MBTD10, MBTD11, MBTD12, MBTD13, MBTD14, MBTD15
MBTD16, MBTD17, MBTD18, MBTD19, MBTD20, MBTD25
MBTD27, MBTD29, MBTD30, MBTD40

LCS Report

SDG NO: MBTC99
CASE NO: 27237
LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTC99.ASF

No problems found for this qualification.

Sample Result Verification Report

SDG NO: MBTC99 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTC99.ASF

No problems found for this qualification.

Analytical Results (Qualified Data)

Page ____ of ____

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC99
MONROE TWP GROUND WATER CONTAM
SENTIN

Number of Soil Samples : 0
Number of Water Samples : 20

Sample Number :	MBTC99		MBTD07		MBTD08		MBTD09		MBTD09D	
Sampling Location :	MGC-9907-TWS1		MGC-9907-TWS9		MGC-9907-TW60		MGC-9907-TW61		MGC-9907-TW61	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/28/1999		07/28/1999		07/28/1999		07/28/1999		07/28/1999	
Time Sampled :	11:17		11:20		11:50		12:15		12:15	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	373		567		185	B	109	B	120	
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	7.0	B	132	B	70.1	B	43.8	B	41.3	
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	1040	B	883	B	3640	B	392	B	312	
CHROMIUM	1.0	U	1.2	B	1.0	U	1.0	U	1.0	U
COBALT	2.2	U	5.0	B	2.2	U	2.2	U	2.2	U
COPPER	77.7	J	204	J	185	J	181	J	173	
IRON	243		118		94.9	B	66.0	B	71.0	
LEAD	11.3		1.7	U	1.7	U	1.7	U	2.2	
MAGNESIUM	448	B	1750	B	3090	B	1450	B	1360	
MANGANESE	8.5	B	22.1		10.6	B	3.6	B	3.3	
MERCURY	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
NICKEL	2.5	U	5.5	B	2.5	U	2.5	U	2.5	U
POTASSIUM	537	B	1190	B	1120	B	1390	B	1320	
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	1660	B	8910	R	2880	B	1640	B	1600	
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	93.6		21.2		5.3	B	21.2		20.0	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC99
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200161

Sample Number :	MBTD09S		MBTD10		MBTD11		MBTD12		MBTD13	
Sampling Location :	MGC-9907-TW61		MGC-9907-TW62		MGC-9907-TW63		MGC-9907-TW64		MGC-9907-TW65	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/28/1999		07/28/1999		07/28/1999		07/28/1999		07/28/1999	
Time Sampled :	12:15		11:59		13:00		12:44		14:39	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	2160		351		235		125	B	397	
ANTIMONY	311		3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	39.8		3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	2150		151	B	32.6	B	14.1	B	116	B
BERYLLIUM	50.1		0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	51.3		0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM			1750	B	608	B	477	B	2340	B
CHROMIUM	204		1.0	U	1.4	B	1.0	U	1.0	U
COBALT	513		2.8	B	2.2	U	2.2	U	2.2	U
COPPER	415		349	J	336	J	11.9	B	149	J
IRON	1080		140		175		108		655	
LEAD	22.1		17.2		3.0	B	1.7	U	4.6	
MAGNESIUM			2500	B	1040	B	449	B	5100	J
MANGANESE	517		15.8		4.5	B	3.4	B	28.8	
MERCURY	0.84		0.10	U	0.10	U	0.10	U	0.10	U
NICKEL	509		2.5	U	2.5	U	2.5	U	2.5	U
POTASSIUM			2010	B	1030	B	634	B	2370	B
SELENIUM	10.0		2.3	U	2.3	U	2.3	U	2.3	U
SILVER	50.9		1.4	U	1.4	U	1.4	U	1.4	U
SODIUM			16100	R	1850	B	1860	B	20100	R
THALLIUM	49.9		3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	509		1.4	U	1.4	U	1.4	U	1.4	U
ZINC	531		8.8	B	17.1	B	345		17.8	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data) Page ____ of ____

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC99
MONROE TWP GROUND WATER CONTAM
SENTIN

Sample Number :	MBTD14		MBTD15		MBTD16		MBTD17		MBTD18	
Sampling Location :	MGC-9907-TW66		MGC-9907-TW67		MGC-9907-TW68		MGC-9907-TW69		MGC-9907-TW70	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/28/1999		07/28/1999		07/28/1999		07/28/1999		07/28/1999	
Time Sampled :	11:40		11:45		12:15		12:45		15:19	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	260		119	B	256		198	B	337	
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	20.8	B	0.74	B	222	J	183	B	94.0	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	1.3	B	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	1140	B	130	B	4060	B	18600	R	2000	B
CHROMIUM	1.0	U	1.0	U	1.0	U	1.0	U	1.4	B
COBALT	2.2	U	2.2	U	4.7	B	2.2	U	2.2	U
COPPER	12.5	B	2.5	U	29.1	J	28.4	J	15.2	B
IRON	597		33.3	B	149		40.0	B	285	
LEAD	4.4		1.7	U	11.4		3.8		1.7	U
MAGNESIUM	494	B	14.4	U	3340	B	17100	J	3390	B
MANGANESE	9.0	B	0.62	B	63.7		8.5	B	17.8	
MERCURY	0.10	U	0.10	U	10.0		0.10	U	0.60	
NICKEL	2.5	U	2.5	U	2.8	B	2.5	U	2.5	U
POTASSIUM	1410	B	218	B	2730	B	2200	B	1700	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	2170	B	33700	R	11700	R	14900	R	7820	R
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	18.8	B	3.5	B	5.9	B	5.6	B	10.5	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data) Page ____ of ____

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC99
MONROE TWP GROUND WATER CONTAM
SENTIN

Sample Number :	MBTD19		MBTD20		MBTD25		MBTD27		MBTD29	
Sampling Location :	MGC-9907-TW71		MGC-9907-TW72		MGC-9907-TW77		MGC-9907-TW79		MGC-9907-TW81	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/28/1999		07/28/1999		07/28/1999		07/28/1999		07/28/1999	
Time Sampled :	16:40		11:59		17:40		16:15		16:15	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	256		337		120	B	123	B	437	
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	21.4	B	158	B	18.7	B	25.4	B	29.8	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.76	B	0.54	B
CALCIUM	8350	R	1910	B	237	B	2230	B	7850	R
CHROMIUM	1.9	B	1.0	U	1.0	U	1.0	U	1.0	U
COBALT	2.2	U	2.6	B	2.2	U	2.2	U	2.2	U
COPPER	114	J	525	J	352	J	436	J	64.6	J
IRON	190		193		854		160		483	
LEAD	1.7	U	18.2		4.3		10.2		4.5	
MAGNESIUM	2560	B	2580	B	273	B	1230	B	3380	B
MANGANESE	19.2		17.0		11.7	B	15.2		8.9	B
MERCURY	0.29		0.10	U	0.10	U	0.10	U	0.10	U
NICKEL	2.5	U	2.5	U	2.5	U	3.1	B	2.5	U
POTASSIUM	777	B	2120	B	478	B	914	B	1340	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	4100	B	17000	R	1520	B	4440	B	15700	R
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	7.5	B	10.6	B	30.6		68.6		18.9	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

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Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC99
MONROE TWP GROUND WATER CONTAM
SENTIN

Sample Number :	MBTD30		MBTD40		MBTD09A		IDL			
Sampling Location :	MGC-9907-TW82		MGC-9907-TW92		MGC-9907-TW61					
Matrix :	Water		Water		Water		Water			
Units :	ug/L		ug/L		ug/L		ug/L			
Date Sampled :	07/28/1999		07/28/1999		07/28/1999					
Time Sampled :	17:08		17:15		12:15					
%Solids :	0.0		0.0		0.0					
Dilution Factor :	1.0		1.0		1.0		1.0			
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	103	B	121	B			12.0			
ANTIMONY	3.0	UJ	3.0	UJ	123	J	3.0			
ARSENIC	3.0	U	3.0	U			3.0			
BARIUM	21.1	B	23.0	B			0.70			
BERYLLIUM	0.40	U	0.40	U			0.40			
CADMIUM	0.50	U	0.50	U			0.50			
CALCIUM	239	B	243	B			12.6			
CHROMIUM	1.0	U	1.0	U			1.0			
COBALT	2.2	U	2.2	U			2.2			
COPPER	94.7	J	88.9	J			2.5			
IRON	178		169				18.8			
LEAD	2.3	B	3.8				1.7			
MAGNESIUM	290	B	312	B			14.4			
MANGANESE	11.8	B	12.0	B			0.60			
MERCURY	0.10	U	0.10	U			0.10			
NICKEL	2.5	U	2.5	U			2.5			
POTASSIUM	449	B	457	B			22.9			
SELENIUM	2.3	U	2.3	U			2.3			
SILVER	1.4	U	1.4	U			1.4			
SODIUM	1590	B	1580	B			153			
THALLIUM	3.3	U	3.3	U			3.3			
VANADIUM	1.4	U	1.4	U			1.4			
ZINC	30.9		30.9				2.4			
CYANIDE	N/A		N/A		N/A		N/A			

MONROE TWP

CASE # 27201
SDG # MBTC9

MTG-3.200165

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: _____ DATE: 1-31-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1-31-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1/31/92
Robert Runyon, Chief
Monitoring Management Branch

2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a log the reviews completed to include: a. date of start of case rev

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MWB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

MTG-3.200167

3.0 Data Completeness
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines c October 1, 1989.

6.0 SMO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 Record of Communication - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 Rounding off numbers - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[✓]	___	___
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[✓]	___	___
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[✓]	___	___
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[✓]	___	___
Legible?	[✓]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[✓]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	___	___
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[✓]	___	___
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]	___	___
(b) Form I's?	[✓]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

A.1.6 Form I to IX	Yes	No	N/A
A.1.6.1 Are all the Form I through Form IX labeled with:			
Laboratory name?	[✓]	___	___
Case/SAS number?	[✓]	___	___
EPA sample No.?	[✓]	___	___
SDG No.?	[✓]	___	___
Contract No.?	[✓]	___	___
Correct units?	[✓]	___	___
Matrix?	[✓]	___	___

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	[✓]	___	___
(b) all analytes analyzed by GFAA?	[ ]	___	✓
(c) all analytes analyzed by AA Flame?	[ ]	___	✓
(d) Mercury?	[✓]	___	___
(e) Cyanide?	[ ]	___	✓

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

			YES	NO	N/A
A.1.7	Raw Data				
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?		[✓]		
	Digestion Log for furnace AA Form XIII present?		[ ]		✓
	Distillation Log for mercury Form XIII present?		[✓]		
	Distillation Log for cyanides Form XIII present?		[ ]		✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?		[✓]		
	*Weights, dilutions and volumes used to obtain values.				
	Percent solids calculation present for soils/sediments?		[ ]		✓
	Are preparation dates present on sample preparation logs/bench sheets?		[✓]		
A.1.7.2	Measurement read out record present?	ICP	[✓]		
		Flame AA	[ ]		✓
		Furnace AA	[ ]		✓
		Mercury	[✓]		
		Cyanides	[ ]		✓
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?		[✓]		
	Legible?		[✓]		
	Properly Labeled?		[✓]		

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

Title: Evaluation of Metals for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.8	Holding Times - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[✓]	___
	Cyanide distillation (14 days). . . . . exceeded?	___	[ ]	✓
	Other Metals analysis (6 months). . . . exceeded?	___	[✓]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	___	[✓]	___
	Cyanides Analysis <12?	___	[ ]	✓
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	Form I (Final Data)			
A.1.9.1	Are all Form I's present and complete?	[✓]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[✓]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[ ]	___	✓
	Are all "less than IDL" values properly coded with "U"?	[✓]	___	___

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
*Revision: 11

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[✓]	___	___
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]	___	___
	Was a brief physical description of samples given on Form I's?	[✓]	___	___
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	___	[✓]	___
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]	___	___
	Is record of 5 point calibration present for Hg analysis?	[✓]	___	___
	Is record of 4 point calibration present for:			
	Flame AA?	[___]	___	[✓]
	Furnace AA?	[___]	___	[✓]
	Cyanides?	[___]	___	[✓]
	Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses?	[✓]	___	___
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	___	[✓]	___
	Cyanide Analysis?	___	[___]	✓
	Atomic Absorption Analysis?	___	[___]	✓

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[___]	___	✓

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 Form II A (Initial and Continuing Calibration Verification) -

A.1.11.1	Present and complete for every metal and cyanide?	[✓]	___	___
	Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-110%R?	[✓]	___	___
	Hg - 80-120%R?	[✓]	___	___
	Cyanides- 85-115%R?	[___]	___	✓

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	—	—
Was ICV for cyanides distilled?	[ ]	—	✓
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 Form II B (CRDL Standards for AA and ICP) -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	[✓]	—	—
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[ ]	—	✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	—	—
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[✓]	___	___
	ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3	Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
	Are CRA and CRI standards within control limits:			
	Metals 80 - 120%R?	[✓]	___	___
	Is mid-range standard within control limits:			
	Cyanide 80 - 120%R?	[___]	___	✓
	ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.			
	Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.			
A.1.13	Form III (Initial and Continuing Calibration Blanks)			
A.1.13.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[✓]	___	___
	each batch of digested samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data ≤10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[✓]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	✓
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[___]	___	✓
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[✓]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	Form IV (ICP Interference Check Sample)			
A.1.15.1	Present and complete?	[✓]	___	___
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[✓]	*	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	✓

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[✓]	—	—
	each matrix type?	[✓]	—	—
	each conc. range (i.e. low, med., high)?	[✓]	—	—
	For both AA and ICP when both are used for the same analyte?	[ ]	—	✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	—	[✓]	—
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[ ]	✓	—
	If no, is sample concentration greater than or equal to four times spike concentration?	[ ]	✓	—

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	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[✓]		
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 Aqueous

Are any spike recoveries:

(a) less than 30%?		[✓]	
(b) between 30-74%?	✓	[ ]	
(c) between 126-150%?		[✓]	
(d) greater than 150%?		[✓]	

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?		[ ]	✓
(b) between 10-74%?		[ ]	✓
(c) between 126-200%?		[ ]	✓
(d) greater than 200%?		[ ]	✓

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	Form VI (Lab Duplicates)			
A.1.17.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[✓]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	✓
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

YES NO N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? ___ [ ] ___

Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? ___ [ ] ___

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :

> 100%? ___ [ ] ___

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :

> 2x*CRDL? ___ [ ] ___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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	YES	NO	N/A

ACTION: If yes, flag the associated data as estimated.

A.1.18 Field Duplicates

A.1.18.1 Were field duplicates analyzed? [✓] ___ ___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? ___ [✓] ___

Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? ___ [✓] ___

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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	YES	NO	N/A

A.1.18.3 Soil/Sediment

Circle all values on self prepared Form VI for field duplicates that are:

RPD >100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) :

>100%? ___ [___] ✓

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL):

>2x *CRDL? ___ [___] ✓

ACTION: If yes, flag the associated data as estimated.

A.1.19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

A.1.19.1 Was one LCS prepared and analyzed for:

each SDG? [✓] ___ ___

each batch samples digested/distilled? [✓] ___ ___

both AA and ICP when both are used for the same analyte? [___] ___ ✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.19.2	Aqueous LCS			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	___	[V]	___
	between 50% and 79%?	___	[V]	___
	between 121% and 150%?	___	[ ]	___
	greater than 150%?	___	[ ]	___
	ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.			
A.1.19.3	Solid LCS			
	NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J). 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.			
	Is LCS "Found" value higher than the control limits on Form VII?	___	[ ]	✓
	ACTION: If yes, qualify all associated positive data as estimated.			
	Is LCS "Found" value lower than the Control limits on Form VII?	___	[ ]	✓
	ACTION: If yes, qualify all associated data as estimated.			

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		YES	NO	N/A
A.1.20	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for:			
	each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med.)?	[✓]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[✓]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[✓]	___	___
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	✓	[ ]	___
	≥ 100%?	✓	[ ]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	Furnace Atomic Absorbtion (AA) QC Analysis			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[ ]		
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[ ]		
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[ ]		
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?		[ ]	
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

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		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	Form VIII (Method of Standard Addition Results)			
A.1.22.1	Present?	[__]	__	✓
	If no, is any Form I result coded with "S" or a "+"?	__	[__]	✓
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	__	[__]	✓
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	__	[__]	✓
	Is coefficient of correlation for MSA less than 0.995?	__	[__]	✓
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	__	[__]	✓
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[__]	__	✓
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

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		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[___]	✓
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	___

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[ ]		✓

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 Form X, XI, XII (Verification of Instrumental Parameters).

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[✓]		
ICP Interelement Correction Factors (annually)?	[✓]		
ICP Linear Ranges (quarterly)?	[✓]		

ACTION: If no, contact TPO of the lab.

A.1.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[✓]		
all the instruments used?	[✓]		
For both AA and ICP when both are used for the same analyte?	[ ]		✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?		[ ]	
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[ ]		

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

A.1.25.3 Form XI (Linear Ranges)

	YES	NO	N/A
A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[✓]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	✓

ACTION: If no, flag the result reported on Form I as estimated(J).

A.1.26 Percent Solids of Sediments

	YES	NO	N/A
A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[___]	✓
< 10%?	___	[___]	✓

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTC99	23272S
MBTD07	23273S
MBTD08	23274S
MBTD09	23275S
MBTD09D	23275S2
MBTD09S	23275DS
MBTD10	23276S
MBTD11	23277S
MBTD12	23278S
MBTD13	23279S
MBTD14	23280S
MBTD15	23281S
MBTD16	23282S
MBTD17	23283S
MBTD18	23284S
MBTD19	23285S
MBTD20	23286S
MBTD25	23287S
MBTD27	23288S
MBTD29	23289S

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: Barium, copper, magnesium and potassium are estimated due to possible matrix interferences. The cooler temperatures measured 3.5°C & 4.5°C.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: BARilgwe

Date: 8/9/99 Title: [signature]

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Name: SENTINEL INC. Contract: 68-D5-0169

Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTD30	23290S
MBTD40	23291S

re ICP interelement corrections applied? Yes/No YES
re ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

mments:

certify that this data package is in compliance with the terms and onditions of the contract, both technically and for completeness, for ther than the conditions detailed above. Release of the data contained n this hardcopy data package and in the computer-readable data submitted n floppy diskette has been authorized by the Laboratory Manager or the anager's designee, as verified by the following signature.

ignature: [signature] Name: BAKilgue

ate: 8/9/99 Title: QAOfcr

2

MTG-3.200193

EPA SAMPLE NO.

MBTC99

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23272S

Level (low/med): LOW Date Received: 07/29/99

% 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	373			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	7.0	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1040	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	77.7		E J	P
7439-89-6	Iron	243			P
7439-92-1	Lead	11.3			P
7439-95-4	Magnesium	448	B	E	P
7439-96-5	Manganese	8.5	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	537	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1660	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	93.6			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
MBTD07

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23273S

Level (low/med): LOW Date Received: 07/29/99

% 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	567			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	132	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	883	B		P
7440-47-3	Chromium	1.2	B		P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	204		E	P
7439-89-6	Iron	118			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	1750	B	E	P
7439-96-5	Manganese	22.1			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	5.5	B		P
7440-09-7	Potassium	1190	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	~~8910~~			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	21.2			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD08

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23274S

Level (low/med): LOW Date Received: 07/29/99

% 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	185	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	70.1	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	3640	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	185		E	P
7439-89-6	Iron	94.9	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	3090	B	E	P
7439-96-5	Manganese	10.6	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1120	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	2880	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	5.3	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD09

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23275S

Level (low/med): LOW Date Received: 07/29/99

% 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	109	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	43.8	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	392	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	181		E	P
7439-89-6	Iron	66.0	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	1450	B	E	P
7439-96-5	Manganese	3.6	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1390	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1640	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	21.2			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

60

MTG-3.200197

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD10

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23276S

Level (low/med): LOW Date Received: 07/29/99

% 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	351			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	151	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1750	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.8	B		P
7440-50-8	Copper	349		E J	P
7439-89-6	Iron	140			P
7439-92-1	Lead	17.2			P
7439-95-4	Magnesium	2500	B	E	P
7439-96-5	Manganese	15.8			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	2010	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	~~16100~~			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	8.8	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

7

U.S. EPA - CLP
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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD11

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23277S

Level (low/med): LOW Date Received: 07/29/99

% 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	235			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	32.6	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	608	B		P
7440-47-3	Chromium	1.4	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	336		E J	P
7439-89-6	Iron	175			P
7439-92-1	Lead	3.0	B		P
7439-95-4	Magnesium	1040	B	E	P
7439-96-5	Manganese	4.5	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1030	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1850	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	17.1	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD12

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23278S

Level (low/med): LOW Date Received: 07/29/99

% 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	125	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	14.1	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	477	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	11.9	B	E	P
7439-89-6	Iron	108			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	449	B	E	P
7439-96-5	Manganese	3.4	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	634	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1860	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	345			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD13

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23279S

Level (low/med): LOW Date Received: 07/29/99

% 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	397			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	116	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2340	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	149		E J	P
7439-89-6	Iron	655			P
7439-92-1	Lead	4.6			P
7439-95-4	Magnesium	5100		E J	P
7439-96-5	Manganese	28.8			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	2370	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	~~20100~~			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	17.8	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD14

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23280S

Level (low/med): LOW Date Received: 07/29/99

% 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	260			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	20.8	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	1.3	B		P
7440-70-2	Calcium	1140	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	12.5	B	E	P
7439-89-6	Iron	597			P
7439-92-1	Lead	4.4			P
7439-95-4	Magnesium	494	B	E	P
7439-96-5	Manganese	9.0	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1410	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	2170	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	18.8	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD15

Name: SENTINEL INC. Contract: 68-D5-0169

Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23281S

Level (low/med): LOW Date Received: 07/29/99

% 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	119	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	0.74	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	130	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	2.5	U	E	P
7439-89-6	Iron	33.3	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	14.4	U	E	P
7439-96-5	Manganese	0.62	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	218	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	~~33700~~			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	3.5	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200203

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD16

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23282S

Level (low/med): LOW Date Received: 07/29/99

% 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	256			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	222		E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	4060	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	4.7	B		P
7440-50-8	Copper	29.1		E	P
7439-89-6	Iron	149			P
7439-92-1	Lead	11.4			P
7439-95-4	Magnesium	3340	B	E	P
7439-96-5	Manganese	63.7			P
7439-97-6	Mercury	10.0			CV
7440-02-0	Nickel	2.8	B		P
7440-09-7	Potassium	2730	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	~~11700~~			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	5.9	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD17

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23283S

Level (low/med): LOW Date Received: 07/29/99

% 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	198	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	183	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	~~18600~~			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	28.4		E J	P
7439-89-6	Iron	40.0	B		P
7439-92-1	Lead	3.8			P
7439-95-4	Magnesium	17100		E J	P
7439-96-5	Manganese	8.5	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	2200	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	~~14900~~			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	5.6	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200205

EPA SAMPLE NO.

MBTD18

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23284S

Level (low/med): LOW Date Received: 07/29/99

% 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	337			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	94.0	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2000	B		P
7440-47-3	Chromium	1.4	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	15.2	B	E	P
7439-89-6	Iron	285			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	3390	B	E	P
7439-96-5	Manganese	17.8			P
7439-97-6	Mercury	0.60			CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1700	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	~~7820~~			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	10.5	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.
MBTD19

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23285S

Level (low/med): LOW Date Received: 07/29/99

% 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	256			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	21.4	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	~~8350~~			P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	114		E J	P
7439-89-6	Iron	190			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	2560	B	E	P
7439-96-5	Manganese	19.2			P
7439-97-6	Mercury	0.29			CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	777	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	4100	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	7.5	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD20

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23286S

Level (low/med): LOW Date Received: 07/29/99

% 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	337			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	158	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1910	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.6	B		P
7440-50-8	Copper	525		E	P
7439-89-6	Iron	193			P
7439-92-1	Lead	18.2			P
7439-95-4	Magnesium	2580	B	E	P
7439-96-5	Manganese	17.0			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	2120	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	~~17000~~			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	10.6	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO

MBTD25

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23287S

Level (low/med): LOW Date Received: 07/29/99

% 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	120	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	18.7	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	237	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	352		E J	P
7439-89-6	Iron	854			P
7439-92-1	Lead	4.3			P
7439-95-4	Magnesium	273	B	E	P
7439-96-5	Manganese	11.7	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	478	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1520	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	30.6			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200209

EPA SAMPLE NO.

MBTD27

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23288S

Level (low/med): LOW Date Received: 07/29/99

% 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	123	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	25.4	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.76	B		P
7440-70-2	Calcium	2230	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	436		E J	P
7439-89-6	Iron	160			P
7439-92-1	Lead	10.2			P
7439-95-4	Magnesium	1230	B	E	P
7439-96-5	Manganese	15.2			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.1	B		P
7440-09-7	Potassium	914	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	4440	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	68.6			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO

INORGANIC ANALYSIS DATA SHEET

MBTD29

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23289S

Level (low/med): LOW Date Received: 07/29/99

% 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	437			P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	29.8	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.54	B		P
7440-70-2	Calcium	~~7850~~			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	64.6		E J	P
7439-89-6	Iron	483			P
7439-92-1	Lead	4.5			P
7439-95-4	Magnesium	3380	B	E	P
7439-96-5	Manganese	8.9	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1340	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	~~15700~~			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	18.9	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200211

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD30

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23290S

Level (low/med): LOW Date Received: 07/29/99

% 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	103	B			P
7440-36-0	Antimony	3.0	U	N	J	P
7440-38-2	Arsenic	3.0	U			P
7440-39-3	Barium	21.1	B	E		P
7440-41-7	Beryllium	0.40	U			P
7440-43-9	Cadmium	0.50	U			P
7440-70-2	Calcium	239	B			P
7440-47-3	Chromium	1.0	U			P
7440-48-4	Cobalt	2.2	U			P
7440-50-8	Copper	94.7		E	J	P
7439-89-6	Iron	178				P
7439-92-1	Lead	2.3	B			P
7439-95-4	Magnesium	290	B	E		P
7439-96-5	Manganese	11.8	B			P
7439-97-6	Mercury	0.10	U			CV
7440-02-0	Nickel	2.5	U			P
7440-09-7	Potassium	449	B	E		P
7782-49-2	Selenium	2.3	U			P
7440-22-4	Silver	1.4	U			P
7440-23-5	Sodium	1590	B			P
7440-28-0	Thallium	3.3	U			P
7440-62-2	Vanadium	1.4	U			P
7440-66-6	Zinc	30.9				P
	Cyanide					NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD40

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC99

Matrix (soil/water): WATER Lab Sample ID: 23291S

Level (low/med): LOW Date Received: 07/29/99

% 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	121	B		P
7440-36-0	Antimony	3.0	U	N J	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	23.0	B	E	P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	243	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	88.9		E J	P
7439-89-6	Iron	169			P
7439-92-1	Lead	3.8			P
7439-95-4	Magnesium	312	B	E	P
7439-96-5	Manganese	12.0	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	457	B	E	P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1580	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	30.9			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Sentinel Contract No.: 68-D5-0169

Lab Code: Sentin Case No.: 27237

Full Sample Analysis Price in Contract: MBTC99

SDG No./First Sample in SDG: ___ Sample Receipt Date: 7/29/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: MBTD40 Sample Receipt Date: 7/29/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBTC99	11	MBTD16
2	MBTD07	12	17
3	08	13	18
4	09	14	19
5	10	15	20
6	11	16	25
7	12	17	27
8	13	18	29
9	14	19	30
10	✓ 15	20	✓ 40

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Amanda B Tossett
Signature

7/29/99
Date

11C

MTG-3.200215

RECORD OF COMMUNICATION

TO: Smita Sumbaly

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: August 27, 1999

SUBJECT: QUALITY ASSURED DATA

MESSAGE

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

(1) Monroe Township Groundwater Contamination
Case # 27237 Semtin Inorganic
SDG # MBTC71 20 Waters

* Additional SDG's To Follow

REPLY BY: _____

SIGNATURE: Janet Trotter DATE: 7 September 1999

DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file

RECEIVED
AUG 30 1999

MTG-3.200216

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

RECEIVED
AUG 25 1999.

DATE: AUG. 11, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE MONROE TWP. G.W. CONTAM | CASE# 27237/SDG# MBTC71

CONTRACTOR STARTW | #SAMPLES | MATRIX

PHASE IA | | |

LAB SENTIN | 20 | WATER

TURN-AROUND-TIME 14 DAYS | FRACTION TAL ONLY

CERCLIS ID # NJD980769699 | SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	8-10-99
John Bulich	8-11-99	Charles M. Adams	8/16/99
Charles M. Adams	8/19/99	J Bulich (DCR)	8-19-99
J Bulich (DCR)	8/19/99	George Kaiser for EHS	8/19/99
Hanif Sheikh	8/25/99	DCR J.T	8/25/99

RECEIVED
AUG 30 1999

(over for instructions) revised 3/99

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

Case #	27237	Site:	Monroe Twp. G.W. Contamination	Soil:	00
SDG #	MBTC71	Lab:	Sentinel	Water:	20
Contractor:	STARTW/TA	Reviewer:	C. M. Alaimo/ESAT	Other:	0

A.2.1. Validation flags- The following flags have been applied in red by the data validator and must be considered by the data user.

J - This flag indicates the result qualified as estimated.

Red-Line - A red-line drawn through a sample result indicates unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0

A.2.2. The data assessment is given below and on the attached sheets.

This package consists of twenty (20) aqueous samples collected from the Monroe Twp Groundwater Contamination site between 07/26/99 and 07/27/99 for TAL metals analysis. QC was performed on sample MBTC69. Samples MBTC70/MBTC80 were identified as a field duplicate pair. All holding times were met.

CRDL

For Pb and Se, the CRI_1 % recoveries fell between 121-150% requiring estimation of positive results within the effected range. Please note that Se was not affected.

J—>Pb in MBTC69.

MATRIX SPIKE RECOVERY

For Sb (62.4%), the matrix spike recovery fell between 30-74% when the initial sample results were less than 4x the spike amount, therefore all associated data were estimated. For Hg (126.0%), the matrix spike recovery fell between 126.)% and 150% when the initial sample results were less than 4x the spike amount, therefore all positive associated data were estimated. Please note that all mercury values were nondetect.

J—> Sb in MBTC67, MBTCF9, MBTC71—>88.

ICP SERIAL DILUTION

For Al, Ca, & Mn, the %Ds were >10% but less than 100% when the initial sample value was ≥ 10xIDL therefore the associated data ≥ CRDL (or 10xIDL when 10xIDL ≥ CRDL) were estimated.

J—>Al in MBTC83 MBTC86
J—>Ca in MBTC74 & MBTC76
J—>Mn in MBTC67, MBTC69, MBTC71, MBTC72, MBTC84 & MBTC87.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

A.2.3. Contract-Problems/Non-Compliance
NONE

MMB Reviewer:_____ Date:_____
Signature

Contractor Reviewer: C M A [illegible] Date: 8/19/99
Signature

Verified by:_____ Date:_____
Signature

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SMO Report)

Date: Jan. 1992
Number: HW-2
Revision: 11

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 27237

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: N/A

CMA
Reviewer's Initial

8/9/99
Date

DPO MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-4312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York,
ESI, Skinner, TMA

2. USEPA Region II ESD
Woodbridge Avenue
Edison, NJ 08837
Lisa Gamos Vidulich
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nasco
ETC, Gadson, EMS, Galson, ICM

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Hitman, JTC, MACK, VERSAR,
ITAS, Weston, MMES, EA Engineering,
Subject Tech., KEYPA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
CompuChem, EPS, ESE, PBS&J,
Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
(312) 353-9087
IL, IN, MI, MN, OH, WI
NLE, TAI/ENG

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
Houston, TX 77074
David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, EIS, Glocbem
Research, Inc., SPL Inc., SWRI,
Allied, KEYTX, EIRA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3881
IO, KS, NB, MO
Wilson, Kansas City Scientific
Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
Box 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSMRI, RMAL, Data Chem., Centef

9. USEPA Region XI (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
(415) 974-0924
AZ, CA, HI, NV, American Samoa,
Guam Trust Territories of Pacific
Islands, Wake Island
ALI, CAL Weston, S-Cubed, IT_CA,
Vegas

10. USEPA Region X Laboratory
P.O. Box 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Laucks Testing Labs, Century Testing
Labs (For VOA Only), Weyerhauser Co.,
Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
Box 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. Box 818
Alexandria, VA 22313

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Date: Jan. 1992
Number: HW-2
Revision: 11

Inorganic Analysis

INORGANIC REGIONAL DATA ASSESSMENT Region II

CASE NO. 27137 SITE Monroe Twp GW Contamination

LABORATORY Sentinel NO. OF SAMPLES/ MATRIX 20 w

SDG# MBTC71 REVIEWER (IF NOT ESD)

SOW# ILM4.0 REVIEWER'S NAME CM Aliano

DPO: ACTION FYI COMPLETION DATE 8/19/91

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES	O	N/A	O	N/A
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Summary Form (Inorganics)

Date: Feb. 1990
Number: HW-2
Revision: 10

MTG-3.200222

SDG # MATC71

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: TAL Date: 8/19/99 Case #: 27237

Site: Monroe Twp GW Contamination Lab Name: Sentinel

Reviewer's Initials: _____ Number of Samples: 20 w

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP													440	0
Flame AA														
Furnace AA														
Mercury													20	0
Total													460	0
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

		CRDL												
ICP		1				20					10		440	31
Flame AA														
Furnace AA														
Mercury													20	
Total		1				20					10		460	31
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

U.S. EPA – CLP

6
FIELD DUPLICATES

EPA SAMPLE NO.

MBTC70	MBTC7

Lab Name: Sentinel Inc. Contract: 68-D5-0169

Lab Code: Sentin Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): water Level (low/med): low

% Solids Sample: 0 % Solids Duplicate: 0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Action Limit	Sample (S) Concentration	C	Field Duplicate (D) Concentration	C	RPD	DIFF	Q	M
Aluminum		59.9000	B	18.8000	B	—	—		P
Antimony		3.0000	U	3.0000	U	—	—		P
Arsenic		3.0000	U	3.0000	U	—			F
Barium		0.7000	U	0.7000	U	—	—		P
Beryllium		0.4000	U	0.4000	U	—	—		P
Cadmium		0.5000	U	0.5000	U	—	—		P
Calcium		105.0000	B	110.0000	B	—	—		P
Chromium		1.0000	U	1.0000	U	—			P
Cobalt		2.2000	U	2.2000	U	—	—		P
Copper	50%	154.0000		183.0000		17.2	—		F
Iron		34.4000	B	15.5000	U	—	—		P
Lead	3	1.7000	U	4.2000		—	2.50		P
Magnesium		19.5000	B	14.4000	U	—	—		P
Manganese		0.6000	U	0.6000	U	—	—		P
Mercury		0.1000	U	0.1000	U	—	—		CV
Nickel		3.4000	B	2.5000	U	—	—		P
Potassium		130.0000	B	115.0000	B	—	—		P
Selenium		2.3000	U	2.3000	U	—	—		F
Silver		1.4000	U	1.4000	U	—	—		P
Sodium	50%	30500.0000		30000.0000		1.7	—		P
Thallium		3.3000	U	3.3000	U	—	—		F
Vanadium		1.4000	U	1.4000	U	—	—		P
Zinc		7.5000	B	7.7000	B	—	—		P
Cyanide									NR

Analytical Results (Qualified Data)

Case #: 27237 SDG : MBTC71
Site : MONROE TWP GROUND WATER CONTAM
Lab. : SENTIN
Reviewer :
Date :

Number of Soil Samples : 0
Number of Water Samples : 20

Sample Number :	MBTC67		MBTC69		MBTC69D		MBTC69S		MBTC71	
Sampling Location :	MGC-9907-TW19		MGC-9907-TW21		MGC-9907-TW21		MGC-9907-TW21		MGC-9907-TW23	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/27/1999		07/27/1999		07/27/1999		07/27/1999		07/26/1999	
Time Sampled :	10:08		10:11		10:11		10:11		16:35	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	12.0	U	180	B	206		2260		38.0	B
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	312		3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	42.5		3.0	U
BARIUM	20.0	B	418		435		2620		148	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	52.2		0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	53.6		0.50	U
CALCIUM	4550	B	1530	B	1240				576	B
CHROMIUM	1.0	U	1.0	U	1.0	U	211		1.0	U
COBALT	2.2	U	4.2	B	4.5		534		2.2	U
COPPER	52.4		196		204		472		77.3	
IRON	46.3	B	20.5	B	28.9		1040		1220	
LEAD	1.7	U	3.3	J	4.0		25.1		6.7	
MAGNESIUM	1950	B	3550	B	3720				1620	B
MANGANESE	27.9	J	33.5	J	34.9		568		45.9	J
MERCURY	0.10	U	0.10	U	0.10	U	1.3		0.10	U
NICKEL	2.5	U	6.0	B	6.1		530		2.7	B
POTASSIUM	439	B	2050	B	2120				1740	B
SELENIUM	2.3	U	2.3	U	2.3	U	11.9		2.3	B
SILVER	1.4	U	1.4	U	1.4	U	52.7		1.4	U
SODIUM	2650	B	7990		8230				15400	
THALLIUM	3.3	U	3.3	U	3.3	U	52.9		3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	526		1.4	U
ZINC	21.8		19.5	B	12.5		547		345	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC71
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200225

Sample Number :	MBTC72		MBTC73		MBTC74		MBTC75		MBTC76	
Sampling Location :	MGC-9907-TW24		MGC-9907-TW25		MGC-9907-TW26		MGC-9907-TW27		MGC-9907-TW28	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/27/1999		07/27/1999		07/27/1999		07/27/1999		07/27/1999	
Time Sampled :	10:15		10:30		10:45		10:57		12:09	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	139	B	149	B	71.1	B	95.0	B	143	B
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	5.3	B	45.6	B	6.8	B	61.7	B	29.2	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	1050	B	760	B	19800	J	1260	B	5380	J
CHROMIUM	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
COBALT	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
COPPER	16.2	B	87.7		2.5	U	80.1		269	
IRON	3580		78.8	B	258		213		214	
LEAD	3.8		5.6		1.7	U	17.4		3.2	
MAGNESIUM	359	B	1060	B	741	B	1970	B	659	B
MANGANESE	35.1	J	6.5	B	14.2	B	6.8	B	13.5	B
MERCURY	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
NICKEL	2.5	U	2.5	U	2.5	U	2.8	B	2.5	U
POTASSIUM	488	B	896	B	588	B	1320	B	722	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	1320	B	5110		1390	B	11800		1920	B
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	29.4		8.4	B	8.7	B	25.5		13.1	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
SDG : MBTC71
Site : MONROE TWP GROUND WATER CONTAM
Lab. : SENTIN
Reviewer :
Date :

MTG-3.200226

Sample Number :	MBTC77		MBTC78		MBTC79		MBTC80		MBTC81	
Sampling Location :	MGC-9907-TW29		MGC-9907-TW30		MGC-9907-TW31		MGC-9907-TW32		MGC-9907-TW33	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/27/1999		07/27/1999		07/27/1999		07/26/1999		07/27/1999	
Time Sampled :	12:30		10:35		11:07		17:00		11:10	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	12.0	U	26.4	B	18.8	B	18.8	B	27.8	B
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	3.6	B	20.0	B	31.9	B	0.70	U	24.4	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	792	B	1660	B	774	B	110	B	1280	B
CHROMIUM	1.0	U	1.5	B	1.0	U	1.0	U	1.0	U
COBALT	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
COPPER	43.4		267		72.5		183		284	
IRON	34.0	B	29.6	B	201		18.8	U	39.3	B
LEAD	3.4		8.6		4.9		4.2		17.5	
MAGNESIUM	102	B	278	B	391	B	14.4	U	874	B
MANGANESE	1.8	B	1.7	B	2.8	B	0.60	U	4.3	B
MERCURY	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
NICKEL	2.5	U	2.5	U	2.5	U	2.5	U	2.5	U
POTASSIUM	244	B	452	B	708	B	115	B	1200	B
SELENIUM	2.3	U	2.7	B	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	26400		1200	B	1400	B	30000		1550	B
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	14.6	B	34.1		16.9	B	7.7	B	24.2	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC71
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200227

Sample Number :	MBTC82		MBTC83		MBTC84		MBTC85		MBTC86	
Sampling Location :	MGC-9907-TW34		MGC-9907-TW35		MGC-9907-TW36		MGC-9907-TW37		MGC-9907-TW38	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/27/1999		07/27/1999		07/27/1999		07/27/1999		07/27/1999	
Time Sampled :	11:00		11:15		12:36		12:03		14:15	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	99.1	B	266	J	190	B	12.0	U	1240	J
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	4.8	B	9.7	B	181	B	23.7	B	13.8	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.64	B	0.50	U	0.50	U
CALCIUM	1970	B	1150	B	2170	B	799		1800	B
CHROMIUM	1.5	B	1.0	U	1.1	B	1.0	U	1.0	U
COBALT	2.2	U	2.2	U	2.2	U	2.2	U	2.2	U
COPPER	2.5	U	9.0	B	102		98.4		18.3	B
IRON	1910		270		171		41.9	B	1080	
LEAD	3.0	B	2.3	B	37.6		6.8		16.3	
MAGNESIUM	289	B	488	B	4790	B	437	B	801	B
MANGANESE	14.2	B	10.5	B	32.5	J	2.7	B	14.8	B
MERCURY	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
NICKEL	2.5	U	2.5	U	3.5	B	2.5	U	3.3	B
POTASSIUM	509	B	548	B	4740	B	706	B	1380	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	1100	B	1450	B	9950		1710	B	2320	B
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	B	3.3	U
VANADIUM	1.4	U	1.4	B	1.4	U	1.4	U	2.9	B
ZINC	21.4		12.1	B	43.3		40.5		12.1	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
SDG : MBTC71
Site : MONROE TWP GROUND WATER CONTAM
Lab. : SENTIN
Reviewer :
Date :

MTG-3.200228

Sample Number :	MBTC87		MBTC88		MBTC69A		IDL			
Sampling Location :	MGC-9907-TW39		MGC-9907-TW40		MGC-9907-TW21					
Matrix :	Water		Water		Water		Water			
Units :	ug/L		ug/L		ug/L		ug/L			
Date Sampled :	07/27/1999		07/27/1999		07/27/1999					
Time Sampled :	14:40		15:20		10:11					
%Solids :	0.0		0.0		0.0					
Dilution Factor :	1.0		1.0		1.0		1.0			
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	178	B	12.0	U			12.0			
ANTIMONY	3.0	UJ	3.0	UJ	114	J	3.0			
ARSENIC	3.0	U	3.0	U			3.0			
BARIUM	219		9.0	B			0.70			
BERYLLIUM	0.40	U	0.40	U			0.40			
CADMIUM	0.50	U	0.50	U			0.50			
CALCIUM	2300	B	576				12.6			
CHROMIUM	1.0	U	1.0	U			1.0			
COBALT	2.8	B	2.2	U			2.2			
COPPER	60.9		112				2.5			
IRON	255		31.8	B			18.8			
LEAD	6.4		4.3				1.7			
MAGNESIUM	4620	B	346	B			14.4			
MANGANESE	19.8	J	1.6	B			0.60			
MERCURY	0.10	U	0.10	U			0.10			
NICKEL	3.3	B	2.5	U			2.5			
POTASSIUM	1070	B	337	B			22.9			
SELENIUM	2.5	B	2.3	U			2.3			
SILVER	1.4	U	1.4	U			1.4			
SODIUM	1780	B	1240	B			153			
THALLIUM	3.3	U	3.3	U			3.3			
VANADIUM	1.4	U	1.4	U			1.4			
ZINC	62.0		12.3				2.4			
CYANIDE	N/A		N/A		N/A		N/A			

Case # 4125

SDG: MBTC 71

MTG-3.200229

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: _____ DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1-31-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1/31/92
Robert Runyon, Chief
Monitoring Management Branch

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a log o the reviews completed to include: a. date of start of case revie

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 Data Completeness
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 SMO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 Record of Communication - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 Rounding off numbers - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/A
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[✓]	___	___
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[✓]	___	___
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[✓]	___	___
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[✓]	___	___
Legible?	[✓]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[✓]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	___	___
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[✓]	___	___
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]	___	___
(b) Form I's?	[✓]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
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A.1.6 Form I to IX	Yes	No	N/A
A.1.6.1 Are all the Form I through Form IX labeled with:			
Laboratory name?	[/]	___	___
Case/SAS number?	[/]	___	___
EPA sample No.?	[/]	___	___
SDG No.?	[/]	___	___
Contract No.?	[/]	___	___
Correct units?	[/]	___	___
Matrix?	[/]	___	___

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	[/]	___	/
(b) all analytes analyzed by GFAA?	[ ]	___	/
(c) all analytes analyzed by AA Flame?	[ ]	___	/
(d) Mercury?	[ ]	___	/
(e) Cyanide?	[ ]	___	/

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

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		YES	NO	N/A
A.1.7	Raw Data			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[✓]	___	___
	Digestion Log for furnace AA Form XIII present?	[___]	___	✓
	Distillation Log for mercury Form XIII present?	[✓]	___	___
	Distillation Log for cyanides Form XIII present?	[___]	___	✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[✓]	___	___
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[___]	___	✓
	Are preparation dates present on sample preparation logs/bench sheets?	[✓]	___	___
A.1.7.2	Measurement read out record present? ICP	[✓]	___	___
	Flame AA	[___]	___	✓
	Furnace AA	[___]	___	✓
	Mercury	[✓]	___	___
	Cyanides	[___]	___	✓
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[✓]	___	___
	Legible?	[✓]	___	___
	Properly Labeled?	[✓]	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

STANDARD OPERATING PROCEDURE

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		YES	NO	N/A
A.1.8	Holding Times - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[✓]	/
	Cyanide distillation (14 days). . . . . exceeded?	___	[ ]	/
	Other Metals analysis (6 months). . . . exceeded?	___	[/]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for:			
	Metals Analysis >2?	___	[✓]	___
	Cyanides Analysis <12?	___	[ ]	/
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	Form I (Final Data)			
A.1.9.1	Are all Form I's present and complete?	[/]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[/]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[ ]	___	/
	Are all "less than IDL" values properly coded with "U"?	[/]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[✓]	___	___
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]	___	___
	Was a brief physical description of samples given on Form I's?	[✓]	___	___
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	___	[✓]	___
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]	___	___
	Is record of 5 point calibration present for Hg analysis?	[✓]	___	___
	Is record of 4 point calibration present for:			
	Flame AA?	[___]	___	✓
	Furnace AA?	[___]	___	___
	Cyanides?	[___]	___	✓
	Is one calibration standard at the CRDL level for all AA and cyanides analyses?	[✓]	___	___
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

	YES	NO	N/A
A.1.10.2 Is correlation coefficient less than 0.995 for:			
Mercury Analysis?	___	[✓]	___
Cyanide Analysis?	___	[___]	/
Atomic Absorption Analysis?	___	[___]	/

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values? [___] ___ /

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 Form II A (Initial and Continuing Calibration Verification) -

A.1.11.1 Present and complete for every metal and cyanide? [✓] ___ ___

Present and complete for AA and ICP when both are used for the same analyte? [___] ___ /

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows.
Are all calibration standards (initial and continuing) within control limits:

Metals- 90-110%R? [✓] ___ ___

Hg - 80-120%R? [✓] ___ ___

Cyanides- 85-115%R? [___] ___ /

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			MTG-3.200239
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	—	—
Was ICV for cyanides distilled?	[ ]	—	✓
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 Form II B (CRDL Standards for AA and ICP) -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals?	[✓]	—	—
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[ ]	—	✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	—	—
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[✓]	___	___

ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".

A.1.12.3 Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.

Are CRA and CRI standards within control limits:				
	Metals 80 - 120%R?	[___]	✓	___
Is mid-range standard within control limits:				
	Cyanide 80 - 120%R?	[___]	___	✓

ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.

Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.

A.1.13	Form III (Initial and Continuing Calibration Blanks)			
A.1.13.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[✓]	___	___

		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[✓]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[✓]	___	___
	each batch of digested samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[ ]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[✓]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	✓
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[✓]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[✓]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	Form IV (ICP Interference Check Sample)			
A.1.15.1	Present and complete?	[✓]	___	___
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[✓]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[✓]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	___

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	✓	___

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[/]	___	___
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			
A.1.16.4 Aqueous Are any spike recoveries:			
(a) less than 30%?	___/	[/]	___
(b) between 30-74%?	___/	[___]	___
(c) between 126-150%?	___/	[___]/	___
(d) greater than 150%?	___	[/]	___
ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".			
A.1.16.5 Soil/Sediment Are any spike recoveries:			
(a) less than 10%?	___	[___]	___/
(b) between 10-74%?	___	[___]	___/
(c) between 126-200%?	___	[___]	___/
(d) greater than 200%?	___	[___]	___

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	Form VI (Lab Duplicates)			
A.1.17.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[✓]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	___
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

YES NO N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? ___ [/] ___

Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? ___ [/] ___

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :

> 100%? ___ [__] ___ /

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :

> 2x*CRDL? ___ [__] ___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

ACTION: If yes, flag the associated data as estimated.

A.1.18 Field Duplicates

A.1.18.1 Were field duplicates analyzed? [✓] ___ ___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL? ___ [✓] ___

Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL? ___ [✓] ___

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
A.1.18.3	Soil/Sediment Circle all values on self prepared Form VI for field duplicates that are: RPD >100%, or Difference > 2 x CRDL* Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) : >100%?	___	[__]	/
	Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL): >2x *CRDL?	___	[__]	/
	ACTION: If yes, flag the associated data as estimated.			
A.1.19	Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)			
A.1.19.1	Was one LCS prepared and analyzed for: each SDG?	[/]	___	___
	each batch samples digested/distilled?	[/]	___	___
	both AA and ICP when both are used for the same analyte?	[__]	___	/
	ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.			
	NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

A.1.19.2 Aqueous LCS

Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.

Is any LCS recovery:				
	less than 50%?	___	[ ]	___
	between 50% and 79%?	___	[ ]	___
	between 121% and 150%?	___	[ ]	___
	greater than 150%?	___	[ ]	___

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[ ]	___

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[ ]	___

ACTION: If yes, qualify all associated data as estimated.

		YES	NO	N/A
A.1.20	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for: each SDG?	[/]	___	___
	each matrix type?	[/]	___	___
	each concentration range (i.e. low, med.)?	[/]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[/]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[/]	___	___
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	___	[/]	___
	≥ 100%?	___	[/]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	Furnace Atomic Absorbtion (AA) QC Analysis			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[ ]		
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[ ]		
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[ ]		
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?		[ ]	
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	Form VIII (Method of Standard Addition Results)			
A.1.22.1	Present?	[ ]		/
	If no, is any Form I result coded with "S" or a "+"?		[ ]	
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?		[ ]	/
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?		[ ]	/
	Is coefficient of correlation for MSA less than 0.995?		[ ]	/
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?		[ ]	/
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[ ]		/
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

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		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[ ]		

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 Form X, XI, XII (Verification of Instrumental Parameters).

A.1.25.1 Is verification report present for:			
Instrument Detection Limits (quarterly)?	[/]		
ICP Interelement Correction Factors (annually)?	[/]		
ICP Linear Ranges (quarterly)?	[ ]		

ACTION: If no, contact TPO of the lab.

A.1.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)			
A.1.25.2.1 Are IDLs present for: all the analytes?	[/]		
all the instruments used?	[/]		
For both AA and ICP when both are used for the same analyte?	[ ]		

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?		[/]	
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[ ]		

	YES	NO	N/A
Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			
A.1.25.3 Form XI (Linear Ranges)			
A.1.25.3.1 Was any sample result higher than high linear range of ICP.	___	[✓]	___
Was any sample result higher than the highest calibration standard for non-ICP parameters?	___	[✓]	___
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[___]	___	✓
ACTION: If no, flag the result reported on Form I as estimated(J).			
A.1.26 Percent Solids of Sediments			
A.1.26.1 Are percent solids in sediment(s): < 50%?	___	[___]	✓
< 10%?	___	[___]	✓
ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).			
NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.			

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTC67	23202S
MBTC69	23203S
MBTC69D	23203S2
MBTC69S	23203DS
MBTC71	23182S
MBTC72	23204S
MBTC73	23205S
MBTC74	23206S
MBTC75	23207S
MBTC76	23208S
MBTC77	23209S
MBTC78	23210S
MBTC79	23211S
MBTC80	23183S
MBTC81	23212S
MBTC82	23213S
MBTC83	23214S
MBTC84	23215S
MBTC85	23216S
MBTC86	23217S

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: Calcium and Manganese are estimated due to possible matrix interferences. The cooler temperatures measured 3.5°, 3.5°, 6.0°, and 6.5°C.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: BARTGIVE

Date: 8/5/99 Title: QA Officer

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTC87	23218S
MBTC88	23219S

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: BAKIL Jore

Date: 8/5/89 Title: [illegible]

MTG-3.200259

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC67

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23202S

Level (low/med): LOW Date Received: 07/28/99

% 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	12.0	U		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	20.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	4550	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	52.4			P
7439-89-6	Iron	46.3	B		P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	1950	B		P
7439-96-5	Manganese	27.9		E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	439	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	2650	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	21.8			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200260

EPA SAMPLE NO.

MBTC68

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23203S

Level (low/med): LOW Date Received: 07/28/99

% 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	180	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	418			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1530	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	4.2	B		P
7440-50-8	Copper	196			P
7439-89-6	Iron	20.5	B		P
7439-92-1	Lead	3.3			P
7439-95-4	Magnesium	3550	B		P
7439-96-5	Manganese	33.5		E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	6.0	B		P
7440-09-7	Potassium	2050	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	7990			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	19.5	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200261

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC71

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23182S

Level (low/med): LOW Date Received: 07/27/99

% 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	38.0	B		P	J
7440-36-0	Antimony	3.0	U	N	P	
7440-38-2	Arsenic	3.0	U		P	
7440-39-3	Barium	148	B		P	
7440-41-7	Beryllium	0.40	U		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	576	B	E	P	
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	2.2	U		P	
7440-50-8	Copper	77.3			P	
7439-89-6	Iron	1220			P	
7439-92-1	Lead	6.7			P	
7439-95-4	Magnesium	1620	B		P	
7439-96-5	Manganese	45.9		E	P	J
7439-97-6	Mercury	0.10	U	N	CV	
7440-02-0	Nickel	2.7	B		P	
7440-09-7	Potassium	1740	B		P	
7782-49-2	Selenium	2.3	B		P	
7440-22-4	Silver	1.4	U		P	
7440-23-5	Sodium	15400			P	
7440-28-0	Thallium	3.3	U		P	
7440-62-2	Vanadium	1.4	U		P	
7440-66-6	Zinc	345			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC72

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23204S

Level (low/med): LOW Date Received: 07/28/99

% 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	139	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	5.3	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1050	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	16.2	B		P
7439-89-6	Iron	3580			P
7439-92-1	Lead	3.8			P
7439-95-4	Magnesium	359	B		P
7439-96-5	Manganese	35.1		E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	488	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1320	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	29.4			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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MTG-3.200263

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC73

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23205S

Level (low/med): LOW Date Received: 07/28/99

% 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	149	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	45.6	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	760	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	87.7			P
7439-89-6	Iron	78.8	B		P
7439-92-1	Lead	5.6			P
7439-95-4	Magnesium	1060	B		P
7439-96-5	Manganese	6.5	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	896	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	5110			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	8.4	B		P
	Cyanide				NR

J

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

7

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC74

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23206S

Level (low/med): LOW Date Received: 07/28/99

% 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	71.1	B		P	
7440-36-0	Antimony	3.0	U	N	P	J
7440-38-2	Arsenic	3.0	U		P	
7440-39-3	Barium	6.8	B		P	
7440-41-7	Beryllium	0.40	U		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	19800		E	P	J
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	2.2	U		P	
7440-50-8	Copper	2.5	U		P	
7439-89-6	Iron	258			P	
7439-92-1	Lead	1.7	U		P	
7439-95-4	Magnesium	741	B		P	
7439-96-5	Manganese	14.2	B	E	P	
7439-97-6	Mercury	0.10	U	N	CV	
7440-02-0	Nickel	2.5	U		P	
7440-09-7	Potassium	588	B		P	
7782-49-2	Selenium	2.3	U		P	
7440-22-4	Silver	1.4	U		P	
7440-23-5	Sodium	1390	B		P	
7440-28-0	Thallium	3.3	U		P	
7440-62-2	Vanadium	1.4	U		P	
7440-66-6	Zinc	8.7	B		P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200265

EPA SAMPLE NO.

MBTC75

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23207S

Level (low/med): LOW Date Received: 07/28/99

% 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	95.0	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	61.7	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1260	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	60.1			P
7439-89-6	Iron	213			P
7439-92-1	Lead	17.4			P
7439-95-4	Magnesium	1970	B		P
7439-96-5	Manganese	6.8	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.8	B		P
7440-09-7	Potassium	1320	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	11800			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	25.5			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200266

EPA SAMPLE NO.

MBTC76

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23208S

Level (low/med): LOW Date Received: 07/28/99

% 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	143	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	29.2	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	5380		E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	269			P
7439-89-6	Iron	214			P
7439-92-1	Lead	3.2			P
7439-95-4	Magnesium	659	B		P
7439-96-5	Manganese	13.5	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	722	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1920	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	13.1	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC77

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23209S

Level (low/med): LOW Date Received: 07/28/99

% 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	12.0	U		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	3.6	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	792	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	43.4			P
7439-89-6	Iron	34.0	B		P
7439-92-1	Lead	3.4			P
7439-95-4	Magnesium	102	B		P
7439-96-5	Manganese	1.8	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	244	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	26400			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	14.6	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC78

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23210S

Level (low/med): LOW Date Received: 07/28/99

% 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	26.4	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	20.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1660	B	E	P
7440-47-3	Chromium	1.5	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	267			P
7439-89-6	Iron	29.6	B		P
7439-92-1	Lead	8.6			P
7439-95-4	Magnesium	278	B		P
7439-96-5	Manganese	1.7	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	452	B		P
7782-49-2	Selenium	2.7	B		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1200	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	34.1			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200269

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC79

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23211S

Level (low/med): LOW Date Received: 07/28/99

% 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	18.8	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	31.9	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	774	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	72.5			P
7439-89-6	Iron	201			P
7439-92-1	Lead	4.9			P
7439-95-4	Magnesium	391	B		P
7439-96-5	Manganese	2.8	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	708	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1400	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	16.9	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC80

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23183S

Level (low/med): LOW Date Received: 07/27/99

% 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	18.8	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	0.70	U		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	110	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	183			P
7439-89-6	Iron	18.8	U		P
7439-92-1	Lead	4.2			P
7439-95-4	Magnesium	14.4	U		P
7439-96-5	Manganese	0.60	U	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	115	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	30000			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	7.7	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200271

EPA SAMPLE NO.

MBTC81

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23212S

Level (low/med): LOW Date Received: 07/28/99

% 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	27.8	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	24.4	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1280	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	284			P
7439-89-6	Iron	39.3	B		P
7439-92-1	Lead	17.5			P
7439-95-4	Magnesium	874	B		P
7439-96-5	Manganese	4.3	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1200	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1550	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	24.2			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC82

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23213S

Level (low/med): LOW Date Received: 07/28/99

% 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	99.1	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	4.8	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1970	B	E	P
7440-47-3	Chromium	1.5	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	2.5	U		P
7439-89-6	Iron	1910			P
7439-92-1	Lead	3.0	B		P
7439-95-4	Magnesium	289	B		P
7439-96-5	Manganese	14.2	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	509	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1100	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	21.4			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200273

EPA SAMPLE NO.

MBTC83

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23214S

Level (low/med): LOW Date Received: 07/28/99

% 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	266			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	9.7	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1150	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	9.0	B		P
7439-89-6	Iron	270			P
7439-92-1	Lead	2.3	B		P
7439-95-4	Magnesium	488	B		P
7439-96-5	Manganese	10.5	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	548	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1450	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	12.1	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC84

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23215S

Level (low/med): LOW Date Received: 07/28/99

% 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	190	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	181	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.64	B		P
7440-70-2	Calcium	2170	B	E	P
7440-47-3	Chromium	1.1	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	102			P
7439-89-6	Iron	171			P
7439-92-1	Lead	37.6			P
7439-95-4	Magnesium	4790	B		P
7439-96-5	Manganese	32.5		E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	3.5	B		P
7440-09-7	Potassium	4740	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	9950			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	43.3			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200275

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC85

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23216S

Level (low/med): LOW Date Received: 07/28/99

% 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	12.0	U		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	23.7	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	799	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	98.4			P
7439-89-6	Iron	41.9	B		P
7439-92-1	Lead	6.8			P
7439-95-4	Magnesium	437	B		P
7439-96-5	Manganese	2.7	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	706	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1710	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	40.5			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.
MBTC86

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23217S

Level (low/med): LOW Date Received: 07/28/99

% 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	1240			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	13.8	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1800	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	18.3	B		P
7439-89-6	Iron	1080			P
7439-92-1	Lead	16.3			P
7439-95-4	Magnesium	801	B		P
7439-96-5	Manganese	14.8	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	3.3	B		P
7440-09-7	Potassium	1380	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	2320	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	2.9	B		P
7440-66-6	Zinc	12.1	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200277

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBTC87

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23218S

Level (low/med): LOW Date Received: 07/28/99

% 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	178	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	219			P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2300	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.8	B		P
7440-50-8	Copper	60.9			P
7439-89-6	Iron	255			P
7439-92-1	Lead	6.4			P
7439-95-4	Magnesium	4620	B		P
7439-96-5	Manganese	19.8		E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	3.3	B		P
7440-09-7	Potassium	1070	B		P
7782-49-2	Selenium	2.6	B		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1780	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	62.0			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC88

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC71

Matrix (soil/water): WATER Lab Sample ID: 23219S

Level (low/med): LOW Date Received: 07/28/99

% 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	12.0	U		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	9.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	576	B	E	P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	112			P
7439-89-6	Iron	31.8	B		P
7439-92-1	Lead	4.3			P
7439-95-4	Magnesium	346	B		P
7439-96-5	Manganese	1.6	B	E	P
7439-97-6	Mercury	0.10	U	N	CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	337	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1240	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	12.3	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Sentinel Contract No.: 68-D5-D169

Lab Code: Sentin Case No.: 27237

Full Sample Analysis Price in Contract:

SDG No./First Sample in SDG: MBTC71 Sample Receipt Date: 7/27/99 (MM/DD/YY)
(Lowest EPA Sample Number in first shipment of samples received under SDG.)

Last Sample in SDG: MBTC88 Sample Receipt Date: 7/28/99 (MM/DD/YY)
(Highest EPA Sample Number in last shipment of samples received under SDG.)

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBTC71	7/27	11	MBTC78	
2	80		12	79	
3	67	7/28	13	81	
4	69		14	82	
5	72		15	83	
6	73		16	84	
7	74		17	85	
8	75		18	86	
9	76		19	87	
10	77		20	88	

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Amanda B Gossett 7/28/99
Signature Date

101

RECORD OF COMMUNICATION

MTG-3.200281

RECEIVED
SEP 03 1999

REGIONAL SAMPLE CONTROL CENTER

DATE: AUG. 20, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE MONROE TWP. GW CONTAM.	CASE# 27237 / SDG # MBTD 50
CONTRACTOR STARTW	#SAMPLES MATRIX
PHASE IA	
LAB SENTIN	8 WATER
TURN-AROUND-TIME 14 DAYS	FRACTION TAL ONLY
CERCLIS ID # NJD 980769699	SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	8-16-99
John Bulich	8-20-99	CMX	8/30/99
CMX	9/1/99	J. Tuttle	9/1/99
J. Tuttle	9/1/99	Hanif Sheikh	9/1/99
Hanif Sheikh	9/3/99	DCR JBulich	9/3/99

(over for instructions) revised 3/99

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

Case #	27237	Site:	Monroe Twp. G.W. Contamination	Soil:	00
SDG #	MBTD50	Lab:	Sentinel	Water:	08
Contractor:	STARTW/TA	Reviewer:	C. M. Alaimo/ESAT	Other:	0

A.2.1. Validation flags- The following flags have been applied in red by the data validator and must be considered by the data user.

J - This flag indicates the result qualified as estimated.

Red-Line - A red-line drawn through a sample result indicates unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0

A.2.2. The data assessment is given below and on the attached sheets.

This package consists of eight (08) aqueous samples collected from the Monroe Twp Groundwater Contamination site on 07/30/9[illegible] TAL metals analysis. QC was performed on sample MBTD50. Samples MBTD50/MBTD60 were identified as a field duplicate pair. All holding times were met.

CRDL

For Hg, the CRA % recovery fell between 50-75% requiring estimation of all results within the effected range.

J—>Hg in MBTD50—>53, MBTD55, MBTD56 & MBTD60.

MATRIX SPIKE RECOVERY

For Sb (64.0%), the matrix spike recovery fell between 30-74% when the initial sample results were less than 4x the spike amount, therefore all associated data were estimated.

J—> Sb in MBTD50—>56, MBTD60.

FIELD DUPLICATE

For Zn, the sample/or duplicate values were <5xCRDL and the sample-duplicate difference was greater then 1xCRDL, therefore the associated data was estimated.

J—>Zn in MBTD50 & MBTD60.

ICP SERIAL DILUTION

For Ba, Cu, Na & Zn, the %Ds were >10% but less than 100% when the initial sample value was ≥ 10xIDL therefore the associated data ≥ CRDL (or 10xIDL when 10xIDL ≥ CRDL) were estimated.

J—>Ba in MBTD54
J—>Cu in MBTD50—>54, & MBTD56
J—>Na in MBTD52, MBTD53, MBTD54, MBTD55 & MBTD56
J—>Zn in MBTD50*, MBTD56 & MBTD60*.
*PREVIOUSLY QUALIFIED.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

A.2.3. Contract-Problems/Non-Compliance
NONE

MMB Reviewer:_____ Date:_____
Signature

Contractor Reviewer: CMA Date: 8/31/99
Signature

Verified by:_____ Date:_____
Signature

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SMO Report)

Date: Jan. 1992
Number: HW-2
Revision: 11

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste Site Contract Laboratory Data Package

SDG # MBTD30

CASE NO. 27237

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments:_____

CMA
Reviewer's Initial

8/31/99
Date

DPO MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-4312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York,
ESI, Skinner, TMA

2. USEPA Region II ESD
Woodbridge Avenue
Edison, NJ 08837
Lisa Gatton Vidulich
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco
ETC, Gadson, EMS, Galson, ICM

3. USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Hitman, JTC, MACK, VERSAR,
ITAS, Weston, MMES, EA Engineering,
Subject Tech., KEYPA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
CompuChem, EPS, ESE, PBS&J,
Triangle Labs

5. USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
(312) 353-9087
IL, IN, MI, MN, OH, WI
NLE, TAI/ENG

6. USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Hornwood Drive
Houston, TX 77074
David Stockton
(713) 953-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, EIS, Glocheon
Research, Inc., SPL Inc., SWRI,
Allied, KEYTX, EIRA

7. USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morey
(913) 236-3881
IO, KS, NB, MO
Wilson, Kansas City Scientific
Enterprises, Eagle Picher

8. USEPA Region VIII Laboratory
Box 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSMRI, RMAL, Data Chem., Cearef

9. USEPA Region XI (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
(415) 974-0924
AZ, CA, HI, NV, American Samoa,
Guam Trust Territories of Pacific
Islands, Wake Island
ALI, CAL Weston, S-Cubed, IT_CA,
Vegas

10. USEPA Region X Laboratory
P.O. Box 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Laucks Testing Labs, Century Testing
Labs (For VOA Only), Weyerhauser Co.,
Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
Box 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. Box 818
Alexandria, VA 22313

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT Region II

CASE NO. 27237 SITE Monroe Twp GW Contamination

LABORATORY Sentinel NO. OF SAMPLES/ MATRIX 8w

SDG# MBTD10 REVIEWER (IF NOT ESD)

SOW# ILM04.0 REVIEWER'S NAME CM. Alaio

DPO: ACTION FYI COMPLETION DATE 8/31/99

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES		N/A		N/A
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION				
10.	SAMPLE VERIFICATION				
11.	OTHER QC				
12.	OVERALL ASSESSMENT				

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

U.S. EPA – CLP

6
FIELD DUPLICATES

EPA SAMPLE NO.
MBTD50 MBTD60

Lab Name: Sentinel Inc Contract: 68-D5-0167

Lab Code: Sentin Case No.: 27237 SAS No.: SDG No.: MBTD50

Matrix (soil/water): Water Level (low/med): low

% Solids Sample: 0 % Solids Duplicate: 0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Action Limit	Sample (S) Concentration	C	Field Duplicate (D) Concentration	C	RPD	DIFF	Q	M
Aluminum		98.9000	B	84.5000	B				P
Antimony		3.0000	U	3.0000	U				P
Arsenic		3.0000	U	3.0000	U				P
Barium		8.0000	B	7.4000	B				P
Beryllium		0.4000	U	0.4000	U				P
Cadmium		0.5000	U	0.5000	U				P
Calcium		71.6000	B	57.8000	B				P
Chromium		1.0000	U	1.0000	U				P
Cobalt		2.2000	U	2.2000	U				P
Copper		26.0000		22.1000	B		3.900		P
Iron		32.1000	B	25.1000	B				P
Lead	3	6.4000		7.0000			0.600		P
Magnesium		293.0000	B	247.0000	B				P
Manganese		1.1000	B	1.3000	B				P
Mercury		0.1000	U	0.1000	U				CV
Nickel		2.5000	U	2.5000	U				P
Potassium		808.0000	B	750.0000	B				P
Selenium		2.3000	U	2.3000	U				P
Silver		1.4000	U	1.4000	U				P
Sodium		1860.0000	B	1610.0000	B				P
Thallium		3.3000	U	3.3000	U				P
Vanadium		1.4000	U	1.4000	U				P
Zinc	20	70.7000		21.5000			49.2		P
Cyanide									NR

FORM VI – IN

Zn < 5xCRDL
Δ > 1xCRDL

Percent Moisture Report

SDG NO: MBTD50 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTD50.ASF

PERCENT MOISTURE LIMITS

	Primary	Expanded
INORG	50%	90%

No problems found for this qualification.

Holding Time Report

SDG NO: MBTD50
CASE NO: 27237
LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTD50.ASF

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	16704	2.0	2.6
Mercury	28	0	2.0	50.0
Cyanide	14	0	12.0	1.0

No problems found for this qualification.

Calibration Report

SDG NO: MBTD50 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTD50.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

Calibration Report

SDG NO: MBTD50 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTD50.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

Matrix Spike Report

SDG NO: MBTD50 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTD50.ASF

MATRIX SPIKE CRITERIA

Inorganic

Percent Recovery Limits

Upper	125.0
Lower	75.0
Extreme lower	30.0

DC-268: The following inorganic samples are associated with a matrix spike recovery which is low, indicating that sample results may be biased low.
Hits are qualified "J" and non-detects are qualified "UJ".

Antimony

MBTD50, MBTD50A, MBTD50D, MBTD51, MBTD52, MBTD53
MBTD54, MBTD55, MBTD56, MBTD60

LCS Report

SDG NO: MBTD50
CASE NO: 27237
LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTD50.ASF

No problems found for this qualification.

Sample Result Verification Report

SDG NO: MBTD50 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTD50.ASF

No problems found for this qualification.

Case #: 27237 SDG : MBTD50
Site : MONROE TWP GROUND WATER CONTAM Number of Soil Samples : 0
Lab. : SENTIN Number of Water Samples : 8
Reviewer :
Date :

MTG-3.200295

Sample Number :	MBTD50		MBTD50A		MBTD50D		MBTD50S		MBTD51	
Sampling Location :	MGC-9907-TW102		MGC-9907-TW102		MGC-9907-TW102		MGC-9907-TW102		MGC-9907-TW103	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/30/1999		07/30/1999		07/30/1999		07/30/1999		07/30/1999	
Time Sampled :	09:30		09:30		09:30		09:30		10:05	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	78.9	B			83.0		2130		162	B
ANTIMONY	3.0	UJ	121	J	3.0	UJ	320		3.0	UJ
ARSENIC	3.0	U			3.0	U	39.9		3.0	U
BARIUM	8.0	B			8.6		2140		34.9	B
BERYLLIUM	0.40	U			0.40	U	51.9		0.40	U
CADMIUM	0.50	U			0.50	U	52.9		0.50	U
CALCIUM	71.6	B			103				151	B
CHROMIUM	1.0	U			1.0	U	210		1.0	U
COBALT	2.2	U			2.2	U	528		2.2	U
COPPER	26.0	J			27.6		278		32.7	J
IRON	32.1	B			50.3		1130		872	
LEAD	6.4				8.8		27.2		3.3	
MAGNESIUM	293	B			305				538	B
MANGANESE	1.1	B			1.3		531		11.5	B
MERCURY	0.10	UJ			0.10	U	1.1		0.10	UJ
NICKEL	2.5	U			2.5	U	520		2.5	U
POTASSIUM	808	B			863				625	B
SELENIUM	2.3	U			2.3	U	11.1		2.3	U
SILVER	1.4	U			1.4	U	51.3		1.4	U
SODIUM	1860	B			1980				2170	B
THALLIUM	3.3	U			3.3	U	49.9		3.3	U
VANADIUM	1.4	U			1.4	U	522		1.4	U
ZINC	70.7	J			58.4		565		8.2	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTD50
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200296

Sample Number :	MBTD52		MBTD53		MBTD54		MBTD55		MBTD56	
Sampling Location :	MGC-9907-TW104		MGC-9907-TW105		MGC-9907-TW106		MGC-9907-TW107		MGC-9907-TW108	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/30/1999		07/30/1999		07/30/1999		07/30/1999		07/30/1999	
Time Sampled :	11:10		11:43		11:10		11:45		11:50	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	340		216		192	B	281		344	
ANTIMONY	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ	3.0	UJ
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	86.6	B	144	B	280	J	52.3	B	95.6	B
BERYLLIUM	0.42	B	0.47	B	0.56	B	0.46	B	0.62	B
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	3060	B	2450	B	4880	B	4060	B	2620	B
CHROMIUM	1.6	B	1.0	U	1.0	U	1.0	U	1.0	U
COBALT	2.2	U	2.5	B	4.9	B	2.2	U	2.2	U
COPPER	199	J	257	J	66.3	J	23.8	B	31.5	J
IRON	46.3	B	107		135		69.0	B	81.1	B
LEAD	7.7		3.4		1.7	U	1.7	U	3.5	
MAGNESIUM	1940	B	3440	B	3590	B	2320	B	2860	B
MANGANESE	25.1		24.3		74.2		28.2		25.3	
MERCURY	0.10	UJ	0.10	UJ	19.9		0.10	UJ	0.10	UJ
NICKEL	2.5	U	4.1	B	3.1	B	2.5	U	2.5	B
POTASSIUM	2550	B	1890	B	3770	B	1980	B	2080	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	11800	J	6290	J	25000	J	21800	J	12200	J
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	6.7	B	12.7	B	15.3	B	9.0	B	836	J
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
SDG : MBTD50
Site : MONROE TWP GROUND WATER CONTAM
Lab. : SENTIN
Reviewer :
Date :

MTG-3.200297

Sample Number :	MBTD60		IDL							
Sampling Location :	MGC-9907-TW112									
Matrix :	Water		Water							
Units :	ug/L		ug/L							
Date Sampled :	07/30/1999									
Time Sampled :	09:40									
%Solids :	0.0									
Dilution Factor :	1.0		10.0							
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	84.5	B	12.0							
ANTIMONY	3.0	UJ	3.0							
ARSENIC	3.0	U	3.0							
BARIUM	7.4	B	0.70							
BERYLLIUM	0.40	U	0.40							
CADMIUM	0.50	U	0.50							
CALCIUM	57.8	B	12.6							
CHROMIUM	1.0	U	1.0							
COBALT	2.2	U	2.2							
COPPER	22.1	B	2.5							
IRON	25.1	B	18.8							
LEAD	7.0		1.7							
MAGNESIUM	245	B	14.4							
MANGANESE	1.3	B	0.60							
MERCURY	0.10	UJ	0.10							
NICKEL	2.5	U	2.5							
POTASSIUM	750	B	22.9							
SELENIUM	2.3	U	2.3							
SILVER	1.4	U	1.4							
SODIUM	1510	B	153							
THALLIUM	3.3	U	3.3							
VANADIUM	1.4	U	1.4							
ZINC	21.5	J	2.4							
CYANIDE	N/A		N/A							

SDG: MOTA 50

MTG-3.200299

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: _____ DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a log of the reviews completed to include: a. date of start of case review

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1, original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EPA office in Las Vegas are given in Appendix A-4.

2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 Data Completeness
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.

6.0 SMO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 Record of Communication - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 Rounding off numbers - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/A
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[✓]	___	___
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[✓]	___	___
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[✓]	___	___
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[✓]	___	___
Legible?	[✓]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[✓]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	___	___
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[✓]	___	___
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]	___	___
(b) Form I's?	[✓]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

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A.1.6 Form I to IX	Yes	No	N/A
A.1.6.1 Are all the Form I through Form IX labeled with:			
Laboratory name?	[✓]	___	___
Case/SAS number?	[✓]	___	___
EPA sample No.?	[✓]	___	___
SDG No.?	[✓]	___	___
Contract No.?	[✓]	___	___
Correct units?	[✓]	___	___
Matrix?	[✓]	___	___

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:

(NOTE: Check all forms against raw data.)

(a) all analytes analyzed by ICP?	[✓]	___	___
(b) all analytes analyzed by GFAA?	[ ]	___	✓
(c) all analytes analyzed by AA Flame?	[ ]	___	✓
(d) Mercury?	[✓]	___	___
(e) Cyanide?	[ ]	___	✓

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

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		YES	NO	N/A
A.1.7	Raw Data			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	[✓]		
	Digestion Log for furnace AA Form XIII present?	[ ]		✓
	Distillation Log for mercury Form XIII present?	[✓]		
	Distillation Log for cyanides Form XIII present?	[ ]		✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	[✓]		
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	[ ]		✓
	Are preparation dates present on sample preparation logs/bench sheets?	[✓]		
A.1.7.2	Measurement read out record present? ICP	[✓]		✓
	Flame AA	[ ]		✓
	Furnace AA	[ ]		
	Mercury	[✓]		
	Cyanides	[ ]		✓
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	[✓]		
	Legible?	[✓]		
	Properly Labeled?	[✓]		

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

STANDARD OPERATING PROCEDURE

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		YES	NO	N/A
A.1.8	Holding Times - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[/]	___
	Cyanide distillation (14 days). . . . . exceeded?	___	[ ]	/
	Other Metals analysis (6 months). . . . exceeded?	___	[/]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for:			
	Metals Analysis >2?	___	[/]	___
	Cyanides Analysis <12?	___	[ ]	/
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	Form I (Final Data)			
A.1.9.1	Are all Form I's present and complete?	[/]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[ ]	/	___
	Are soil sample results for each parameter corrected for percent solids?	[ ]	___	/
	Are all "less than IDL" values properly coded with "U"?	[/]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[✓]		
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]		
	Was a brief physical description of samples given on Form I's?	[✓]		
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		[✓]	
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]		
	Is record of 5 point calibration present for Hg analysis?	[✓]		
	Is record of 4 point calibration present for:			
	Flame AA?	[ ]		[✓]
	Furnace AA?	[ ]		[✓]
	Cyanides?	[ ]		[✓]
	Is one calibration standard at the CRDL level for all AA and cyanides analyses?	[✓]		
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

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		YES	NO	N/A
A.1.10.2	Is correlation coefficient less than 0.995 for:			
	Mercury Analysis?	___	[✓]	___
	Cyanide Analysis?	___	[___]	✓
	Atomic Absorption Analysis?	___	[___]	✓

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values? [___] ___ ✓

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 Form II A (Initial and Continuing Calibration Verification) -

A.1.11.1 Present and complete for every metal and cyanide? [✓] ___ ___

Present and complete for AA and ICP when both are used for the same analyte? [___] ___ ✓

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows.
Are all calibration standards (initial and continuing) within control limits:

Metals- 90-110%R?	[✓]	___	___
Hg - 80-120%R?	[✓]	___	✓
Cyanides- 85-115%R?	[___]	___	✓

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___
Was ICV for cyanides distilled?	[___]	___	✓
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 Form II B (CRDL Standards for AA and ICP) -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals?	[✓]	___	___
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	___	___
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[✓]		

ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".

A.1.12.3 Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.

Are CRA and CRI standards within control limits:

Metals 80 - 120%R?	[ ]	✓		

Is mid-range standard within control limits:

Cyanide 80 - 120%R?	[ ]			✓

ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.

Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.

A.1.13	Form III (Initial and Continuing Calibration Blanks)			
A.1.13.1	Present and complete?	[✓]		
	For both AA and ICP when both are used for the same analyte?	[ ]		✓
	Was an initial calibration blank analyzed?	[✓]		
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[✓]		

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		YES	NO	N/A
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[✓]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[✓]	___	___
	each batch of digested samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[ ]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[/]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	/
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[/]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[/]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	Form IV (ICP Interference Check Sample)			
A.1.15.1	Present and complete?	[/]	___	___
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[/]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[/]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	/

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation) - (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	✓	___

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[/]		
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 Aqueous

Are any spike recoveries:

(a) less than 30%?		[/]	
(b) between 30-74%?	/	[ ]	
(c) between 126-150%?		[/]	
(d) greater than 150%?		[/]	

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?		[ ]	/
(b) between 10-74%?		[ ]	/
(c) between 126-200%?		[ ]	/
(d) greater than 200%?		[ ]	/

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	Form VI (Lab Duplicates)			
A.1.17.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[✓]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[✓]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	✓
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[/]	___
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[/]	___

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :			
> 100%?	___	[ ]	/
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :			
> 2x*CRDL?	___	[ ]	/

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	Field Duplicates			
A.1.18.1	Were field duplicates analyzed?	[✓]	___	___
	ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.			
	NOTE: 1. Do not calculate RPD when both values are less than IDL. 2. Flag all associated data only for field duplicate pair.			
A.1.18.2	Aqueous			
	Circle all values on self prepared Form VI for field duplicates that are: RPD > 50%, or Difference > CRDL*			
	Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[✓]	___
	Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	✓	[__]	___
	ACTION: If yes, flag the associated data as estimated.			

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

A.1.18.3 Soil/Sediment

Circle all values on self prepared Form VI for field duplicates that are:

RPD >100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) :

>100%? ___ [___] ___ /

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL):

>2x *CRDL? ___ [___] ___ /

ACTION: If yes, flag the associated data as estimated.

A.1.19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

A.1.19.1 Was one LCS prepared and analyzed for:

each SDG? [/] ___ ___

each batch samples digested/distilled? [/] ___ ___

both AA and ICP when both are used for the same analyte? [___] ___ ___ /

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

A.1.19.2 Aqueous LCS

Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.

Is any LCS recovery:			
less than 50%?	___	[✓]	___
between 50% and 79%?	___	[✓]	___
between 121% and 150%?	___	[✓]	___
greater than 150%?	___	[✓]	___

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[ ]	✓
ACTION: If yes, qualify all associated positive data as estimated.			
Is LCS "Found" value lower than the Control limits on Form VII?	___	[ ]	___

ACTION: If yes, qualify all associated data as estimated.

		YES	NO	N/A
A.1.20	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for: each SDG?	[/]	___	___
	each matrix type?	[/]	___	___
	each concentration range (i.e. low, med.)?	[/]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[/]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[/]	___	___
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values:			
	> 10%?	___	[/]	___
	≥ 100%?	___	[/]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	Furnace Atomic Absorbtion (AA) QC Analysis			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[ ]		✓
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[ ]		✓
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[ ]		✓
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?		[ ]	✓
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

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		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	Form VIII (Method of Standard Addition Results)			
A.1.22.1	Present?	[__]	__	/
	If no, is any Form I result coded with "S" or a "+"?	__	[__]	/
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	__	[__]	/
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	__	[__]	/
	Is coefficient of correlation for MSA less than 0.995?	__	[__]	/
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	__	[__]	/
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[__]	__	/
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	(Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[ ]		

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 Form X, XI, XII (Verification of Instrumental Parameters).

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	[ ]		
ICP Interelement Correction Factors (annually)?	[ ]		
ICP Linear Ranges (quarterly)?	[ ]		

ACTION: If no, contact TPO of the lab.

A.1.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)

A.1.25.2.1 Are IDLs present for: all the analytes?	[ ]		
all the instruments used?	[ ]		
For both AA and ICP when both are used for the same analyte?	[ ]		

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?		[ ]	
If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[ ]		

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

	YES	NO	N/A

Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.

A.1.25.3 Form XI (Linear Ranges)

A.1.25.3.1 Was any sample result higher than high linear range of ICP. ___ [/] ___

Was any sample result higher than the highest calibration standard for non-ICP parameters? ___ [/] ___

If yes for any of the above, was the sample diluted to obtain the result on Form I? [___] ___ /

ACTION: If no, flag the result reported on Form I as estimated(J).

A.1.26 Percent Solids of Sediments

A.1.26.1 Are percent solids in sediment(s):

< 50%? ___ [___] /

< 10%? ___ [___] /

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

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AUG 16 1999

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD50

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTD50	23331S
MBTD50D	23331S2
MBTD50S	23331DS
MBTD51	23332S
MBTD52	23333S
MBTD53	23334S
MBTD54	23335S
MBTD55	23336S
MBTD56	23337S
MBTD60	23338S

Were ICP interelement corrections applied? YES
Were ICP background corrections applied? YES
If yes-were raw data generated before application of background corrections? NO NO

Comments: The cooler temperature measured 5

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: Name: B

Date: 8/10/99 Title: QA Officer

1

INORGANIC ANALYSIS DATA SHEET

MBTD50

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD50

Matrix (soil/water): WATER Lab Sample ID: 23331S

Level (low/med): LOW Date Received: 07/31/99

% 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	78.9	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	8.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	71.6	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	26.0			P
7439-89-6	Iron	32.1	B		P
7439-92-1	Lead	6.4			P
7439-95-4	Magnesium	293	B		P
7439-96-5	Manganese	1.1	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	808	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1860	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	70.7			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

MBTD51

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD50

Matrix (soil/water): WATER Lab Sample ID: 23332S

Level (low/med): LOW Date Received: 07/31/99

% 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	162	B		P	
7440-36-0	Antimony	3.0	U	N	P	L
7440-38-2	Arsenic	3.0	U		P	
7440-39-3	Barium	34.9	B		P	
7440-41-7	Beryllium	0.40	U		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	151	B		P	
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	2.2	U		P	
7440-50-8	Copper	32.7			P	L
7439-89-6	Iron	872			P	
7439-92-1	Lead	3.3			P	
7439-95-4	Magnesium	538	B		P	
7439-96-5	Manganese	11.5	B		P	
7439-97-6	Mercury	0.10	U		CV	L
7440-02-0	Nickel	2.5	U		P	
7440-09-7	Potassium	625	B		P	
7782-49-2	Selenium	2.3	U		P	
7440-22-4	Silver	1.4	U		P	
7440-23-5	Sodium	2170	B		P	
7440-28-0	Thallium	3.3	U		P	
7440-62-2	Vanadium	1.4	U		P	
7440-66-6	Zinc	8.2	B		P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

MBTD52

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD50

Matrix (soil/water): WATER Lab Sample ID: 23333S

Level (low/med): LOW Date Received: 07/31/99

% 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	340			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	66.8	B		P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	3060	B		P
7440-47-3	Chromium	1.6	B		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	199			P
7439-89-6	Iron	46.3	B		P
7439-92-1	Lead	7.7			P
7439-95-4	Magnesium	1940	B		P
7439-96-5	Manganese	25.1			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	2550	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	11800			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	6.7	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

MBTD53

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD50

Matrix (soil/water): WATER Lab Sample ID: 23334S

Level (low/med): LOW Date Received: 07/31/99

% 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	216			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	144	B		P
7440-41-7	Beryllium	0.47	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2450	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.5	B		P
7440-50-8	Copper	257			P
7439-89-6	Iron	107			P
7439-92-1	Lead	3.4			P
7439-95-4	Magnesium	3440	B		P
7439-96-5	Manganese	24.3			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	4.1	B		P
7440-09-7	Potassium	1890	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	6290			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	12.7	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

MBTD54

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD50

Matrix (soil/water): WATER Lab Sample ID: 23335S

Level (low/med): LOW Date Received: 07/31/99

% 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	192	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	280			P
7440-41-7	Beryllium	0.56	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	4880	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	4.9	B		P
7440-50-8	Copper	66.3			P
7439-89-6	Iron	135			P
7439-92-1	Lead	1.7	U		P
7439-95-4	Magnesium	3590	B		P
7439-96-5	Manganese	74.2			P
7439-97-6	Mercury	19.9			CV
7440-02-0	Nickel	3.1	B		P
7440-09-7	Potassium	3770	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	25000			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	15.3	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

MBTD55

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD50

Matrix (soil/water): WATER Lab Sample ID: 23336S

Level (low/med): LOW Date Received: 07/31/99

% 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	281			P	
7440-36-0	Antimony	3.0	U	N	P	J
7440-38-2	Arsenic	3.0	U		P	
7440-39-3	Barium	52.3	B		P	
7440-41-7	Beryllium	0.46	B		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	4060	B		P	
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	2.2	U		P	
7440-50-8	Copper	23.8	B		P	
7439-89-6	Iron	69.0	B		P	
7439-92-1	Lead	1.7	U		P	
7439-95-4	Magnesium	2320	B		P	
7439-96-5	Manganese	28.2			P	
7439-97-6	Mercury	0.10	U		CV	J
7440-02-0	Nickel	2.5	U		P	
7440-09-7	Potassium	1980	B		P	
7782-49-2	Selenium	2.3	U		P	
7440-22-4	Silver	1.4	U		P	
7440-23-5	Sodium	21800			P	J
7440-28-0	Thallium	3.3	U		P	
7440-62-2	Vanadium	1.4	U		P	
7440-66-6	Zinc	9.0	B		P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

INORGANIC ANALYSIS DATA SHEET

MBTD56

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD50

Matrix (soil/water): WATER Lab Sample ID: 23337S

Level (low/med): LOW Date Received: 07/31/99

% 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	344			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	95.6	B		P
7440-41-7	Beryllium	0.62	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2620	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	31.5			P
7439-89-6	Iron	81.1	B		P
7439-92-1	Lead	3.5			P
7439-95-4	Magnesium	2860	B		P
7439-96-5	Manganese	25.3			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	B		P
7440-09-7	Potassium	2080	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	12200			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	836			P
_____	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200335

INORGANIC ANALYSIS DATA SHEET

MBTD60

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTD50

Matrix (soil/water): WATER Lab Sample ID: 23338S

Level (low/med): LOW Date Received: 07/31/99

% 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	84.5	B		P	
7440-36-0	Antimony	3.0	U	N	P	V
7440-38-2	Arsenic	3.0	U		P	
7440-39-3	Barium	7.4	B		P	
7440-41-7	Beryllium	0.40	U		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	57.8	B		P	
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	2.2	U		P	
7440-50-8	Copper	22.1	B		P	
7439-89-6	Iron	25.1	B		P	
7439-92-1	Lead	7.0			P	
7439-95-4	Magnesium	245	B		P	
7439-96-5	Manganese	1.3	B		P	
7439-97-6	Mercury	0.10	U		CV	V
7440-02-0	Nickel	2.5	U		P	
7440-09-7	Potassium	750	B		P	
7782-49-2	Selenium	2.3	U		P	
7440-22-4	Silver	1.4	U		P	
7440-23-5	Sodium	1610	B		P	
7440-28-0	Thallium	3.3	U		P	
7440-62-2	Vanadium	1.4	U		P	
7440-66-6	Zinc	21.5			P	V
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Sentinel Contract No.: 68-D5-0169

Lab Code: Sentin Case No.: 27237

Full Sample Analysis Price in Contract:

SDG No./First Sample in SDG: MBTD5Q Sample Receipt Date: 7/31/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: MBTD60 Sample Receipt Date: 7/31/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBTD5Q	11	
2	51	12	
3	52	13	
4	53	14	
5	54	15	
6	55	16	
7	56	17	
8	60	18	
9		19	
10		20	

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Amanda B Bissett
Signature

7/31/99
Date

81

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

MTG-3.200337

DATE: AUG. 17, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

RECEIVED
AUG 27 1999

Attached is the following INORGANIC Data Package to be reviewed for Quality Assurance

SITE MONROE TWP. GW CONTAM.	CASE# 27237 / SDG# MBTC89
CONTRACTOR STARTW	#SAMPLES MATRIX
PHASE IA	
LAB SENTIN	20 WATER
TURN-AROUND-TIME	FRACTION TAL ONLY
CERCLIS ID # NJD980769699	SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
John Bulicz	8-17-99	John Bulicz	8-13-99
C M Adams	8/26/99	C M Adams	8/19/99
J. Tuttle	8/26/99	J. Tuttle	8/26/99
D Karras for HS	8/27/99	Hanif Sheikh	8/26/99
		J. Tuttle	8/27/99

(over for instructions) revised 3/99

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

Case #	27237	Site:	Monroe Twp. G.W. Contamination	Soil:	00
SDG #	MBTC89	Lab:	Sentinel	Water:	20
Contractor:	STARTW/TA	Reviewer:	C. M. Alaimo/ESAT	Other:	0

A.2.1. Validation flags- The following flags have been applied in red by the data validator and must be considered by the data user.

J - This flag indicates the result qualified as estimated.

Red-Line - A red-line drawn through a sample result indicates unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SOW ILM01.0

A.2.2. The data assessment is given below and on the attached sheets.

This package consists of twenty (20) aqueous samples collected from the Monroe Twp Groundwater Contamination site between 07/27/99 and 07/28/99for TAL metals analysis. QC was performed on sample MBTC89. Samples MBTC95/MBTD00 were identif. as a field duplicate pair. All holding times were met.

CRDL

For Pb, the CRI_1 % recovery fell between 121-150% requiring estimation of positive results within the effected range.

J—>Pb in MBTC89.

MATRIX SPIKE RECOVERY

For Sb (66.4%), the matrix spike recovery fell between 30-74% when the initial sample results were less than 4x the spike amount, therefore all associated data were estimated.

J—> Sb in MBTC89—>97, MBTD00—>06, MBTD21—>24.

FIELD DUPLICATE

For Pb, the sample/or duplicate values were <5xCRDL and the sample-duplicate difference was greater then 2xCRDL, therefore the associated data was estimated.

J—>Pb in MBTC95 & MBTC00.

ICP SERIAL DILUTION

For K & Na, the %Ds were >10% but less than 100% when the initial sample value was ≥ 10xIDL therefore the associated data ≥ CRDL (or 10xIDL when 10xIDL ≥ CRDL) were estimated. For Ca, the %D was ≥100% when the initial sample value was ≥ 10xIDL therefore the associated data ≥ CRDL (or 10xIDL when 10xIDL ≥ CRDL) were rejected.

J—>Na in MBTC93, MBTC96, MBTD01—>04, MBTD22 & MBTD24.
R—>Ca in MBTD01, MBTD03 & MBTD22.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

A.2.3. Contract-Problems/Non-Compliance
NONE

MMB Reviewer: _____ Date: _____
Signature

Contractor Reviewer: _____ Date: _____
Signature

Verified by: _____
Signature

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.3: Contract Non-Compliance (SMO Report)

Date: Jan. 1992
Number: HW-2
Revision: 11

CONTRACT NON-COMPLIANCE
(SMO REPORT)

Regional Review of Uncontrolled Hazardous Waste Site Contract Laboratory Data Package

CASE NO. 27237

The hardcopied (laboratory name)_____
Inorganic data package received at Region II has been reviewed and the quality assurance and performance data summarized. The data reviewed included:
SMO Sample No.:_____

Conc. & Matrix:_____

Contract No.(_____) requires that specific analytical work be done and that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMO. The general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Matrix Spike Results
- Calibration Standards Results
- Duplicate Analysis Results
- Blank Analysis Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: NA

CMA
Reviewer's Initial

8/23/99
Date

DPO MAILING LIST FOR DATA REVIEWERS

1. USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-4312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York,
E3I, Skinner, TMA

2. USEPA Region II ESD
Woodbridge Avenue
Edison, NJ 08837
Lisa Gattos Vidulich
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco
ETC, Gadson, EMS, Galson, ICM

3. USEPA Region III (CRL)
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Centec, Hitman, JTC, MACK, VERSAR,
ITAS, Weston, MMES, EA Engineering,
Subject Tech., KEYPA

4. USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
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Tom Bennett, Jr.
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AL, FL, GA, KY, MS, NC, SC, TN
CompuChem, EPS, ESE, PBS&J,
Triangle Labs

5. USEPA Region V (ESD)
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Pat Churilla
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NLR, TAI/ENG

6. USEPA Region VI (ESD)
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David Stockton
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AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, EIS, Glocbem
Research, Inc., SPL Inc., SWRI,
Allied, KEYTX, EIRA

7. USEPA Region VII Laboratory
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CO, ND, SD, UT, WY, MT
ACCU, CSMRI, RMAL, Data Chem., Cearef

9. USEPA Region XI (ESD)
QA Management Section
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AZ, CA, HI, NV, American Samoa,
Guam Trust Territories of Pacific
Islands, Wake Island
ALI, CAL Weston, S-Cubed, IT_CA,
Vegas

10. USEPA Region X Laboratory
P.O. Box 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Laucks Testing Labs, Century Testing
Labs (For VOA Only), Weyerhauser Co.,
Columbia Testing, Silver Valley

11. Carla Dempsey - (OS-230)
USEPA
401 "M" Street S.W.
Washington, DC 20460
FTS 382-5746

12. Edward Kantor
USEPA
EMSL-LV
944 E. Harmon Avenue
Box 93478
Las Vegas, NV 89119

13. Sample Management Office
Viar and Company
P.O. Box 818
Alexandria, VA 22313

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Inorganic Analysis

Date: Jan. 1992
Number: HW-2
Revision: 11

INORGANIC REGIONAL DATA ASSESSMENT Region II

CASE NO. 27237 SITE Monroe Twp GW Contamination

LABORATORY Sentinel NO. OF SAMPLES/ MATRIX 10w

SDG# MBTC 89 REVIEWER (IF NOT ESD)

SOW# ILM04.0 REVIEWER'S NAME C.M. Alaimo

DPO: ACTION FYI COMPLETION DATE 8/23/99

DATA ASSESSMENT SUMMARY

		ICP	AA	Hg	CYANIDE
1.	HOLDING TIMES	O	N/A	O	N/A
2.	CALIBRATIONS				
3.	BLANKS				
4.	ICS				
5.	LCS				
6.	DUPLICATE ANALYSIS				
7.	MATRIX SPIKE				
8.	MSA				
9.	SERIAL DILUTION	X			
10.	SAMPLE VERIFICATION	O-X			
11.	OTHER QC				
12.	OVERALL ASSESSMENT	OX			

O = Data has no problems/or qualified due to minor problems.
M = Data qualified due to major problems.
Z = Data unacceptable.
X = Problems, but do not affect data.

ACTION ITEMS:

AREAS OF CONCERN:

NOTABLE PERFORMANCE:

Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.6: CLP Data Assessment Summary Form (Inorganics)

MTG-3.200343

Date: Feb. 1990
Number: HW-2
Revision: 10

SDG # MBTC89

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: TAL Date: 8/22/89 Case #: 27227

Site: Monroe Twp GW Contamination Lab Name: Sentinel

Reviewer's Initials: CMA Number of Samples: 20w

Analytes Rejected Due to Exceeding Review Criteria:*

	Holding Times	Calibration	Prep Blank	Field Blank	Inter-ferences	Spike Recovery	Duplicates Lab	Duplicates Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP											3		440	3
Flame AA														
Furnace AA														
Mercury													20	0
Total											3		460	3
Other														

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For:*

CRDL

ICP		1				20		2			8		440	31
Flame AA														
Furnace AA														
Mercury													20	0
Total		1				20		2			8		460	31
Other														

Note:
Asterisk (*) Indicates additional exceedances of review criteria.

Percent Moisture Report

SDG NO: MBTC89
CASE NO: 27237

LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTC89.ASF

PERCENT MOISTURE LIMITS

	Primary	Expanded
INORG	50%	90%

No problems found for this qualification.

Holding Time Report

SDG NO: **MBTC89** LABORATORY: **SENTINEL INC.**

CASE NO: **27237** AGENCY INPUT FILE: **MBTC89.ASF**

HOLDING TIME CRITERIA

Inorganic

	-- Holding Time --		------- pH -------	
	Primary	Expanded	Primary	Expanded
Metals	180	16704	2.0	2.6
Mercury	28	0	2.0	50.0
Cyanide	14	0	12.0	1.0

No problems found for this qualification.

Calibration Report

SDG NO: MBTC89
CASE NO: 27237
LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTC89.ASF

CALIBRATION CRITERIA

Inorganic

Percent Recovery Limits

	--- Primary ---		-- Expanded ---	
	Low	High	Low	High
Cyanide	85.00	115.00	70.00	130.00
AA	90.00	110.00	75.00	125.00
ICP	90.00	110.00	75.00	125.00
Mercury	80.00	120.00	65.00	135.00

No problems found for this qualification.

Matrix Spike Report

SDG NO: MBTC89 LABORATORY: SENTINEL INC.
CASE NO: 27237 AGENCY INPUT FILE: MBTC89.ASF

MATRIX SPIKE CRITERIA

Inorganic

Percent Recovery Limits

Upper	125.0
Lower	75.0
Extreme lower	30.0

DC-268: The following inorganic samples are associated with a matrix spike recovery which is low, indicating that sample results may be biased low.
Hits are qualified "J" and non-detects are qualified "UJ".

Antimony

MBTC89, MBTC89A, MBTC89D, MBTC90, MBTC91, MBTC92
MBTC93, MBTC94, MBTC95, MBTC96, MBTC97, MBTD00
MBTD01, MBTD02, MBTD03, MBTD04, MBTD05, MBTD06
MBTD21, MBTD22, MBTD23, MBTD24

LCS Report

SDG NO: MBTC89 LABORATORY: SENTINEL INC.

CASE NO: 27237 AGENCY INPUT FILE: MBTC89.ASF

No problems found for this qualification.

Sample Result Verification Report

SDG NO: MBTC89
CASE NO: 27237
LABORATORY: SENTINEL INC.
AGENCY INPUT FILE: MBTC89.ASF

No problems found for this qualification.

Analytical Results (Qualified Data)

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC89
MONROE TWP GROUND WATER CONTAM
SENTIN

Number of Soil Samples : 0
Number of Water Samples : 20

Sample Number :	MBTC89		MBTC89D		MBTC89S		MBTC90		MBTC91	
Sampling Location :	MGC-9907-TW41		MGC-9907-TW41		MGC-9907-TW41		MGC-9907-TW42		MGC-9907-TW43	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/27/1999		07/27/1999		07/27/1999		07/27/1999		07/27/1999	
Time Sampled :	12:45		12:45		12:45		13:00		13:20	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	106	B	112		2230		456		479	
ANTIMONY	3.0	U	3.0	U	39.2		3.0	U	3.0	U
ARSENIC	3.0	U	3.0	U	39.7		3.0	U	3.0	U
BARIUM	62.2	B	62.9	B	222	B	16.8	B	11.1	B
BERYLLIUM	0.40	U	0.40	U	51.8		0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	53.5		0.50	U	0.50	U
CALCIUM	172	B	439				896	B	668	B
CHROMIUM	1.0	U	1.0	U	109		1.0	U	1.0	U
COBALT	2.2	U	2.2	U	529		2.2	U	2.2	U
COPPER	4.52	B	4.50	B	261		5.47	B	3.58	B
IRON	86.7	B	74.6		1020		287		445	
LEAD	2.0	U	2.0	U	24.8		2.0	U	1.2	B
MAGNESIUM	14.4	U	53.2				467	B	317	B
MANGANESE	0.60	U	0.85	B	533		0.29	B	1.9	B
MERCURY	0.10	U	0.10	U	0.96		0.10	U	0.10	U
NICKEL	2.5	U	2.5	U	528		2.5	U	2.5	U
POTASSIUM	496	B	525				536	B	438	B
SELENIUM	2.3	U	2.3	U	10.9		2.3	U	2.3	U
SILVER	1.4	U	1.4	U	51.9		1.4	U	1.4	U
SODIUM	4610	B	4710				1460	B	2130	B
THALLIUM	3.3	U	3.3	U	51.7		4.0	B	3.3	U
VANADIUM	1.4	U	1.4	U	529		1.4	U	1.4	U
ZINC	11.7	B	14.1		535		4.6	B	8.4	B
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Analytical Results (Qualified Data)

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC89
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200351

Sample Number :	MBTC92		MBTC93		MBTC94		MBTC95		MBTC96	
Sampling Location :	MGC-9907-TW44		MGC-9907-TW45		MGC-9907-TW46		MGC-9907-TW47		MGC-9907-TW48	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/27/1999		07/27/1999		07/27/1999		07/27/1999		07/27/1999	
Time Sampled :	13:30		14:05		13:32		16:20		15:35	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	1520		92.4	B	622		258		404	
ANTIMONY	3.0	U	3.0	U	3.0	U	3.0	U	[illegible]	U
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	69.8	B	0.44	B	13.4	B	101	B	16	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.47	B	0.60	B
CADMIUM	1.0	B	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	516	B	125	B	365	B	1210	B	1860	B
CHROMIUM	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
COBALT	19.6	B	2.2	U	2.2	U	2.2	U	3.5	B
COPPER	7.5	B	130		92.9		152		400	
IRON	993		60.4	B	495		98.0	B	109	
LEAD	1.8	B	3.4		2.6	B	5.1	J	15.2	
MAGNESIUM	1530	B	14.4	U	359	B	1510	B	2890	B
MANGANESE	13.4	B	0.60	U	7.3	B	4.2	B	23.7	
MERCURY	0.10	U	0.10	U	0.10	U	0.10	U	0.15	B
NICKEL	12.9	B	2.5	U	2.5	U	2.5	U	3.1	B
POTASSIUM	1060	B	185	B	583	B	1010	B	2320	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	2350	B	20300	J	1620	B	4380	B	31300	J
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.5	B	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	9.7	B	9.4	B	14.4	B	14.5	B	73.4	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC89
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200352

Sample Number :	MBTC97		MBTD00		MBTD01		MBTD02		MBTD03	
Sampling Location :	MGC-9907-TW49		MGC-9907-TW52		MGC-9907-TW53		MGC-9907-TW54		MGC-9907-TW55	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/27/1999		07/27/1999		07/27/1999		07/27/1999		07/27/1999	
Time Sampled :	15:45		16:20		16:15		16:35		16:55	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	169	B	321		328		112	B	226	
ANTIMONY	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	37	B	61	B	79	B	152	B	20	B
BERYLLIUM	0.40	U	0.45	B	0.40	U	0.40	U	0.41	B
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	2240	B	1200	B	6920	R	3350	B	5990	R
CHROMIUM	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
COBALT	2.6	B	2.2	U	3.3	B	2.9	B	4.0	B
COPPER	35.5		20.1		18.6		12.0		10.0	
IRON	18.8	U	77.7	B	185		302		167	
LEAD	2.9	B	2.0	U	3.6		5.2		2.0	U
MAGNESIUM	3820	B	1650	B	2140	B	3940	B	5070	
MANGANESE	93.0	B	4.5	B	510		29.9		0.50	U
MERCURY	0.10	U	0.10	U	0.10	U	0.10	U	5.3	
NICKEL	2.7	B	2.5	U	2.6	B	5.9	B	2.8	B
POTASSIUM	1200	B	1240	B	3740	B	1760	B	3070	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	2970	B	4790	B	7010		8920		2700	
THALLIUM	3.3	U	3.3	U	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	9.5	B	28.6		49.1		39.6		30.9	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237
Site :
Lab. :
Reviewer :
Date :

SDG : MBTC89
MONROE TWP GROUND WATER CONTAM
SENTIN

MTG-3.200353

Sample Number :	MBTD04		MBTD05		MBTD06		MBTD21		MBTD22	
Sampling Location :	MGC-9907-TW56		MGC-9907-TW57		MGC-9907-TW58		MGC-9907-TW73		MGC-9907-TW	
Matrix :	Water		Water		Water		Water		Water	
Units :	ug/L		ug/L		ug/L		ug/L		ug/L	
Date Sampled :	07/27/1999		07/27/1999		07/27/1999		07/28/1999		07/28/1999	
Time Sampled :	17:30		16:40		16:50		15:10		15:40	
%Solids :	0.0		0.0		0.0		0.0		0.0	
Dilution Factor :	1.0		1.0		1.0		1.0		1.0	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Fl
ALUMINUM	165	B	85.1	B	115	B	88.4	B	118	B
ANTIMONY	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
ARSENIC	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
BARIUM	106	B	128	B	315	B	40.0	B	161	B
BERYLLIUM	0.40	U	0.40	U	0.40	U	0.40	U	0.40	U
CADMIUM	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
CALCIUM	4760	B	605	B	573	B	1520	B	5200	R
CHROMIUM	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
COBALT	2.9	B	2.2	U	2.2	U	2.2	U	4.6	B
COPPER	260		25.4		526		331		693	
IRON	64.6	B	18.8	U	18.8	U	40.4	B	2160	
LEAD	7.0		2.7	B	6.7		7.4		7.5	
MAGNESIUM	2160	B	575	B	1380	B	1450	B	3570	B
MANGANESE	313		220	B	277	B	161	B	86.1	
MERCURY	1.0		0.10	U	0.10	U	0.10	U	0.10	U
NICKEL	2.5	U	2.5	U	5.2	B	2.5	U	3.6	B
POTASSIUM	4070	B	500	B	607	B	939	B	2130	B
SELENIUM	2.3	U	2.3	U	2.3	U	2.3	U	2.3	U
SILVER	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
SODIUM	7150		1650	B	2120	B	4060	B	13700	
THALLIUM	3.3	U	3.5	B	3.3	U	3.3	U	3.3	U
VANADIUM	1.4	U	1.4	U	1.4	U	1.4	U	1.4	U
ZINC	16.8	B	5.2	B	141		12.7	B	37.7	
CYANIDE	N/A		N/A		N/A		N/A		N/A	

Case #: 27237 SDG : MBTC89
Site : MONROE TWP GROUND WATER CONTAM
Lab. : SENTIN
Reviewer :
Date :

MTG-3.200354

Sample Number :	MBTD23		MBTD24		MBTC89A		IDL			
Sampling Location :	MGC-9907-TW75		MGC-9907-TW76		MGC-9907-TW41					
Matrix :	Water		Water		Water		Water			
Units :	ug/L		ug/L		ug/L		ug/L			
Date Sampled :	07/28/1999		07/28/1999		07/27/1999					
Time Sampled :	15:35		15:50		12:45					
%Solids :	0.0		0.0		0.0					
Dilution Factor :	1.0		1.0		1.0		1.0			
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ALUMINUM	112	B	122	B			12.0			
ANTIMONY	2.0	U	2.0	U	2.0	U	2.0			
ARSENIC	3.0	U	3.0	U			3.0			
BARIUM	15.7	B	16.9	B			0.70			
BERYLLIUM	0.40	U	0.40	U			0.40			
CADMIUM	0.50	U	0.50	U			0.50			
CALCIUM	376	B	390	B			12.6			
CHROMIUM	1.0	U	1.0	U			1.0			
COBALT	2.2	U	2.2	U			2.2			
COPPER	13.4		15.0				2.5			
IRON	269		623				18.8			
LEAD	5.9		24.5				1.1			
MAGNESIUM	346	B	430	B			14.4			
MANGANESE	2.4	B	1.6	B			0.60			
MERCURY	0.10	U	0.10	U			0.10			
NICKEL	2.5	U	2.5	U			2.5			
POTASSIUM	441	B	2640	B			22.9			
SELENIUM	2.3	U	2.3	U			2.3			
SILVER	1.4	U	1.4	U			1.4			
SODIUM	1590	B	8090	B			153			
THALLIUM	3.3	U	3.3	U			3.3			
VANADIUM	1.4	U	1.4	U			1.4			
ZINC	22.1		85.7				2.4			
CYANIDE	NA		NA		NA		NA			

U.S. EPA – CLP

6
FIELD DUPLICATES

EPA SAMPLE NO.
MBTC95 | MBTD

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Level (low/med): LOW

% Solids Sample: 0 % Solids Duplicate: 0

Concentration Units (ug/L or mg/kg dry weight): ug/L

Analyte	Action Limit	Sample (S) Concentration	C	Field Duplicate (D) Concentration	C	RPD	DIFF	Q	M
Aluminum	200	258.0000		321.0000		—	63.0		P
Antimony		3.0000	U	3.0000	U	—	—		P
Arsenic		3.0000	U	3.0000	U	—	—		F
Barium		101.0000	B	111.0000	B	—	—		P
Beryllium		0.4700	B	0.4500	B	—	—		P
Cadmium		0.5000	U	0.5000	U	—	—		P
Calcium		1210.0000	B	1200.0000	B	—	—		P
Chromium		1.0000	U	1.0000	U	—	—		P
Cobalt		2.2000	U	2.2000	U	—	—		P
Copper	50%	152.0000		201.0000		.28	—		F
Iron		98.0000	B	77.7000	B	—	—		P
Lead	3	5.1000		9.0000		—	3.9		P
Magnesium		1510.0000	B	1650.0000	B	—	—		P
Manganese		4.2000	B	4.5000	B	—	—		P
Mercury		0.1000	U	0.1000	U	—	—		CV
Nickel		2.5000	U	2.5000	U	—	—		P
Potassium		1010.0000	B	1240.0000	B	—	—		P
Selenium		2.3000	U	2.3000	U	—	—		F
Silver		1.4000	U	1.4000	U	—	—		P
Sodium		4380.0000	B	4790.0000	B	—	—		P
Thallium		3.3000	U	3.3000	U	—	—		F
Vanadium		1.4000	U	1.4000	U	—	—		P
Zinc	20	14.5000	B	28.6000		—	14.1		P
Cyanide									NR

SDG: MBTC89

MTG-3.200357

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SOW. 3/90

(SOP Revision XI)

PREPARED BY: _____ DATE: 1-30-92
Hanif Sheikh, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: _____ DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program

Date: Jan. 1992
Number: HW-2
Revision: 11

1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90 .

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1). The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2) The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMO Report (Appendix A.3) This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses on Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a log the reviews completed to include: a. date of start of case revi

b. date of completion of case review
c. site
d. case number
e. contract laboratory
f. number of samples
g. matrix
h. hours worked
i. reviewer's initials

2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMO. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).

2.1.7 Forwarded Paperwork

2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
a. data package
b. completed data assessment checklist (Appendix A.1,original)
c. SMO Contract Compliance Screening (CCS)
d. Record of Communication (copy)
e. CLP Reanalysis Request/Approval Record (original + 3 copies)
f. Appendix A.6 (original).

2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log , if any,: one each for appropriate Regional TPO, and the other one to EPA EMSL office in Las Vegas. The addresses of TPOs and EP office in Las Vegas are given in Appendix A-4.

2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MMB files:
a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carryin Appendix A.6.
b. Telephone Record Log (copy)
c. SMO Report (copy Appendix A-3)
d. CLP Reanalysis Request/Approval Record (copy)

3.0 Data Completeness
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SMO and MMB coordinator of Region II will be notified.

4.0 Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.

5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines c October 1, 1989.

6.0 SMO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.

7.0 Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storag times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".

8.0 Record of Communication - Provided by the Regional Sample Control Center (RSCC) to indicate which data packages have been received and are ready to be reviewed.

9.0 Rounding off numbers - The data reviewer will follow the standard practice.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
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	YES	NO	NA
A.1.1 Contract Compliance Screening Report (CCS) - Present?	[✓]	___	___
ACTION: If no, contact RSCC.			
A.1.2 Record of Communication (from RSCC) - Present?	[✓]	___	___
ACTION: If no, request from RSCC.			
A.1.3 Trip Report - Present and complete?	[✓]	___	___
ACTION: If no, contact RSCC for trip report.			
A.1.4 Sample Traffic Report - Present?	[✓]	___	___
Legible?	[✓]	___	___
ACTION: If no, request from Regional Sample Control Center (RSCC).			
A.1.5 Cover Page - Present?	[✓]	___	___
Is cover page properly filled in and signed by the lab manager or the manager's designee?	[✓]	___	___
ACTION: If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	[✓]	___	___
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	[✓]	___	___
(b) Form I's?	[✓]	___	___
ACTION: If no for any of the above, contact RSCC for clarification.			

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
Number: HW-2
Revision: 11

A.1.6 Form I to IX	Yes	No	N/A
A.1.6.1 Are all the Form I through Form IX labeled with:			
Laboratory name?	[/]	___	___
Case/SAS number?	[/]	___	___
EPA sample No.?	[/]	___	___
SDG No.?	[/]	___	___
Contract No.?	[/]	___	___
Correct units?	[/]	___	___
Matrix?	[ ]	___	___

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:			
(NOTE: Check all forms against raw data.)			
(a) all analytes analyzed by ICP?	[/]	___	___
(b) all analytes analyzed by GFAA?	[ ]	___	/___
(c) all analytes analyzed by AA Flame?	[/]	___	___
(d) Mercury?	[/]	___	/___
(e) Cyanide?	[ ]	___	/___

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

Title: Evaluation of Metals Data for the Contract Laboratory Program Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
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			YES	NO	N/A
A.1.7	Raw Data				
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?		[✓]		
	Digestion Log for furnace AA Form XIII present?		[ ]		✓
	Distillation Log for mercury Form XIII present?		[✓]		
	Distillation Log for cyanides Form XIII present?		[ ]		✓
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?		[✓]		
	*Weights, dilutions and volumes used to obtain values.				
	Percent solids calculation present for soils/sediments?		[ ]		✓
	Are preparation dates present on sample preparation logs/bench sheets?		[✓]		
A.1.7.2	Measurement read out record present?	ICP	[✓]		
		Flame AA	[ ]		✓
		Furnace AA	[ ]		✓
		Mercury	[✓]		
		Cyanides	[ ]		✓
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?		[✓]		
	Legible?		[✓]		
	Properly Labeled?		[ ]		

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract

Date: Jan. 1992
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Compliance (Total Review)

		YES	NO	N/A
A.1.8	Holding Times - (aqueous and soil samples)			
	(Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days). . . . . exceeded?	___	[✓]	___
	Cyanide distillation (14 days). . . . . exceeded?	___	[ ]	___
	Other Metals analysis (6 months). . . . exceeded?	___	[ ]	___
	NOTE: Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	ACTION: If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for:			
	Metals Analysis >2?	___	[ ]	___
	Cyanides Analysis <12?	___	[ ]	___
	Action: If yes, flag the associated metals and cyanides data as estimated.			
A.1.9	Form I (Final Data)			
A.1.9.1	Are all Form I's present and complete?	[ ]	___	___
	ACTION: If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?	[ ]	___	___
	Are soil sample results for each parameter corrected for percent solids?	[ ]	___	___
	Are all "less than IDL" values properly coded with "U"?	[ ]	___	___

		YES	NO	N/A
	Are the correct concentration qualifiers used with final data?	[✓]		
	ACTION: If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3	Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	[✓]		
	Was a brief physical description of samples given on Form I's?	[✓]		
	Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?		[✓]	
	ACTION: If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			
A.1.10	Calibration			
A.1.10.1	Is record of at least 2 point calibration present for ICP analysis?	[✓]		
	Is record of 5 point calibration present for Hg analysis?	[✓]		
	Is record of 4 point calibration present for:			
	Flame AA?	[ ]		✓
	Furnace AA?	[ ]		✓
	Cyanides?	[ ]		✓
	Is one calibration standard at the CRDL level for all AA and cyanides analyses?	[✓]		
	ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".			

	YES	NO	N/A
A.1.10.2 Is correlation coefficient less than 0.995 for:			
Mercury Analysis?	___	[/]	___
Cyanide Analysis?	___	[___]	/
Atomic Absorption Analysis?	___	[___]	/

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3 In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within ±10% of the true values?	[___]	___	/

ACTION: If no, flag the associated data as estimated if standards are not within ±10% of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 Form II A (Initial and Continuing Calibration Verification) - /

A.1.11.1 Present and complete for every metal and cyanide?	[___]	___	___
Present and complete for AA and ICP when both are used for the same analyte?	[___]	___	/

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2 Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
Metals- 90-110%R?	[/]	___	___
Hg - 80-120%R?	[/]	___	/
Cyanides- 85-115%R?	[___]	___	/

	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (UJ) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	[✓]	___	___
Was ICV for cyanides distilled?	[___]	___	✓
ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.12 Form II B (CRDL Standards for AA and ICP) -			
A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals?	[✓]	___	___
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	[___]	___	✓
Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL,Ba,Ca,Fe,Mg,Na,or K is not required.)	[✓]	___	___
ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are: AA Analysis - **True Value ± CRDL; ICP Analysis - **True Value ± 2CRDL; CN Analysis - **True Value ± 0.5 x True Value.			

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

		YES	NO	N/A
A.1.12.2	Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	[✓]	___	___

ACTION: If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".

A.1.12.3 Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.

Are CRA and CRI standards within control limits:

Metals 80 - 120%R?	[___]	✓	___	

Is mid-range standard within control limits:

Cyanide 80 - 120%R?	[___]	___	✓	

ACTION: Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of CRI standard outside the control limits.

Note: Flag or reject the final results only when sample raw data are within the affected ranges and the CRDL standards are outside the acceptance windows.

A.1.13 Form III (Initial and Continuing Calibration Blanks)

A.1.13.1	Present and complete?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[✓]	___	✓
	Was an initial calibration blank analyzed?	[✓]	___	___
	Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	[✓]	___	

		YES	NO	N/
	ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/ Non-Compliance section of the "Data Assessment Narrative".			
A.1.13.2	Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).			
	Are all calibration blanks (when IDL<CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?	[✓]	___	___
	Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)?	[✓]	___	___
	ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank. Flag five samples on either side of the calibration blank outside the control limits.			
A.1.14	FORM III (Preparation Blank) - (Note: The preparation blank for mercury is the same as the calibration blank.)			
A.1.14.1	Was one prep. blank analyzed for:			
	each Sample Delivery Group (SDG)?	[✓]	___	___
	each batch of digested samples?	[✓]	___	___
	each matrix type?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[ ]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the associated positive data <10 x IDLs for which prep. blank was not analyzed.			
	NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			

		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL?	___	[/]	___
	If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep.blank?	___	[___]	/
	ACTION: If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.			
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL?	[/]	___	___
	ACTION: If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.			
A.1.14.4	Is concentration of prep. blank below the negative CRDL?	___	[/]	___
	ACTION: If yes, reject (red-line) all associated sample results less than 10xCRDL.			
A.1.15	Form IV (ICP Interference Check Sample)	/		
A.1.15.1	Present and complete?	[___]	___	___
	(NOTE: Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.)			
	Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)?	[/]	___	___
	ACTION: If no, flag as estimated (J) all the samples for which AL, Ca, Fe, or Mg is higher than in ICS.			
A.1.15.2	Circle all values on each Form IV that are more than ± 20% of true or established mean value.			
	Are all Interference Check Sample results inside the control limits (± 20%)?	[/]	___	___
	If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	[___]	___	___

		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)- (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each conc. range (i.e. low, med., high)?	[✓]	___	___
	For both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	___	[✓]	___
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	[___]	✓	___
	If no, is sample concentration greater than or equal to four times spike concentration?	[___]	✓	___

	YES	NO	N/A
ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.			
Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?	[✓]	___	___
ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".			

A.1.16.4 Aqueous

Are any spike recoveries:

(a) less than 30%?	___	[___]	___
(b) between 30-74%?	✓	[___]	___
(c) between 126-150%?	___	[___]	___
(d) greater than 150%?	___	[___]	___

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5 Soil/Sediment

Are any spike recoveries:

(a) less than 10%?	___	[___]	___
(b) between 10-74%?	___	[___]	___
(c) between 126-200%?	___	[___]	___
(d) greater than 200%?	___	[___]	___

		YES	NO	N/A
	ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			
A.1.17	Form VI (Lab Duplicates)			
A.1.17.1	Present and complete for: each SDG?	[✓]	___	___
	each matrix type?	[✓]	___	___
	each concentration range (i.e. low, med., high)?	[✓]	___	___
	both AA and ICP when both are used for the same analyte?	[___]	___	✓
	ACTION: If no for any the above, flag as estimated (J) all the data ≥CRDL* for which duplicate sample was not analyzed.			
	Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.			
	2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.			
A.1.17.2	Was field blank used for duplicate analysis?	___	[___]	___
	ACTION: If yes, flag all data ≥CRDL* as estimated (J) for which field blank was used as duplicate.			
A.1.17.3	Are all values within control limits (RPD 20% or difference ≤ ±CRDL)?	[✓]	___	___
	If no, are all results outside the control limits flagged with an * on Form I's and VI?	[___]	___	✓
	ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".			

* Substitute IDL for CRDL when IDL > CRDL.

	YES	NO	N/A

NOTE: 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[___]	
Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	___	[___]	___

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :			
> 100%?	___	[___]	___
Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :			
> 2x*CRDL?	___	[___]	___

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

Title: Evaluation of Metals Data for the Contract Laboratory Program
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		YES	NO	N/A
	ACTION: If yes, flag the associated data as estimated.			
A.1.18	Field Duplicates			
A.1.18.1	Were field duplicates analyzed?	[✓]	___	___

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RPDs or Difference for each analyte.

NOTE: 1. Do not calculate RPD when both values are less than IDL.
2. Flag all associated data only for field duplicate pair.

A.1.18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?	___	[✓]	___
Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?	✓	[___]	___

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

A.1.18.3 Soil/Sediment

Circle all values on self prepared Form VI for field duplicates that are:

RPD >100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) :

>100%? ___ [ ] ___

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL):

>2x *CRDL? ___ [ ] ___

ACTION: If yes, flag the associated data as estimated.

A.1.19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

A.1.19.1 Was one LCS prepared and analyzed for:

each SDG? [ ] ___ ___

each batch samples digested/distilled? [ ] ___ ___

both AA and ICP when both are used for the same analyte? [ ] ___ ___

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

	YES	NO	N/A

A.1.19.2 Aqueous LCS

Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.

Is any LCS recovery:				
less than 50%?	___	[✓]	___
between 50% and 79%?	___	[✓]	___
between 121% and 150%?	___	[✓]	___
greater than 150%?	___	[✓]	___

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 Solid LCS

NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII?	___	[ ]	✓

ACTION: If yes, qualify all associated positive data as estimated.

Is LCS "Found" value lower than the Control limits on Form VII?	___	[ ]	✓

ACTION: If yes, qualify all associated data as estimated.

		YES	NO	N/A
A.1.20	Form IX (ICP Serial Dilution) -			
	NOTE: Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for: each SDG?	[/]	___	___
	each matrix type?	[/]	___	___
	each concentration range (i.e. low, med.)?	[/]	___	___
	ACTION: If no for any of the above, flag as estimated all the positive data ≥ 10xIDLs or ≥ CRDL when 10xIDL ≤ CRDL for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis?	___	[/]	___
	ACTION: If yes, flag all associated data ≥ 10 x IDL as estimated (J). If 10xIDL ≤ CRDL, flag all data ≥ CRDL.			
A.1.20.3	Are results outside control limit flagged with an "E" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater.	[/]	___	___
	ACTION: If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only.			
	Are any % difference values: > 10%?	[/]	[ ]	___
	≥ 100%?	[/]	[ ]	___

		YES	NO	N/A
	ACTION: Flag as estimated (J) all the associated sample data ≥ 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than 10xIDLs (or ≥ CRDL when 10xIDL ≤ CRDL) for which PD is greater than or equal to 100%.			
	Note: Flag or reject on Form I's only the sample results whose associated raw data are ≥ 10xIDL (or ≥ CRDL when 10xIDL≤ CRDL)			
A.1.21	Furnace Atomic Absorbtion (AA) QC Analysis			
A.1.21.1	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?	[ ]	___	✓
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.			
A.1.21.2	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?	[ ]	___	✓
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?	[ ]	___	✓
	ACTION: If no for any of the above, flag all the associated data as estimated.			
A.1.21.3	Is *analytical spike recovery outside the control limits (85-115%) for any sample?	___	[ ]	✓
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.			

* Analytical spike is not required on the pre-digestion spiked sample.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
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		YES	NO	N/A
	NOTE: Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.			
A.1.22	Form VIII (Method of Standard Addition Results)			/
A.1.22.1	Present?	[ ]	___	___
	If no, is any Form I result coded with "S" or a "+"?	___	[ ]	/
	ACTION: If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.			
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	___	[ ]	/
	ACTION: If yes, reject (red-line) the affected data.			
A.1.22.3	Was *MSA required for any sample but not performed?	___	[ ]	/
	Is coefficient of correlation for MSA less than 0.995?	___	[ ]	/
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	___	[ ]	/
	ACTION: If yes for any of the above, flag all the associated data as estimated (J).			
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	[ ]	___	/
	ACTION: If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.			

* MSA is not required on LCS and prep. blank.

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.1: Data Assessment - Contract Compliance (Total Review)

Date: Jan. 1992
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		YES	NO	N/A
A.1.23	Dissolved/Total or Inorganic/Total Analytes -			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	___	[✓]	___
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	___	[✓]	___
	NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration. 2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents. 3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	___	[___]	✓
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	___	[___]	✓
	ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.			
A.1.24	Form I (Field Blank) -			
	Note: Designate "Field Blank" as such on Form I.)			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?	[___]	___	✓

	YES	NO	N/A
If no, was field blank value already rejected due to other QC criteria?	[ ]		/

ACTION: If no, reject (except field blank results) all associated positive sample data less than or equal to five times the field blank value. Reject on Form I's the soil sample results that when converted to ug/L on wet basis are less than or equal to five times the field blank value in ug/L.

A.1.25 Form X, XI, XII (Verification of Instrumental Parameters).

A.1.25.1	Is verification report present for:			
	Instrument Detection Limits (quarterly)?	[/]		
	ICP Interelement Correction Factors (annually)?	[/]		
	ICP Linear Ranges (quarterly)?	[/]		

ACTION: If no, contact TPO of the lab.

A.1.25.2	Form X (Instrument Detection Limits) - (Note: IDL is not required for Cyanide.)			
A.1.25.2.1	Are IDLs present for: all the analytes?	[/]		
	all the instruments used?	[/]		
	For both AA and ICP when both are used for the same analyte?	[ ]		/

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.25.2.2	Is IDL greater than CRDL for any analyte?		[/]	
	If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	[ ]		/

	YES	NO	N/A

Action : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.

A.1.25.3 Form XI (Linear Ranges)

A.1.25.3.1 Was any sample result higher than high linear range of ICP. ___ [✓] ___

Was any sample result higher than the highest calibration standard for non-ICP parameters? ___ [✓] ___

If yes for any of the above, was the sample diluted to obtain the result on Form I? [___] ___ ✓

ACTION: If no, flag the result reported on Form I as estimated(J).

A.1.26 Percent Solids of Sediments

A.1.26.1 Are percent solids in sediment(s):

< 50%? ___ [___] ✓

< 10%? ___ [___] ✓

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag(J) only the sample results that were not previously rejected or flaged due to other QC criteria.

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTC89	23220S
MBTC89D	23220S2
MBTC89S	23220DS
MBTC90	23221S
MBTC91	23222S
MBTC92	23223S
MBTC93	23224S
MBTC94	23225S
MBTC95	23226S
MBTC96	23227S
MBTC97	23228S
MBTD00	23229S
MBTD01	23230S
MBTD02	23231S
MBTD03	23232S
MBTD04	23233S
MBTD05	23234S
MBTD06	23235S
MBTD21	23268S
MBTD22	23269S

Were ICP interelement corrections applied?	Yes/No	YES
Were ICP background corrections applied?	Yes/No	YES
If yes-were raw data generated before application of background corrections?	Yes/No	NO

Comments: The cooler temperatures measured 6.0°C, 6.5°C and 4.5°C.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: [signature] Name: BAK/Gene

Date: 8/9/99 Title: [illegible]

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

SOW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBTD23	23270S
MBTD24	23271S

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____ Name: [illegible]

Date: 8/9/95 Title: [illegible]

MTG-3.200387

EPA SAMPLE NO.

MBTC89

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23220S

Level (low/med): LOW Date Received: 07/28/99

% 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	106	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	0.72	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	172	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	15.2	B		P
7439-89-6	Iron	86.7	B		P
7439-92-1	Lead	3.9			P
7439-95-4	Magnesium	14.4	U		P
7439-96-5	Manganese	0.60	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	496	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	4610	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	11.7	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC90

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23221S

Level (low/med): LOW Date Received: 07/28/99

% 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	456			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	13.8	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	896	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	54.7			P
7439-89-6	Iron	287			P
7439-92-1	Lead	14.5			P
7439-95-4	Magnesium	467	B		P
7439-96-5	Manganese	10.2	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	536	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1460	B		P
7440-28-0	Thallium	4.0	B		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	4.6	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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MTG-3.200389

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC91

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23222S

Level (low/med): LOW Date Received: 07/28/99

% 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	479			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	10.7	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	668	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	12.1	B		P
7439-89-6	Iron	445			P
7439-92-1	Lead	2.5	B		P
7439-95-4	Magnesium	317	B		P
7439-96-5	Manganese	7.9	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	438	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	2430	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	8.4	B		P
	Cyanide				NR

J

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC92

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23223S

Level (low/med): LOW Date Received: 07/28/99

% 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	1520			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	69.8	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	1.0	B		P
7440-70-2	Calcium	516	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	19.6	B		P
7440-50-8	Copper	7.5	B		P
7439-89-6	Iron	993			P
7439-92-1	Lead	1.8	B		P
7439-95-4	Magnesium	1530	B		P
7439-96-5	Manganese	13.4	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	12.9	B		P
7440-09-7	Potassium	1060	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	2350	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.5	B		P
7440-66-6	Zinc	9.7	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200391

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC93

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23224S

Level (low/med): LOW Date Received: 07/28/99

% 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	92.4	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	0.94	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	125	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	130			P
7439-89-6	Iron	60.4	B		P
7439-92-1	Lead	3.1			P
7439-95-4	Magnesium	14.4	U		P
7439-96-5	Manganese	0.60	U		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	185	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	20300			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	9.4	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTC94

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23225S

Level (low/med): LOW Date Received: 07/28/99

% 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	622			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	13.4	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	365	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	92.9			P
7439-89-6	Iron	495			P
7439-92-1	Lead	2.6	B		P
7439-95-4	Magnesium	359	B		P
7439-96-5	Manganese	7.3	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	583	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1620	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	14.4	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

8

MTG-3.200393

EPA SAMPLE NO.

MBTC95

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23226S

Level (low/med): LOW Date Received: 07/28/99

% 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	258			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	101	B		P
7440-41-7	Beryllium	0.47	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1210	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	152			P
7439-89-6	Iron	98.0	B		P
7439-92-1	Lead	5.1			P
7439-95-4	Magnesium	1510	B		P
7439-96-5	Manganese	4.2	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	1010	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	4380	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	14.5	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200394

EPA SAMPLE NO.

MBTC96

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23227S

Level (low/med): LOW Date Received: 07/28/99

% 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	404			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	161	B		P
7440-41-7	Beryllium	0.60	B		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1860	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	3.5	B		P
7440-50-8	Copper	400			P
7439-89-6	Iron	109			P
7439-92-1	Lead	15.2			P
7439-95-4	Magnesium	2890	B		P
7439-96-5	Manganese	23.7			P
7439-97-6	Mercury	0.15	B		CV
7440-02-0	Nickel	3.1	B		P
7440-09-7	Potassium	2320	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	31300			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	73.4			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200395

EPA SAMPLE NO.

MBTC97

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23228S

Level (low/med): LOW Date Received: 07/28/99

% 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	169	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	137	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	2240	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.6	B		P
7440-50-8	Copper	35.5			P
7439-89-6	Iron	18.8	U		P
7439-92-1	Lead	2.9	B		P
7439-95-4	Magnesium	3820	B		P
7439-96-5	Manganese	9.3	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.7	B		P
7440-09-7	Potassium	1200	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	2970	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	9.5	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200396

EPA SAMPLE NO.

MBTD00

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23229S

Level (low/med): LOW Date Received: 07/28/99

% 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	321			P	
7440-36-0	Antimony	3.0	U	N	P	J
7440-38-2	Arsenic	3.0	U		P	
7440-39-3	Barium	111	B		P	
7440-41-7	Beryllium	0.45	B		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	1200	B		P	
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	2.2	U		P	
7440-50-8	Copper	201			P	
7439-89-6	Iron	77.7	B		P	J
7439-92-1	Lead	9.0			P	
7439-95-4	Magnesium	1650	B		P	
7439-96-5	Manganese	4.5	B		P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	2.5	U		P	
7440-09-7	Potassium	1240	B		P	
7782-49-2	Selenium	2.3	U		P	
7440-22-4	Silver	1.4	U		P	
7440-23-5	Sodium	4790	B		P	
7440-28-0	Thallium	3.3	U		P	
7440-62-2	Vanadium	1.4	U		P	
7440-66-6	Zinc	28.6			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

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MTG-3.200397

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD01

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23230S

Level (low/med): LOW Date Received: 07/28/99

% 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	328			P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	47.3	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	~~6920~~			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	3.3	B		P
7440-50-8	Copper	136			P
7439-89-6	Iron	185			P
7439-92-1	Lead	3.1			P
7439-95-4	Magnesium	2140	B		P
7439-96-5	Manganese	51.0			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.6	B		P
7440-09-7	Potassium	3740	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	7010			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	49.1			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200398

EPA SAMPLE NO.

MBTD02

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23231S

Level (low/med): LOW Date Received: 07/28/99

% 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	112	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	132	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	3350	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.9	B		P
7440-50-8	Copper	120			P
7439-89-6	Iron	302			P
7439-92-1	Lead	5.2			P
7439-95-4	Magnesium	3940	B		P
7439-96-5	Manganese	29.9			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	5.9	B		P
7440-09-7	Potassium	1760	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	8920			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	39.6			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200399

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD03

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23232S

Level (low/med): LOW Date Received: 07/28/99

% 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	226			P	
7440-36-0	Antimony	3.0	U	N	P	J
7440-38-2	Arsenic	3.0	U		P	
7440-39-3	Barium	228			P	
7440-41-7	Beryllium	0.41	B		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	~~5990~~			P	
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	4.0	B		P	
7440-50-8	Copper	100			P	
7439-89-6	Iron	167			P	
7439-92-1	Lead	18.5			P	
7439-95-4	Magnesium	5070			P	
7439-96-5	Manganese	61.6			P	
7439-97-6	Mercury	5.3			CV	
7440-02-0	Nickel	6.8	B		P	
7440-09-7	Potassium	3070	B		P	
7782-49-2	Selenium	2.3	U		P	
7440-22-4	Silver	1.4	U		P	
7440-23-5	Sodium	25700			P	J
7440-28-0	Thallium	3.3	U		P	
7440-62-2	Vanadium	1.4	U		P	
7440-66-6	Zinc	30.9			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200400

EPA SAMPLE NO.

MBTD04

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23233S

Level (low/med): LOW Date Received: 07/28/99

% 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	165	B		P	
7440-36-0	Antimony	3.0	U	N	P	J
7440-38-2	Arsenic	3.0	U		P	
7440-39-3	Barium	106	B		P	
7440-41-7	Beryllium	0.40	U		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	4760	B		P	
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	2.9	B		P	
7440-50-8	Copper	3260			P	
7439-89-6	Iron	64.6	B		P	
7439-92-1	Lead	7.0			P	
7439-95-4	Magnesium	2160	B		P	
7439-96-5	Manganese	31.3			P	
7439-97-6	Mercury	1.0			CV	
7440-02-0	Nickel	2.5	U		P	
7440-09-7	Potassium	4070	B		P	
7782-49-2	Selenium	2.3	U		P	
7440-22-4	Silver	1.4	U		P	
7440-23-5	Sodium	7150			P	J
7440-28-0	Thallium	3.3	U		P	
7440-62-2	Vanadium	1.4	U		P	
7440-66-6	Zinc	16.8	B		P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200401

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD05

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23234S

Level (low/med): LOW Date Received: 07/28/99

% 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	85.1	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	12.8	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	605	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	25.4			P
7439-89-6	Iron	18.8	U		P
7439-92-1	Lead	2.7	B		P
7439-95-4	Magnesium	575	B		P
7439-96-5	Manganese	2.0	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	500	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1650	B		P
7440-28-0	Thallium	3.5	B		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	5.2	B		P
	Cyanide				NR

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Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

7

MTG-3.200402

EPA SAMPLE NO.

MBTD06

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23235S

Level (low/med): LOW Date Received: 07/28/99

% 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	115	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	34.5	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	573	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	526			P
7439-89-6	Iron	18.8	U		P
7439-92-1	Lead	16.7			P
7439-95-4	Magnesium	1380	B		P
7439-96-5	Manganese	2.7	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	5.2	B		P
7440-09-7	Potassium	607	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	2120	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	141			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200403

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD21

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23268S

Level (low/med): LOW Date Received: 07/29/99

% 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	88.4	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	40.0	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	1520	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	331			P
7439-89-6	Iron	40.4	B		P
7439-92-1	Lead	7.4			P
7439-95-4	Magnesium	1450	B		P
7439-96-5	Manganese	6.1	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	939	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	4060	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	12.7	B		P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

MTG-3.200404

EPA SAMPLE NO.

MBTD22

INORGANIC ANALYSIS DATA SHEET

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23269S

Level (low/med): LOW Date Received: 07/29/99

% 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	118	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	161	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	5200			P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	4.6	B		P
7440-50-8	Copper	693			P
7439-89-6	Iron	2160			P
7439-92-1	Lead	7.5			P
7439-95-4	Magnesium	3570	B		P
7439-96-5	Manganese	86.4			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	3.6	B		P
7440-09-7	Potassium	2130	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	13700			P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	37.7			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

20

MTG-3.200405

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD23

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23270S

Level (low/med): LOW Date Received: 07/29/99

% 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	112	B		P
7440-36-0	Antimony	3.0	U	N	P
7440-38-2	Arsenic	3.0	U		P
7440-39-3	Barium	15.7	B		P
7440-41-7	Beryllium	0.40	U		P
7440-43-9	Cadmium	0.50	U		P
7440-70-2	Calcium	376	B		P
7440-47-3	Chromium	1.0	U		P
7440-48-4	Cobalt	2.2	U		P
7440-50-8	Copper	134			P
7439-89-6	Iron	269			P
7439-92-1	Lead	5.9			P
7439-95-4	Magnesium	346	B		P
7439-96-5	Manganese	2.4	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	2.5	U		P
7440-09-7	Potassium	441	B		P
7782-49-2	Selenium	2.3	U		P
7440-22-4	Silver	1.4	U		P
7440-23-5	Sodium	1590	B		P
7440-28-0	Thallium	3.3	U		P
7440-62-2	Vanadium	1.4	U		P
7440-66-6	Zinc	22.1			P
	Cyanide				NR

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

U.S. EPA - CLP
1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBTD24

Lab Name: SENTINEL INC. Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 27237 SAS No.: SDG No.: MBTC89

Matrix (soil/water): WATER Lab Sample ID: 23271S

Level (low/med): LOW Date Received: 07/29/99

% 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	122	B		P	
7440-36-0	Antimony	3.0	U	N	P	J
7440-38-2	Arsenic	3.0	U		P	
7440-39-3	Barium	16.9	B		P	
7440-41-7	Beryllium	0.40	U		P	
7440-43-9	Cadmium	0.50	U		P	
7440-70-2	Calcium	390	B		P	
7440-47-3	Chromium	1.0	U		P	
7440-48-4	Cobalt	2.2	U		P	
7440-50-8	Copper	150			P	
7439-89-6	Iron	623			P	
7439-92-1	Lead	24.5			P	
7439-95-4	Magnesium	430	B		P	
7439-96-5	Manganese	14.6	B		P	
7439-97-6	Mercury	0.10	U		CV	
7440-02-0	Nickel	2.5	U		P	
7440-09-7	Potassium	2640	B		P	
7782-49-2	Selenium	2.3	U		P	
7440-22-4	Silver	1.4	U		P	
7440-23-5	Sodium	8090			P	J
7440-28-0	Thallium	3.3	U		P	
7440-62-2	Vanadium	1.4	U		P	
7440-66-6	Zinc	85.7			P	
	Cyanide				NR	

Color Before: COLORLESS Clarity Before: CLEAR Texture:

Color After: COLORLESS Clarity After: CLEAR Artifacts:

Comments:

22

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Sentinel Contract No.: 68-D5-0169

Lab Code: Sentin Case No.: 27237

Full Sample Analysis Price in Contract:

SDG No./First Sample in SDG: MBTC89 Sample Receipt Date: 7/28/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: MBTD24 Sample Receipt Date: 7/29/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	MBTC89	7/28	11	MBTD01	
2	90		12	02	
3	91		13	03	
4	92		14	04	
5	93		15	05	
6	94		16	06	
7	95		17	MBTD21	7/29
8	96		18	22	
9	97		19	23	
10	MBTD00		20	24	

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Amanda B Hosett
Signature

7/29/99
Date

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RECORD OF COMMUNICATION

TO: Smitha Sundaly

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: August 27, 1999

SUBJECT: QUALITY ASSURED DATA

MESSAGE

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

(1) Monroe Township Ground water Contamination
Case # 27237 MitKem Organic
SDG# BYR04 [redacted] Low Conc VOA 14 Water
SDG# BY Q70 [redacted] Low Conc VOA 20 Water

* Last SDG's For this Case

REPLY BY: _____

SIGNATURE: Janis Wisavage DATE: 7 September 1999

DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file

RECEIVED
AUG 30 1999

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

MTG-3.200410

DATE: AUG. 18, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: George Karras, Hazardous Waste Support Section

RECEIVED
AUG 24 1999

Attached is the following ORGANIC Data Package to be reviewed for Quality Assurance

SITE MONROE TWP. G.W. CONTAM. CASE# 27237/SDG#BYQ70

CONTRACTOR STARTW #SAMPLES MATRIX

PHASE IA

LAB MITKEM 20 WATER

TURN-AROUND-TIME 14 DAYS FRACTION LOW CONC. VOA ONLY

CERCLIS ID # NJD980769699 SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	8-13-99
John Bulich	8-18-99	Mark Jaull	8-18-99
Mark Jaull	mz ~~8-19-99~~ 8-23-99	J. Trotter	8/23/99
J. Trotter		G Karras	8/23/99
G Karras	8/24/99	John Bulich	8-24-99

RECEIVED
AUG 30 1999

(over for instructions) revised 3/99

ATTACHMENT 1
SOP NO. HW-13

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

CASE No.: 27237 SDG No.: BYQ70
LABORATORY: MITKEM SITE: Monroe Twp G. W. Contamination

DATA ASSESSMENT

The current SOP HW-13 (Revision 2) June 1996, USEPA Region II Data Validation SOP for Statement of Work OLCO 2.1. for evaluating organic data have been applied.

All data are valid and acceptable except those analytes rejected "R"(unusable). Due to the detection of QC problems, some analytes may have the "J" (estimated), "N"(presumptive evidence for the presence of the material, "U" (non-detect) or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's
Signature: Mark Zambrowski Date: August 19, 1999

Verified By: _____ Date: 8/23/1999

CLP DATA ASSESSMENT

SDG 1, BYQ70

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.
VOA: No problems.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.
VOA: No problems.

3. LABORATORY CONTROL SAMPLE (LCS):

The LCS data is generated from a laboratory quality control sample. LCS data is intended to assess the ability of the contractor to perform the analytical method.
VOA: No problems.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the

CLP DATA ASSESSMENT

analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:
VOA: No problems.

B) Field or rinse blank contamination:
VOA: Not applicable.

C) Trip blank contamination for VOA aqueous samples:
VOA: The following samples were raised to the CRQL and qualified "U" for chloroform due to contamination in the trip blank BWX49: BYQ81, BYQ91, and BYQ95.

D) Storage blank associated with VOA samples only
VOA: No problems.

E) Tics "R" rejected
VOA: No problems.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".
VOA: No problems.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

CLP DATA ASSESSMENT

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

VOA: The analytes acetone, 2-butanone, and 1,2-dibromo-3-chloropropane were qualified "J" for hits and "R" for non-detects in the following samples due to reported RRF5 values less than 0.050: VBLK1Q, VLCS1Q, BYQ70, BYQ78, BYQ79, BYQ80, BYQ81, BYQ82, BYQ83, BYQ85, BYQ86, BYQ87, and BYQ88.

The analyte acetone was qualified "J" for hits and "R" for non-detects in the following samples due to reported RRF5 values less than 0.050: VBLK1R, BYQ90, BYQ91, BYQ92, BYQ93, BYQ94, BYQ95, BYQ96, BYQ84, BYQ89, and VHBLK1R.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

For the PEST/PCB fraction, if %RSD exceeds 20% for all analytes except for the two surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the sample shown were qualified for %RSD and %D:

VOA: No problems.

CLP DATA ASSESSMENT

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction.
VOA: No problems.

9. COMPOUND IDENTIFICATION:

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

B) Pesticide Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10 ng/ml in the final sample extract.

10. CONTRACT PROBLEMS NON-COMPLIANCE:
VOA: The following samples exceeded the contractual holding time of 10 days as per the SOW, D-23/VOA, Sect. 8.4: BYQ70, BYQ78,

CLP DATA ASSESSMENT

BYQ79, BYQ80, BYQ81, BYQ82, BYQ83, BYQ84, BYQ85, BYQ86, BYQ87, BYQ88, BYQ89, BYQ90, BYQ91, BYQ92, BYQ93, BYQ94, BYQ95, and BYQ96.

11. FIELD DOCUMENTATION:
VOA: No problems.

12. OTHER PROBLEMS
VOA: No problems.

13. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified not to be used.

VOA: No problems.

DPO: []ACTION []FYI REGION__2_

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO._27237__ LABORATORY_MITKEM_____

SDG NO. BYQ70 _ DATA USER___EPA/Region II_____

SOW_OLCO2.1 _____ REVIEW COMPLETION DATE_8/19/99___

NO. OF SAMPLES____20__WATER _____SOIL _____OTHER

REVIEWER: [] ESD [x] ESAT [] OTHER, CONTRACTOR_____

QC ITEM	VOA	BNA	PEST		
HOLDING TIMES	O				
GC-MS PERFORMANCE	O				
INITIAL CALIBRATIONS	O				
CONTINUING CALIBRATIONS	M				
FIELD BLANKS(F = N/A)	O				
LABORATORY BLANKS	O				
SURROGATES	O				
MATRIX SPIKE/DUPLICATES	O				
QC SAMPLES(LCS, PVS)	O				
INTERNAL STANDARDS	O				
COMPOUND IDENTIFICATION	O				
COMPOUND QUANTITATION	X				
SYSTEM PERFORMANCE	O				
OVERALL ASSESSMENT	M				

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DATA REJECTION SUMMARY

Type of Review: Organic Date: 8/19/99 Case No. 27237, SDG# BYQ70

Site Name: Monroe Township Groundwater Contamination Lab Name: MITKEM Reviewer's Initials: MZ

Number of Samples: 20 H_2O, soils, +QC + reanalyses/dilutions

Analytes Rejected Due To Exceeding Review Criteria For:

No. of Compounds/No. of Fractions(Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standards	Other	Total # Samples	Total # Rejected/ Total # in All Samples
VOA(41)	0	0	49	0	0	0	0	24	49/984 = 5%
ACID(14)	0	0	0	0	0	0	0	0	NA
B/N(45)	0	0	0	0	0	0	0	0	NA
PEST(21)	0	0	0	0	0	0	0	0	NA
PCB(7)	0	0	0	0	0	0	0	0	NA

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITIERIA.

Analytes Estimated Due To Exceeding Review Criteria For:

No. of Compounds/No. of Fractions(Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standards	Other	Total # Samples	Total # estimated/ Total # in All Samples
VOA(41)	0	0	1	0	0	0	1	24	2/984 = <1%
ACID(14)	0	0	0	0	0	0	0	0	NA
B/N(45)	0	0	0	0	0	0	0	0	NA
PEST(21)	0	0	0	0	0	0	0	0	NA
PCB(7)	0	0	0	0	0	0	0	0	NA

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITIERIA.

MTG-3.200418

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 27237 LAB: MITKEM

SITE NAME: Monroe Township Groundwater Contamination SDG No(s).: BYQ70

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [✓] ___ ___

ACTION: If no contact RSCC, or the WAM to obtain replacement of missing or illegible copies from the lab.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [✓] ___ ___

ACTION: If no, contact either RSCC or ask the WAM to obtain the necessary information from the prime contractor.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ ✓

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the lab. If lab cannot provide them, note the effect on the review of the data package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with the package? [ ] ✓ ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report and Sample Tags? ___ [✓] ___

ACTION: If yes, contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory.

	YES	NO	N

3.0 Cover Letter SDG Narrative

		YES	NO	N
3.1	Is the Narrative or Cover Letter Present?	[✓]	___	___
3.2	Are the Case number and SDG number contained in the Narrative or Cover letter?	[✓]	___	___
3.3	Does the Narrative contain the following information (see SOW, page B-11, section 2.6.1):			
	VOA: description or trap and column(s) used during sample analyses?	[✓]	___	___
	BNA: descriptions of column(s) used during sample analyses?	[ ]	___	✓
	PEST: description of columns used during sample analyses?	[ ]	___	✓

NOTE: As stated in the SOW, page D-11/PEST, section 6.1.1.3.7, packed columns cannot be used.

3.4	Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	___	✓
3.5	Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler exceeded 10° C, the lab must list by fraction and sample number, all affected samples.	[ ]	✓	___
3.6	Does the narrative contain a list of the pH values determined for each water sample submitted for volatiles analysis (SOW, page B-11, section 2.6.1.2)?	[✓]	___	___
3.7	Does the Case Narrative contain the "verbatim" statement as required on page B-11, section 2.6.1 of the SOW?	[✓]	___	___

ACTION: If "No", to any question in this section, contact the WAM to obtain necessary resubmittals. If the information is unavailable, document under the Contract Problems/Non-Compliance section of the Data Assessment.

	YES	NO	N/A

4.0 Data Validation Checklist

4.1 Check the package for the following (see SOW reporting requirements, section 2.1, page B-7):

a. Is the package paginated in ascending order starting from the SDG narrative?	[✓]	___	___
b. Are all forms and copies legible?	[✓]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[✓]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[✓]	___	___

The following checklist is divided into three parts. Part A is filled out if the data package contains any Low Concentration Volatile analyses, Part B for any Low Concentration Semivolatile analyses and Part C for Low Concentration Pesticide/Aroclors.

Does this package contain:

Low Concentration Volatiles Data?	✓	___
Low Concentration Semivolatiles Data?	___	✓
Low Concentration Pesticides/Aroclors data?	___	✓

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ [ ] ___

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the temperature of the cooler was > 10° C, then flag all positive results with a "J" and all non-detects "UJ".

Contractual holding times missed for all samples

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ [ ] ___

Technical Holding Times: Unpreserved samples maintained at 4°C, being evaluated for aromatic hydrocarbons, must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4°C, then samples must be analyzed within 14 days of collection. If uncertain about preservation, notify the WAM to contact the sampler and determine whether or not samples were preserved.

ACTION: List sampling, VTSR, analysis dates and preservation for samples which missed holding time in the table below.

YES NO N

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R). If holding times are exceeded by more than 28 days, flag all non-detects "R".

NOTE: Contractual Holding Times: Sample must be analyzed within 10 days from validated time of sample receipt (VTSR) at the laboratory.

3.0 System Monitoring Compound (SMC) Recovery (Form II LCV)

3.1 Are the Volatile SMC Recovery Summaries (Form II LCV) present? [ ] ___ ___

ACTION: Call the WAM to obtain an explanation/resubmittal from the lab. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.2 Were outliers marked correctly with an asterisk? [ ] ___ ___

ACTION: Circle all outliers in red.

	YES	NO	N/A
3.3 Was the surrogate, p-bromofluorobenzene, recovery outside contract limits of 80 - 120% for any sample or method blank?	___	[✓]	___
If yes, were samples re-analyzed?	[ ]	___	✓
Were method blanks re-analyzed?	[ ]	___	✓

ACTION: If p-bromofluorobenzene recovery was > 10%, but failed to meet SOW specifications:

1. Qualify all positive results estimated (J).
2. Flag all non-detects as estimated detection limits (UJ) where recovery is < 80%.
3. Do not qualify non-detects if surrogate recovery is > 120%.

If p-bromofluorobenzene recovery was < 10%:

1. Flag all positive results estimated (J).
2. Flag all non-detects unusable (R).

Professional judgement should be used to qualify data that only have an associated method blank with the SMC recovery out of specification in both the original and reanalysis. Check internal standard areas.

3.4 Are there any transcription/calculation errors between raw data and Form II?	___	[✓]	___

ACTION: If large errors exist, ask the WAM to obtain an explanation/resubmittal from the lab, make any necessary corrections and note errors in the data assessment.

4.0 Laboratory Control Sample (LCS) Recovery (Form III LCV)

4.1 Is the LCS Recovery Form (Form III LCV) present?	[✓]	___	___
4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples, whichever is more frequent) for the Low Concentration VOA method?	[✓]	___	___

ACTION: If any LCS data are missing, take action as specified in section 3.1 above.

YES NO N

4.3 How many VOA LCS recoveries are outside the specified QC limits of 60 - 140%?

0 out of 12

ACTION: Qualify associated samples for only the specific analytes included in the LCS solution in the following two situations:

1. If the LCS recovery is > 140%, flag positive results for the affected compound(s) estimated (J). Do not flag non-detects.

2. If the LCS recovery is < 60%, but mass spectral criteria were met, flag positive results for the affected compound(s) estimated (J) and non-detect(s) unusable (R).

Qualify all sample results in the following circumstances:

1. If 25% of the LCS recoveries were < 60%, qualify all positive results in the associated samples "J" and all non-detects "R".

2. If two or more LCS recoveries were < 10%, qualify all positive results in the associated samples "J" and all non-detects "R".

NOTE: It should be noted for TPO action (Organic Regional Data Assessment Summary Form) if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails LCS recovery criteria.

5.0 Method Blanks (Form IV LCV)

5.1 Is the Volatile Method Blank Summary (Form IV LCV) present? ✓ ___ ___

5.2 Frequency of Analysis: For the analysis of Low Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? ✓ ___ ___

5.3 Has a VOA method blank been analyzed at least once every twelve hours for each GC/MS system used? ✓ ___ ___

5.4 Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound

	YES	NO	N/A
at a concentration > 25 µg/ℓ (see SOW, page D-52/VOA, section 12.1.1.3)?	[ ]	___	/

ACTION: If any method/instrument blank data are missing, notify the WAM to obtain resubmittals or an explanation from the lab. If method blank data are unavailable, reject (R) all associated positive results. However, the reviewer may use professional judgement and substitute field blank or trip blank data for missing method blank data.

If an instrument blank was not analyzed after a sample containing > 25 µg/ℓ, inspect the sample chromatogram acquired immediately after this sample for possible carryover. Use professional judgement to determine if carryover occurred and qualify analyte(s) accordingly.

5.5 Was a storage blank analyzed once per SDG after all the samples were analyzed?	[/]	___	___

ACTION: If storage blank data is missing, contact the WAM to obtain any missing deliverables from the laboratory. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for EPA blanks was used. (See SOW page B-31, section 3.3.7.3 for more information.)

Was the correct identification scheme used for all Low Concentration VOA blanks?	[/]	___	___

ACTION: Contact the WAM to obtain corrections from the lab, or make the necessary corrections. Document in the "Contract Problems/Non-Compliance section of the Data Assessment all corrections made by the validator.

5.7 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports, data system printouts and spectra.

Also compare the storage blank raw data with the method blank. Determine if contamination in the storage blank is also present in the method blank.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Low

	YES	NO	
Concentration VOAs?	[✓]	___	___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? [✓] ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Does the storage blank contain positive results (TCL and/or TICs) for Low Concentration VOAs? [ ] ✓ ___

ACTION: If the storage blank contains target compounds at a concentration greater than the CRQL, positive sample results for those compounds should be flagged "J". If gross contamination occurred positive sample results for that compound may be rejected (R).

6.2 Do any method/reagent/instrument blanks contain positive results (including TICs) for Low Concentration VOAs? When applied as described in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. [ ] ✓ ___

NOTE: Contaminated instrument blanks are unacceptable under this SOW (see page D-52/VOA, section 12.1.2.3).

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance if a contaminated instrument blank was submitted.

YES NO N/A

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Instrument cross-contamination should be noted for TPO action (Organic Regional Data Assessment Summary Form) if an effect on the data is suspected.

6.3 Do any field/trip/rinse blanks have positive Low Concentration ~~VOA~~ results (including TICs)? / [ ]

BW X44 : CH_2Cl_2 & Chloroform

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Field blanks & trip blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated sample data should be qualified unusable (R).

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but < 10x blank value.	Sample conc. is < CRQL and < 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
Other Conta-minants	Sample conc. is > CRQL, but < 5x blank value.	Sample conc. is < CRQL and < 5x blank value.	Sample conc. is > CRQL and > 5x blank value.

NOTE: Analytes qualified "U" for blank contamination are treated as "hits" when qualifying for calibration criteria.

	YES	NO	N

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.4 Are there field/rinse/equipment blanks associated with every sample? ✓ ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V-LCV)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V-LCV) present for Bromofluorobenzene (BFB)? ✓ ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? ✓ ___ ___

7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument? ✓ ___ ___

ACTION: List date, time, instrument ID and sample analyses for which associated GC/MS tuning data are missing.

DATE	TIME	INSTRUMENT ID	SAMPLE NUMBERS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

ACTION: Notify the WAM to obtain missing data from the lab. If the lab cannot provide missing data, reject (R) all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 (see SOW, page D-60/VOA)? ✓ ___ ___

YES NO

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable (R).

7.5 Have the ion abundance criteria been met for each instrument used? [✓] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

7.7 Is the number of significant figures for the reported relative abundances consistent with the number given in the ion abundance criteria column on Form V LCV? [✓] ___ ___

ACTION: If large errors exist, take action as specified in section 3.4 above.

7.8 Is the spectrum of the mass calibration compound acceptable? [✓] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (Form I LCV)

8.1 Are the Organic Analysis Data Sheets (Form I LCV) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [✓] ___ ___

b. Laboratory Control Samples? [✓] ___ ___

c. Blanks? [✓] ___ ___

8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the

	YES	NO	N
data system printouts (Quant Reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[✓]	___	___
b. Laboratory Control Samples?	[✓]	___	___
c. Blanks?	[✓]	___	___

ACTION: If any data are missing, take action specified in 3.1 above.

8.3	Are the response factors shown in the quant report? area response only	[ ]	✓	___
8.4	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[✓]	___	___
	Resolution?	[✓]	___	___
	Peak shape?	[✓]	___	___
	Full-scale graph (attenuation)?	[✓]	___	___
	Other: _____?	[ ]	___	✓

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	___	___

ACTION: If any mass spectra are missing, take action as specified in 3.1 above. If lab does not generate their own standard spectra, make note under the "Contract Problems/Non-Compliance" section of the Data Assessment.

8.6	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum?	[✓]	___	___
8.8	Do sample and standard relative ion intensities agree to within ±20%?	[✓]	___	___

YES NO N/A

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R) flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in the SOW page VOA D-32, section 21.

ACTION: When sample carry-over is suspected, use professional judgement to determine if instrument cross-contamination has affected positive compound identifications.

9.0 Tentatively Identified Compounds (TIC)

9.1 Are all Tentatively Identified Compound Forms (Form I LCV-TIC) present? Do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? [✓] ___ ___

9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

Trichloromono Fluoro methane

a. Samples and/or fractions as appropriate? [✓] ___ ___

b. Blanks? [ ] ___ ✓

b. Alkanes listed for each sample? [ ] ___ ✓

ACTION: If any TIC data are missing, take action specified in 3.1 above.

ACTION: Add "JN" qualifier to all chemically named TICs if missing.

9.3 Are any target compounds (from any fraction) listed as TICs? (Example: 1,2-dimethylbenzene is xylene - a VOA target analyte - and should not be reported as a TIC.) ___ [✓] ___

ACTION: Flag with "R" any target compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than

	YES	NO	N
25% also present in the sample mass spectrum?	[1]		
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[1]		

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (I.e., common lab contaminants such as CO_2 - M/E 44, siloxanes - M/E 73, hexane, aldol condensation products, solvent preservatives, and related by-products. See the National Functional Guidelines for further guidance.)

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRFs were used to calculate Form I results.)		[1]	
10.2 Are the CRQLs adjusted to reflect sample dilutions?	[1]		

ACTION: If errors are large, take action as specified in section 3.4 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs data from the diluted sample). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's not to be used, including any in the data summary package.

11.0 Standards Data (GC/MS)

	YES	NO	N/A
11.1 Are the reconstructed ion chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[✓]	___	___

ACTION: If any calibration standard data are missing, take action specified in section 3.1 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI LCV) present and complete for the volatile fraction at concentrations of 1, 2, 5, 10, and 25 µg/ℓ?	[✓]	___	___

ACTION: If any Initial Calibration forms are missing, take action as specified in section 3.1 above.

12.2 Are response factors stable for VOA's over the concentration range of the calibration (e.g., %RSD ≤ 30.0)?	[ ]	✓	___

ACTION: Circle all outliers in red.

NOTE: Although 13 Low Conc. VOA compounds have no maximum %RSD and require only minimal $\overline{RRF}$ performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: If %RSD > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. If %RSD is > 90, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still treated as "hits" when qualifying for initial calibration criteria.

12.3 Are any $\overline{RRF}$s < 0.05?	✓	[ ]	___

ACTION: Circle all outliers in red.

ACTION: If any $\overline{RRF}$ values are < 0.05, qualify associated non-detects unusable (R) and associated positive results estimated (J).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI and Table D-3, page D-61/VOA) to fail contractual %RSD and RRF criteria, provided the %RSD is ≤ 40.0 and RRF ≥ 0.010.

YES NO N

ACTION: If more than two of the required analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.4 Are there any transcription/calculation errors in the reporting of $\overline{RRF}$s, RRFs or %RSD values? (Check at least 2 values, but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, contact the WAM to obtain an explanation/resubmittal from the lab, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

13.0 GC/MS Continuing Calibration (Form VII LCV)

13.1 Are the Continuing Calibration Forms (Form VII LCV) present and complete for the volatile fraction? [✓] ___ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, ask the WAM to obtain explanation/resubmittal from the laboratory. If continuing calibration data are unavailable, flag all associated sample data as unusable (R).

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

13.3 Do any volatile compounds have a % Difference (%D) between the initial $\overline{RRF}$ and continuing RRF which exceeds the ± 30% criteria? ___ [✓] ___

ACTION: Circle all outliers in red.

YES NO N/A

NOTE: Although 13 Low Conc. VOA compounds have no maximum %D and require only minimal RRF performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When % D is above 90%, reject all non-detects for that analyte as unusable (R).

13.4 Do any volatile compounds have a RRF < 0.05? ✓ [ ] ___

ACTION: Circle all outliers in red.

ACTION: If the RRF < 0.05, qualify associated positive results as estimated (J) and associated non-detects unusable (R).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI, or Table D-3, page D-61/VOA) to fail or RRF criteria, provided %D is within ±40.0 and RRF ≥ 0.010.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary if more than two of the required analytes failed the above acceptance criteria.

13.5 Are there any transcription/calculation errors in the reporting of RRFs, or %D between initial RRFs and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, notify the WAM to obtain explanation/resubmittals from the lab. Document errors in the Contract Problems/Non-Compliance section of the Data Assessment.

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (± 40%) for each continuing calibration? [✓] ___ ___

If no, was the sample reanalyzed? [ ] ___ ✓

YES NO N/

ACTION: 1. Circle all outliers in red.

2. List all the outliers below.

Sample #	Int. Std.	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > ÷40%.

3. If the IS area is less than the lower limit (-40%), qualify all associated non-detects "UJ". If extremely low area counts are reported, (< 20%) or if performance exhibits a major, abrupt drop- off, flag all associated non-detects as unusable (R).

14.2 Are the retention times of the internal standards within ±20 seconds of the associated calibration standard? [/] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

NOTE: Contract Requirements: The SOW (section 11.8.4, page D-51/VOA) states that any sample which fails the acceptance criteria for IS response must be reanalyzed.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance any sample(s) which failed the above IS acceptance criteria.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low

	YES	NO	N/A
Concentration VOA analysis?	✓		

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. If large differences exist, contact the WAM to confirm identification of field duplicates with the sampler.

BYQ91 / BYQ91 . OK

RECEIVED
AUG 13 1999

SDG Narrative

MTG-3.200440

Mitkem Corporation submits the enclosed data package in response to USEPA Case # 27237 and SDG# BYQ70. Analyses were performed for twenty aqueous samples that were received on July 29, 1999. The analyses were performed under USEPA Contract # 68-D6-0063.

The following samples are submitted in this data package:

Client ID	Lab ID	Analysis	VOA sample pH
BYQ70	61419001	V	< 2
BYQ78	61419002	V	< 2
BYQ79	61419003	V	< 2
BYQ80	61419004	V	< 2
BYQ81	61419005	V	< 2
BYQ82	61419006	V	< 2
BYQ83	61419007	V	< 2
BYQ84	61419008	V	< 2
BYQ85	61419009	V	< 2
BYQ86	61419010	V	< 2
BYQ87	61419011	V	< 2
BYQ88	61419012	V	< 2
BYQ89	61419013	V	< 2
BYQ90	61419014	V	< 2
BYQ91	61419015	V	< 2
BYQ92	61419016	V	< 2
BYQ93	61419017	V	< 2
BYQ94	61419018	V	< 2
BYQ95	61419019	V	< 2
BYQ96	61419020	V	< 2

V = Volatile Organics

The analyses were performed using USEPA CLP Low Concentration Water (OLC02.1) protocols. The analyses were performed with strict adherence to the SOW with the following exceptions and observations:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required.

2. Volatile Analysis:

Traps used: for instrument V1: OI Analytical #10 trap containing 8 cm each of Tenax, silica gel and carbon molecular sieve

GC column used: 30 m x 0.25 mm id (1.4 um film thickness) DB-624 capillary column.

Due a laboratory oversight, all of the samples were analyzed out of the analytical holding time.

Due to high concentration of target analytes, samples BYQ84 and BYQ89 were analyzed at dilution.

No other unusual observation was made for the analysis.

All of the submittals to the region are originals other than log book pages and copies of tunes and standard files which are shared by many other cases. For these, the original copies are archived in the laboratory.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Kin Chiu

Kin Chiu
Technical Director
8/12/99

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Mitkem Corporation Contract No.: 68-D6-0063

Lab Code: Mitkem Case No.: 27237

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: BVQ70 Sample Receipt Date: 07/29/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: BVQ96 Sample Receipt Date: 07/29/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	BVQ70	11	BVQ87
2	BVQ78	12	BVQ88
3	BVQ79	13	BVQ89
4	BVQ80	14	BVQ90
5	BVQ81	15	BVQ91
6	BVQ82	16	BVQ92
7	BVQ83	17	BVQ93
8	BVQ84	18	BVQ94
9	BVQ85	19	BVQ95
10	BVQ86	20	BVQ96

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Kimberly Rhein
Signature

08/04/99
Date

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ70

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200443

Lab Sample ID: 61419001 Date Received: 07/29/99

Lab File ID: V1C4809 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ70

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200444

Lab Sample ID: 61419001 Date Received: 07/29/99

Lab File ID: V1C4809 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ78

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200445

Lab Sample ID: 61419002 Date Received: 07/29/99

Lab File ID: V1C4810 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ78

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.2[illegible]46

Lab Sample ID: 61419002 Date Received: 07/29/99

Lab File ID: V1C4810 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ79

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200447

Lab Sample ID: 61419003 Date Received: 07/29/99

Lab File ID: V1C4811 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ79

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.20[illegible]48

Lab Sample ID: 61419003 Date Received: 07/29/99

Lab File ID: V1C4811 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ80

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200449

Lab Sample ID: 61419004 Date Received: 07/29/99

Lab File ID: V1C4812 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	U R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ80

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200450

Lab Sample ID: 61419004 Date Received: 07/29/99

Lab File ID: V1C4812 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ81

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200451

Lab Sample ID: 61419005 Date Received: 07/29/99

Lab File ID: V1C4813 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~8~~	~~B~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1 0~~8~~	~~J~~ U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~8~~	~~B~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~B~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ81

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.2[illegible]52

Lab Sample ID: 61419005 Date Received: 07/29/99

Lab File ID: V1C4813 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ82

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200453

Lab Sample ID: 6141900S

Date Received: 07/29/99

Lab File ID: V1C4814

Date Analyzed: 08/10/99

Purge Volume: 25 (mL)

Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ82

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.454

Lab Sample ID: 61419006 Date Received: 07/29/99

Lab File ID: V1C4814 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ83

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200455

Lab Sample ID: 61419007 Date Received: 07/29/99

Lab File ID: V1C4815 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~ 5	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~ 5	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~ 1	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ83

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200456

Lab Sample ID: 61419007 Date Received: 07/29/99

Lab File ID: V1C4815 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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29.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ84

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200457

Lab Sample ID: 61419008 D

Date Received: 07/29/99

Lab File ID: V1C4841

Date Analyzed: 08/11/99

Purge Volume: 25 (mL)

Dilution Factor: 100.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	100	U
74-83-9	Bromomethane	100	U
75-01-4	Vinyl chloride	100	U
75-00-3	Chloroethane	100	U
75-09-2	Methylene chloride	200	U
67-64-1	Acetone	~~500~~	~~U~~ R
75-15-0	Carbon disulfide	100	U
75-35-4	1,1-Dichloroethene	100	U
75-34-3	1,1-Dichloroethane	100	U
156-59-2	cis-1,2-Dichloroethene	100	U
156-60-5	trans-1,2-Dichloroethene	100	U
67-66-3	Chloroform	100	U
107-06-2	1,2-Dichloroethane	100	U
78-93-3	2-Butanone	500	U
74-97-5	Bromochloromethane	100	U
71-55-6	1,1,1-Trichloroethane	100	U
56-23-5	Carbon tetrachloride	100	U
75-27-4	Bromodichloromethane	100	U
78-87-5	1,2-Dichloropropane	100	U
10061-01-5	cis-1,3-Dichloropropene	100	U
79-01-6	Trichloroethene	100	U
124-48-1	Dibromochloromethane	100	U
79-00-5	1,1,2-Trichloroethane	100	U
71-43-2	Benzene	100	U
10061-02-6	trans-1,3-Dichloropropene	100	U
75-25-2	Bromoform	100	U
108-10-1	4-Methyl-2-pentanone	500	U
591-78-6	2-Hexanone	500	U
127-18-4	Tetrachloroethene	1500	
79-34-5	1,1,2,2-Tetrachloroethane	100	U
106-93-4	1,2-Dibromoethane	100	U
108-88-3	Toluene	100	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	100	U
100-42-5	Styrene	100	U
1330-20-7	Xylenes (total)	100	U
541-73-1	1,3-Dichlorobenzene	100	U
106-46-7	1,4-Dichlorobenzene	100	U
95-50-1	1,2-Dichlorobenzene	100	U
96-12-8	1,2-Dibromo-3-chloropropane	100	U
120-82-1	1,2,4-Trichlorobenzene	100	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ84

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.20[illegible]8

Lab Sample ID: 61419008 Date Received: 07/29/99

Lab File ID: V1C4841 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 100.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ85

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200459

Lab Sample ID: 61419009 Date Received: 07/29/99

Lab File ID: V1C4817 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	0.8	J
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ85

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200

Lab Sample ID: 61419009 Date Received: 07/29/99

Lab File ID: V1C4817 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ86

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200461

Lab Sample ID: 61419010 Date Received: 07/29/99

Lab File ID: V1C4818 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	U R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ86

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200462

Lab Sample ID: 61419010 Date Received: 07/29/99

Lab File ID: V1C4818 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ87

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200463

Lab Sample ID: 61419011 Date Received: 07/29/99

Lab File ID: V1C4819 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ87

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200464

Lab Sample ID: 61419011 Date Received: 07/29/99

Lab File ID: V1C4819 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.	75-69-4	TRICHLOROMONOFLUOROMETHANE	3.57	2	NJ
2.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ88

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70 MTG-3.200465

Lab Sample ID: 61419012 Date Received: 07/29/99

Lab File ID: V1C4820 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~2~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ88

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200466

Lab Sample ID: 61419012 Date Received: 07/29/99

Lab File ID: V1C4820 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (ug/L)	Q
1.					
2.					
3.					
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6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ89

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200467

Lab Sample ID: 61419013 Date Received: 07/29/99

Lab File ID: V1C4842 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene chloride	100	U
67-64-1	Acetone	~~280~~	~~U~~ R
75-15-0	Carbon disulfide	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
156-59-2	cis-1,2-Dichloroethene	50	U
156-60-5	trans-1,2-Dichloroethene	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	250	U
74-97-5	Bromochloromethane	50	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon tetrachloride	50	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	470	
10061-02-6	trans-1,3-Dichloropropene	50	U
75-25-2	Bromoform	50	U
108-10-1	4-Methyl-2-pentanone	250	U
591-78-6	2-Hexanone	250	U
127-18-4	Tetrachloroethene	50	U
79-34-5	1,1,2,2-Tetrachloroethane	50	U
106-93-4	1,2-Dibromoethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
100-42-5	Styrene	50	U
1330-20-7	Xylenes (total)	50	U
541-73-1	1,3-Dichlorobenzene	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-50-1	1,2-Dichlorobenzene	50	U
96-12-8	1,2-Dibromo-3-chloropropane	50	U
120-82-1	1,2,4-Trichlorobenzene	50	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ89

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200468

Lab Sample ID: 61419013 Date Received: 07/29/99

Lab File ID: V1C4842 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ90

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70 MTG-3.200469

Lab Sample ID: 61419014 Date Received: 07/29/99

Lab File ID: V1C4834 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ90

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200470

Lab Sample ID: 61419014 Date Received: 07/29/99

Lab File ID: V1C4834 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ91

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200471

Lab Sample ID: 61419015 Date Received: 07/29/99

Lab File ID: V1C4835 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	U
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ91

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200472

Lab Sample ID: 61419015 Date Received: 07/29/99

Lab File ID: V1C4835 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ92

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200473

Lab Sample ID: 61419016 Date Received: 07/29/99

Lab File ID: V1C4836 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~ ~~5~~	R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	3	
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ92

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200474

Lab Sample ID: 61419016 Date Received: 07/29/99

Lab File ID: V1C4836 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ93

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200475

Lab Sample ID: 61419017 Date Received: 07/29/99

Lab File ID: V1C4837 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~ 5	U R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ93

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200476

Lab Sample ID: 61419017 Date Received: 07/29/99

Lab File ID: V1C4837 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ94

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200477

Lab Sample ID: 61419018 Date Received: 07/29/99

Lab File ID: V1C4838 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~8~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ94

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200478

Lab Sample ID: 61419018 Date Received: 07/29/99

Lab File ID: V1C4838 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ95

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200479

Lab Sample ID: 61419019 Date Received: 07/29/99

Lab File ID: V1C4839 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~8~~	~~B~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	~~0.7~~ 1	~~J~~ U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ95

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200480

Lab Sample ID: 61419019 Date Received: 07/29/99

Lab File ID: V1C4839 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
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28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ96

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.20048

Lab Sample ID: 61419020 Date Received: 07/29/99

Lab File ID: V1C4840 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~8~~	~~B~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ96

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ70

MTG-3.200482

Lab Sample ID: 51419020 Date Received: 07/29/99

Lab File ID: V1C4840 Date Analyzed: 08/11/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
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30.					

RECORD OF COMMUNICATION

TO: Smitty Sumbaly

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: August 20, 1999

SUBJECT: QUALITY ASSURED DATA

MESSAGE

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

(1) Monroe Township Groundwater Contamination
Case # 27237 MitKem Organic
SDG # BY098 Low Conc VOA - 2 Water

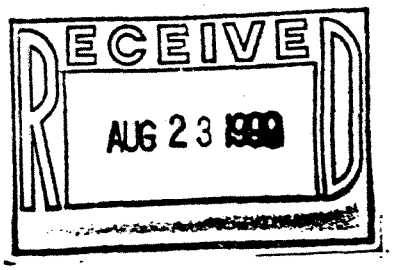
Additional SDG To Follow

REPLY BY: _____

SIGNATURE: Janet Trotter DATE: 23 August 1999

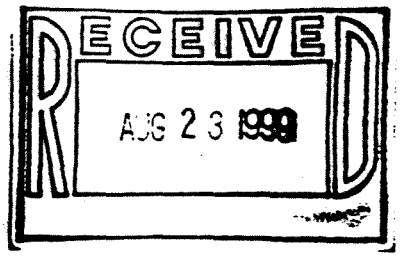
DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file



ATTACHMENT 1
SOP NO. HW-13

CLP DATA ASSESSMENT



Functional Guidelines for Evaluating Organic Analysis

CASE No.:27237 SDG No.: BYQ98
LABORATORY: MITKEM SITE: MONROE TWP. G.W. CONTAMINATION

DATA ASSESSMENT

The current SOP HW-13 (Revision 2) October 1996, USEPA Region II Data Validation SOP for Statement of Work OLCO 2.1. for evaluating organic data have been applied.

All data are valid and acceptable except those analytes rejected "R"(unusable). Due to the detection of QC problems, some analytes may have the "J" (estimated), "N"(presumptive evidence for the presence of the material, "U" (non-detect) or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's Signature: Maureen Hammill Date: August 18, 1999

Verified By: D Karras Date: 8/18/99

CLP DATA ASSESSMENT

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.
No problems. The lab's contractual holding times began on date of project resolution rather than VTSR. Technical and contractual holding times were met for all samples.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.
No problems.

3. LABORATORY CONTROL SPIKE, LCS:

The LCS data is generated to determine the long term precision and accuracy of the analytical method in various matrices. The LCS may be used in conjunction with other QC criteria for additional qualification of data.
No problems.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:
acetone: "U"- R00/R01/

B) Field or rinse blank contamination:
Not apllicable.

C) Trip blank contamination:
Not applicable.

CLP DATA ASSESSMENT

D) Storage Blank
There were not contaminants in the storage blank.

E) Tics "R" rejected
None.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".
No problems.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

Acetone: "R"-Q97, Q98, Q98DL, Q99, R02, R03, R06, R07, R08, R09, R10, R12, R13, R14, R15, R16, R17, R18, F19, VBLK1O, VBLK1Q, VBLK5I, VHBLK1Q, VBLK5J, VLCS5I, "J": R00, R01, R02, R03, VBLK5G

2-butanone: "R"- -Q97, Q98, Q98DL, Q99, ~~R02~~, R03, R06, R07, R08, R09, R10, R12, R13, R14, R15, R16, R17, R18, F19, VBLK1O, VBLK1Q, VBLK5I, VHBLK1Q, VBLK5G, VBLK5J, VLCS5I, R00, R01, R03, "J": R02,

2-hexanone: "R"- R16, R17, R18, F19, Q97, Q99, R02, R03, R06, R07, VBLK5J, R02,

CLP DATA ASSESSMENT

"R" -
1,2 dibromo-3-chloropropane: Q97, Q98, Q99, R00, R01, R02, R03, R06, R07, R09, R12, R10, R13, R14, R15, R16, R17, R18, F19, VBLK1Q, VBLK5I, VHBLK1Q, VBLK5J, VLCS5I, VBLK5G

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

For the PEST/PCB fraction, if %RSD exceeds 20% for all analytes except for the two surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the sample shown were qualified for %RSD and %D:

No problems.

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction.
No problems.

9. COMPOUND IDENTIFICATION:

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the

CLP DATA ASSESSMENT

standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications. No problems.

B) Pesticide Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract.

10. CONTRACT PROBLEMS NON-COMPLIANCE:

11. FIELD DOCUMENTATION:
Problems with sample identification for BYR19, BYR11, BYQ97, BYQ99. Samples BYQ97, BYQ99 were crossed out in the COC and initialed by the sampler. There was no other documentation for these samples on any CoC. Collection dates taken from Sampler's trip report.
Sample BYR11 was recorded on CoC as BYR101. Lab checked in the sample as BYR11. All of the paperwork reflect this ID. The telephone log stated this sample is BYR10. Collection dates taken from Sampler's trip report.
Sample BYR19 not listed on CoC. The telephone log stated this sample is to be analyzed and gives the collection time but not the date. Collection dates taken from Sampler's trip report.

12. OTHER PROBLEMS
Sample BYR10 is listed on Trip report as duplicate for BYR01. Since there is a discrepancy with sample BYR10/11 ID and the project also has a sample BYR11 (not in this SDG), no comparison was made.

13. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified to be used.

Do not use Q98dl.

DPO: []ACTION []FYI REGION__2_

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO._27237__ LABORATORY__MITKEM_____

SDG NO. BYQ98_ DATA USER___EPA/Region II_____

SOW_OLC02.1 _____ REVIEW COMPLETION DATE:August 18, 1999____

NO. OF SAMPLES___20___WATER _____SOIL _____OTHER

REVIEWER: [] ESD [x] ESAT [] OTHER, CONTRACTOR_____

QC ITEM	VOA		
HOLDING TIMES	O		
GC-MS PERFORMANCE	O		
INITIAL CALIBRATIONS	M		
CONTINUING CALIBRATIONS	M		
FIELD BLANKS(F = N/A)	O		
LABORATORY BLANKS	O		
SURROGATES	O		
MATRIX SPIKE/DUPLICATES	O		
QC SAMPLES(LCS, PVS)	O		
INTERNAL STANDARDS	O		
COMPOUND IDENTIFICATION	O		
COMPOUND QUANTITATION	O		
SYSTEM PERFORMANCE	O		
OVERALL ASSESSMENT	O		

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS:
AREAS OF CONCERN:

DATA REJECTION SUMMARY

Type of Review: Organic Date : August 18, 1999 Case : 27237/BYQ98
Site Name: Monroe Twp. GW Contam. Lab Name: MITKEM Reviewer"s Initial : MH
Number of Samples: 20 Waters, + QC +Dilutions/Reanalyses

Analytes Rejected Due To Exceeding Review Criteria For: Number of Compounds /Number of Fractions (Samples)

	Surrogates	Holding Times	Calibration	Contaminatio n	ID	Internal Standard	Other	Total # Samples	Total # REJECTED/ Total Analytes in samples Percent		
VOA(41)	0	0	86	0	0	0	0	28	86	1148	7
AE(14)	0	0	0	0	0	0	0	0	0	0	??
BN(50)	0	0	0	0	0	0	0	0	0	0	??
PEST(21)	0	0	0	0	0	0	0	0	0	0	??
PCB(7)	0	0	0	0	0	0	0	0	0	0	??

Analytes Estimated Due To Exceeding Review Criteria For: Number of Compounds /Number of Fractions (Samples)

	Surrogates	Holding Times	Calibration	Contaminatio n	ID	Internal Standard	Other	Total # Samples	Total # ESTIMATED/ Total Analytes in samples Percent		
VOA(41)	0	0	6	0	0	0	0	28	6	1148	1
AE(14)	0	0	0	0	0	0	0	0	0	0	??
BN(50)	0	0	0	0	0	0	0	0	0	0	??
PEST(21)	0	0	0	0	0	0	0	0	0	0	??
PCB(7)	0	0	0	0	0	0	0	0	0	0	??

Note: Asterisk (*) indicates additional Exceedances of Review Criteria

STANDARD OPERATING PROCEDURE

USEPA Region II
Method: CLP/SOW, OLC02.1

Date: October, 1996
SOP HW-13, Revision 2

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 27237 LAB: Mitkem

SITE NAME: Monroe Twp & W Cent. SDG No(s).: BYQ98

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [X] ___ ___

ACTION: If no contact RSCC, or the WAM to obtain replacement of missing or illegible copies from the lab.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [X] ___ ___

ACTION: If no, contact either RSCC or ask the WAM to obtain the necessary information from the prime contractor.

.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? X ___

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the lab. If lab cannot provide them, note the effect on the review of the data package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with the package? [ ] X ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report and Sample Tags? X [ ] ___

ACTION: If yes, contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory.

STANDARD OPERATING PROCEDURE

USEPA Region II
Method: CLP/SOW, OLC02.1

Date: October, 199
SOP HW-13, Revision 2

	YES	NO	N/A
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]	___	___
3.2 Are the Case number and SDG number contained in the Narrative or Cover letter?	[X]	___	___
3.3 Does the Narrative contain the following information (see SOW, page B-11, section 2.6.1):			
VOA: description or trap and column(s) used during sample analyses?	[X]	___	___
BNA: descriptions of column(s) used during sample analyses?	[ ]	___	X
PEST: description of columns used during sample analyses?	[ ]	___	X
NOTE: As stated in the SOW, page D-11/PEST, section 6.1.1.3.7, packed columns cannot be used.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	___	X
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler exceeded 10° C, the lab must list by fraction and sample number, all affected samples.	[X]	___	___
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatiles analysis (SOW, page B-11, section 2.6.1.2)?	[X]	___	___
3.7 Does the Case Narrative contain the "verbatim" statement as required on page B-11, section 2.6.1 of the SOW?	[X]	___	___

ACTION: If "No", to any question in this section, contact the WAM to obtain necessary resubmittals. If the information is unavailable, document under the Contract Problems/Non-Compliance section of the Data Assessment.

	YES	NO	N/A

4.0 Data Validation Checklist

4.1 Check the package for the following (see SOW reporting requirements, section 2.1, page B-7):

a. Is the package paginated in ascending order starting from the SDG narrative?	[X]	___	___
b. Are all forms and copies legible?	[X]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[X]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	X	___

The following checklist is divided into three parts. Part A is filled out if the data package contains any Low Concentration Volatile analyses, Part B for any Low Concentration Semivolatile analyses and Part C for Low Concentration Pesticide/Aroclors.

Does this package contain:

Low Concentration Volatiles Data?	X	___
Low Concentration Semivolatiles Data?	___	X
Low Concentration Pesticides/Aroclors data?	___	X

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ [X] ___

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the temperature of the cooler was > 10° C, then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ [X] ___

Technical Holding Times: Unpreserved samples maintained at 4°C, being evaluated for aromatic hydrocarbons, must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4°C, then samples must be analyzed within 14 days of collection. If uncertain about preservation, notify the WAM to contact the sampler and determine whether or not samples were preserved.

ACTION: List sampling, VTSR, analysis dates and preservation for samples which missed holding time in the table below.

YES NO N/..

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R). If holding times are exceeded by more than 28 days, flag all non-detects "R".

NOTE: Contractual Holding Times: Sample must be analyzed within 10 days from validated time of sample receipt (VTSR) at the laboratory.

3.0 System Monitoring Compound (SMC) Recovery (Form II LCV)

3.1 Are the Volatile SMC Recovery Summaries (Form II LCV) present? [X] ___ ___

ACTION: Call the WAM to obtain an explanation/resubmittal from the lab. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.2 Were outliers marked correctly with an asterisk? [ ] ___ X

ACTION: Circle all outliers in red.

	YES	NO	N/A
3.3 Was the surrogate, p-bromofluorobenzene, recovery outside contract limits of 80 - 120% for any sample or method blank?		[X]	
If yes, were samples re-analyzed?	[ ]		[X]
Were method blanks re-analyzed?	[ ]		[X]

ACTION: If p-bromofluorobenzene recovery was > 10%, but failed to meet SOW specifications:

1. Qualify all positive results estimated (J).
2. Flag all non-detects as estimated detection limits (UJ) where recovery is < 80%.
3. Do not qualify non-detects if surrogate recovery is > 120%.

If p-bromofluorobenzene recovery was < 10%:

1. Flag all positive results estimated (J).
2. Flag all non-detects unusable (R).

Professional judgement should be used to qualify data that only have an associated method blank with the SMC recovery out of specification in both the original and reanalysis. Check internal standard areas.

	YES	NO	N/A
3.4 Are there any transcription/calculation errors between raw data and Form II?		[X]	

ACTION: If large errors exist, ask the WAM to obtain an explanation/resubmittal from the lab, make any necessary corrections and note errors in the data assessment.

4.0 Laboratory Control Sample (LCS) Recovery (Form III LCV)

	YES	NO	N/A
4.1 Is the LCS Recovery Form (Form III LCV) present?	[X]		
4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples, whichever is more frequent) for the Low Concentration VOA method?	[X]		

ACTION: If any LCS data are missing, take action as specified in section 3.1 above.

YES NO N/..

4.3 How many VOA LCS recoveries are outside the specified QC limits of 60 - 140%?

0 out of 12

ACTION: Qualify associated samples for only the specific analytes included in the LCS solution in the following two situations:

1. If the LCS recovery is > 140%, flag positive results for the affected compound(s) estimated (J). Do not flag non-detects.

2. If the LCS recovery is < 60%, but mass spectral criteria were met, flag positive results for the affected compound(s) estimated (J) and non-detect(s) unusable (R).

Qualify all sample results in the following circumstances:

1. If 25% of the LCS recoveries were < 60%, qualify all positive results in the associated samples "J" and all non-detects "R".

2. If two or more LCS recoveries were < 10%, qualify all positive results in the associated samples "J" and all non-detects "R".

NOTE: It should be noted for TPO action (Organic Regional Data Assessment Summary Form) if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails LCS recovery criteria.

5.0 Method Blanks (Form IV LCV)

5.1 Is the Volatile Method Blank Summary (Form IV LCV) present? X ___ ___

5.2 Frequency of Analysis: For the analysis of Low Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? X ___ ___

5.3 Has a VOA method blank been analyzed at least once every twelve hours for each GC/MS system used? X ___ ___

5.4 Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound

	YES	NO	N/A
at a concentration > 25 µg/ℓ (see SOW, page D-52/VOA, section 12.1.1.3)?	[ ]	___	X

ACTION: If any method/instrument blank data are missing, notify the WAM to obtain resubmittals or an explanation from the lab. If method blank data are unavailable, reject (R) all associated positive results. However, the reviewer may use professional judgement and substitute field blank or trip blank data for missing method blank data.

If an instrument blank was not analyzed after a sample containing > 25 µg/ℓ, inspect the sample chromatogram acquired immediately after this sample for possible carryover. Use professional judgement to determine if carryover occurred and qualify analyte(s) accordingly.

5.5 Was a storage blank analyzed once per SDG after all the samples were analyzed?	[X]	___	___

ACTION: If storage blank data is missing, contact the WAM to obtain any missing deliverables from the laboratory. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for EPA blanks was used. (See SOW page B-31, section 3.3.7.3 for more information.)

Was the correct identification scheme used for all Low Concentration VOA blanks?	[X]	___	___

ACTION: Contact the WAM to obtain corrections from the lab, or make the necessary corrections. Document in the "Contract Problems/Non-Compliance section of the Data Assessment all corrections made by the validator.

5.7 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports, data system printouts and spectra.

Also compare the storage blank raw data with the method blank. Determine if contamination in the storage blank is also present in the method blank.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Low

	YES	NO	N/..
Concentration VOAs?	[X]	___	___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? [X] ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Does the storage blank contain positive results (TCL and/or TICs) for Low Concentration VOAs? [ ] [X] ___

ACTION: If the storage blank contains target compounds at a concentration greater than the CRQL, positive sample results for those compounds should be flagged "J". If gross contamination occurred positive sample results for that compound may be rejected (R).

6.2 Do any method/reagent/instrument blanks contain positive results (including TICs) for Low Concentration VOAs? When applied as described in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. [X] ___ ___

NOTE: Contaminated instrument blanks are unacceptable under this SOW (see page D-52/VOA, section 12.1.2.3).

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance if a contaminated instrument blank was submitted.

YES NO N/A

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Instrument cross-contamination should be noted for TPO action (Organic Regional Data Assessment Summary Form) if an effect on the data is suspected.

6.3 Do any field/trip/rinse blanks have positive Low Concentration VOA results (including TICs)? ___ [ ] &

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Field blanks & trip blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated sample data should be qualified unusable (R).

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but < 10x blank value.	Sample conc. is < CRQL and < 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
Other Conta-minants	Sample conc. is > CRQL, but < 5x blank value.	Sample conc. is < CRQL and < 5x blank value.	Sample conc. is > CRQL and > 5x blank value.

NOTE: Analytes qualified "U" for blank contamination are treated as "hits" when qualifying for calibration criteria.

YES NO N/..

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.4 Are there field/rinse/equipment blanks associated with every sample? [ ] ___ [X]

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V-LCV)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V-LCV) present for Bromofluorobenzene (BFB)? [X] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [\] ___ _

7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument? [X] ___ ___

ACTION: List date, time, instrument ID and sample analyses for which associated GC/MS tuning data are missing.

DATE	TIME	INSTRUMENT ID	SAMPLE NUMBERS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

ACTION: Notify the WAM to obtain missing data from the lab. If the lab cannot provide missing data, reject (R) all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 (see SOW, page D-60/VOA)? [X] ___ ___

YES NO N/A

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable (R).

7.5 Have the ion abundance criteria been met for each instrument used? [X] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ [X] ___

7.7 Is the number of significant figures for the reported relative abundances consistent with the number given in the ion abundance criteria column on Form V LCV? [X] ___ ___

ACTION: If large errors exist, take action as specified in section 3.4 above.

7.8 Is the spectrum of the mass calibration compound acceptable? [X] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (Form I LCV)

8.1 Are the Organic Analysis Data Sheets (Form I LCV) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [X] ___ ___

b. Laboratory Control Samples? [X] ___ ___

c. Blanks? [X] ___ ___

8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the

	YES	NO	N/A
data system printouts (Quant Reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Laboratory Control Samples?	[X]	___	___
c. Blanks?	[X]	___	___

ACTION: If any data are missing, take action specified in 3.1 above.

8.3	Are the response factors shown in the quant report?	[X]	___	___
8.4	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[ ]	___	___
	Resolution?	[ ]	___	___
	Peak shape?	[ ]	___	___
	Full-scale graph (attenuation)?	[ ]	___	___
	Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[X]	___	___

ACTION: If any mass spectra are missing, take action as specified in 3.1 above. If lab does not generate their own standard spectra, make note under the "Contract Problems/Non-Compliance" section of the Data Assessment.

8.6	Is the RRT of each reported compound within 0.0 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum?	[X]	___	___
8.8	Do sample and standard relative ion intensities agree to within ±20%?	[X]	___	___

YES NO N/A

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R) flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in the SOW page VOA D-32, section 21.

ACTION: When sample carry-over is suspected, use professional judgement to determine if instrument cross-contamination has affected positive compound identifications.

9.0 Tentatively Identified Compounds (TIC)

9.1 Are all Tentatively Identified Compound Forms (Form I LCV-TIC) present? Do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? [X] ___ ___

9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

a. Samples and/or fractions as appropriate? [X] ___ ___

b. Blanks? [X] ___ ___

b. Alkanes listed for each sample? [X] ___ ___

ACTION: If any TIC data are missing, take action specified in 3.1 above.

ACTION: Add "JN" qualifier to all chemically named TICs if missing.

9.3 Are any target compounds (from any fraction) listed as TICs? (Example: 1,2-dimethylbenzene is xylene - a VOA target analyte - and should not be reported as a TIC.) ___ [X] ___

ACTION: Flag with "R" any target compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than

	YES	NO	N/A
25% also present in the sample mass spectrum?	[X]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[X]	___	___

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (I.e., common lab contaminants such as CO_2 - M/E 44, siloxanes - M/E 73, hexane, aldol condensation products, solvent preservatives, and related by-products. See the National Functional Guidelines for further guidance.)

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N/A
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRFs were used to calculate Form I results.)	___	[X]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions?	[X]	___	___

ACTION: If errors are large, take action as specified in section 3.4 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs data from the diluted sample). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's not to be used, including any in the data summary package.

11.0 Standards Data (GC/MS)

YES NO N/A

11.1 Are the reconstructed ion chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration? [X] ___ ___

ACTION: If any calibration standard data are missing, take action specified in section 3.1 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI LCV) present and complete for the volatile fraction at concentrations of 1, 2, 5, 10, and 25 µg/ℓ? [X] ___ ___

ACTION: If any Initial Calibration forms are missing, take action as specified in section 3.1 above.

12.2 Are response factors stable for VOA's over the concentration range of the calibration (e.g., %RSD ≤ 30.0)? [X] ___ ___

ACTION: Circle all outliers in red.

NOTE: Although 13 Low Conc. VOA compounds have no maximum %RSD and require only minimal $\overline{RRF}$ performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: If %RSD > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. If %RSD is > 90, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still treated as "hits" when qualifying for initial calibration criteria.

12.3 Are any $\overline{RRF}$s < 0.05? [X] [ ] ___

ACTION: Circle all outliers in red.

ACTION: If any $\overline{RRF}$ values are < 0.05, qualify associated non-detects unusable (R) and associated positive results estimated (J).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI and Table D-3, page D-61/VOA) to fail contractual %RSD and RRF criteria, provided the %RSD is ≤ 40.0 and RRF ≥ 0.010.

YES NO N/A

ACTION: If more than two of the required analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.4 Are there any transcription/calculation errors in the reporting of $\overline{RRF}$s, RRFs or %RSD values? (Check at least 2 values, but if errors are found, check more.) ___ [X] ___

ACTION: Circle errors in red.

ACTION: If errors are large, contact the WAM to obtain an explanation/resubmittal from the lab, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

13.0 GC/MS Continuing Calibration (Form VII LCV)

13.1 Are the Continuing Calibration Forms (Form VII LCV) present and complete for the volatile fraction? [X] ___ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [X] ___ ___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, ask the WAM to obtain explanation/resubmittal from the laboratory. If continuing calibration data are unavailable, flag all associated sample data as unusable (R).

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

13.3 Do any volatile compounds have a % Difference (%D) between the initial $\overline{RRF}$ and continuing RRF which exceeds the ± 30% criteria? ___ [X] ___

ACTION: Circle all outliers in red.

YES NO N/A

NOTE: Although 13 Low Conc. VOA compounds have no maximum %D and require only minimal RRF performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When % D is above 90%, reject all non-detects for that analyte as unusable (R).

13.4 Do any volatile compounds have a RRF < 0.05? X [ ] ___

ACTION: Circle all outliers in red.

ACTION: If the RRF < 0.05, qualify associated positive results as estimated (J) and associated non-detects unusable (R).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI, or Table D-3, page D-61/VOA) to fail

) or RRF criteria, provided %D is within ±40.0 and RRF ≥ 0.010.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary if more than two of the required analytes failed the above acceptance criteria.

13.5 Are there any transcription/calculation errors in the reporting of RRFs, or %D between initial RRFs and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ X[1] ___

ACTION: Circle errors in red.

ACTION: If errors are large, notify the WAM to obtain explanation/resubmittals from the lab. Document errors in the Contract Problems/Non-Compliance section of the Data Assessment.

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (± 40%) for each continuing calibration? X[1] ___ ___

If no, was the sample reanalyzed? [ ] ___ X

YES NO N/A

ACTION: 1. Circle all outliers in red.

2. List all the outliers below.

Sample #	Int. Std.	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > +40%.

3. If the IS area is less than the lower limit (-40%), qualify all associated non-detects "UJ". If extremely low area counts are reported, (< 20%) or if performance exhibits a major, abrupt drop- off, flag all associated non-detects as unusable (R).

14.2 Are the retention times of the internal standards within ±20 seconds of the associated calibration standard? X ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

NOTE: Contract Requirements: The SOW (section 11.8.4, page D-51/VOA) states that any sample which fails the acceptance criteria for IS response must be reanalyzed.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance any sample(s) which failed the above IS acceptance criteria.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low

	YES	NO	N/A
Concentration VOA analysis?	~~X~~ 1		

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. If large differences exist, contact the WAM to confirm identification of field duplicates with the sampler.

Cannot be compared since there is a sample discrepancy BYR10, BYR11.

RECEIVED
AUG 12 1999

SDG Narrative

MTG-3.200513

Mitkem Corporation submits the enclosed data package in response to USEPA Case # 27237 and SDG# BYQ98. Analyses were performed for twenty aqueous samples that were received on July 29 and 30, 1999. The analyses were performed under USEPA Contract # 68-D6-0063.

Please note that BYR19 was received on 7/30/99 but not listed in the chain of custody. In addition, sample BYR10 was listed as BYR101 in the chain. Per DynCorp's directive, BYR19 was added to the chain and that the discrepancy regarding BYR10 was to be discussed in the narrative.

The following samples are submitted in this data package:

Client ID	Lab ID	Analysis	VOA sample pH
BYQ98	61420001	V	< 2
BYR00	61420002	V	< 2
BYR01	61420003	V	< 2
BYR11	61420004	V	< 2
BYR08	61420005	V	< 2
BYR09	61420006	V	< 2
BYR12	61420007	V	< 2
BYR13	61420008	V	< 2
BYR14	61420009	V	< 2
BYR15	61420010	V	< 2
BYR16	61420011	V	< 2
BYR17	61420012	V	< 2
BYR18	61420013	V	< 2
BYR19	61420014	V	< 2
BYQ97	61420015	V	< 2
BYQ99	61420016	V	< 2
BYR02	61420017	V	< 2
BYR03	61420018	V	< 2
BYR06	61420019	V	< 2
BYR07	61420020	V	< 2

V = Volatile Organics

The analyses were performed using USEPA CLP Low Concentration Water (OLC02.1) protocols. The analyses were performed with strict adherence to the SOW with the following exceptions and observations:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required.

2. Volatile Analysis:

Traps used: for instrument V1: OI Analytical #10 trap containing 8 cm each of Tenax, silica gel and carbon molecular sieve, for instrument V5: Vocarb 3000 trap containing 10 cm carbopack B, 6 cm carboxen 1000 and 1 cm carboxen 1001.

GC column used: 30 m x 0.25 mm id (1.4 um film thickness) DB-624 capillary column.

Tetrachloroethene was determined to exceed the calibration range for sample BYQ98. The laboratory did not perform an instrument blank after the analysis. Please note that the analyte was not detected in the subsequent analysis (BYR00). Sample BYQ98 was re-analyzed at dilution to ensure that all of the target analytes were determined within the instrument calibration range.

No other unusual observation was made for the analysis other than those discussed above.

All of the submittals to the region are originals other than log book pages and copies of tunes and standard files which are shared by many other cases. For these, the original copies are archived in the laboratory.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Kin Chiu
Technical Director
8/11/99

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Mitkem Corporation Contract No.: 68-D6-0063

Lab Code: Mitkem Case No.: 27237

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: BYR98 Sample Receipt Date: 07/29/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: BYR19 Sample Receipt Date: 07/30/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	BYD97	11	BYR09
2	BYD98	12	BYR11
3	BYD99	13	BYR12
4	BYR00	14	BYR13
5	BYR01	15	BYR14
6	BYR02	16	BYR15
7	BYR03	17	BYR16
8	BYR06	18	BYR17
9	BYR07	19	BYR18
10	BYR08	20	BYR19

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Signature _____ Date 08/05/99

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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ97

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200516

Lab Sample ID: 61420015 Date Received: 07/30/99

Lab File ID: V5B3828 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

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EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ97

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200517

Lab Sample ID: 61420015 Date Received: 07/30/99

Lab File ID: V5B3828 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ98

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200518

Lab Sample ID: 61420001 Date Received: 07/29/99

Lab File ID: V5B3764 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	~~97~~ 88	~~E~~
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

FORM I LCV OLC02.0

Value Transferred from dilution analysis (3-1

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ98

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200519

Lab Sample ID: 61420001 Date Received: 07/29/99

Lab File ID: V5B3764 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 4

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.		C13H10 ISOMER	14.34	8	J
2.	91-20-3	NAPHTHALENE	15.76	24	NJ
3.		NAPHTHALENE, METHYL- ISOMER	17.16	4	J
4.		NAPHTHALENE, METHYL- ISOMER	17.38	3	J
5.					
6.					
7.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ99

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200520

Lab Sample ID: 61420016 Date Received: 07/30/99

Lab File ID: V5B3829 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ99

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200521

Lab Sample ID: 61420016 Date Received: 07/30/99

Lab File ID: V5B3829 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
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16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR00

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200522

Lab Sample ID: 61420002 Date Received: 07/29/99

Lab File ID: V5B3765 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	JB UJ
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYR00

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200523

Lab Sample ID: 61420002 Date Received: 07/29/99

Lab File ID: V5B3765 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.	91-20-3	NAPHTHALENE	15.77	3	NJ
2.					
3.					
4.					
5.					
6.					
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27.					
28.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR01

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200524

Lab Sample ID: 61420003 Date Received: 07/29/99

Lab File, ID: V5B3766 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	4	~~J~~ BU J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR01

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200525

Lab Sample ID: 61420003 Date Received: 07/29/99

Lab File ID: V5B3766 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR02

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.2

Lab Sample ID: 61420017 Date Received: 07/30/99

Lab File ID: V5B3830 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	~~U~~ J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	32	J
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	0.9	J
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR02

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200527

Lab Sample ID: 61420017 Date Received: 07/30/99

Lab File ID: V5B3830 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR03

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200528

Lab Sample ID: 61420018 Date Received: 07/30/99

Lab File ID: V5B3831 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR03

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200529

Lab Sample ID: 61420018 Date Received: 07/30/99

Lab File ID: V5B3831 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR06

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200530

Lab Sample ID: 61420019 Date Received: 07/30/99

Lab File ID: V5B3832 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYR06

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.20053

Lab Sample ID: 61420019 Date Received: 07/30/99

Lab File ID: V5B3832 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 1

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.		UNKNOWN PAH	19.69	3	J
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
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21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR07

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.2[illegible]32

Lab Sample ID: 61420020 Date Received: 07/30/99

Lab File ID: V5B3833 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

BYR07

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200533

Lab Sample ID: 61420020 Date Received: 07/30/99

Lab File ID: V5B3833 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
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28.					
29.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR08

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200534

Lab Sample ID: 61420005 Date Received: 07/30/99

Lab File ID: V1C4757 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYR08

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200535

Lab Sample ID: 61420005 Date Received: 07/30/99

Lab File ID: V1C4757 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
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27.					
28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR09

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200536

Lab Sample ID: 61420006 Date Received: 07/30/99

Lab File ID: V5B3806 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR09

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200537

Lab Sample ID: 61420006 Date Received: 07/30/99

Lab File ID: V5B3806 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
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26.					
27.					
28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR11

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200538

Lab Sample ID: 61420004 Date Received: 07/29/99

Lab File ID: V5B3767 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR11

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200539

Lab Sample ID: 61420004 Date Received: 07/29/99

Lab File ID: V5B3767 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
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27.					
28.					
29.					
30.					

1LCA
LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR12

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200540

Lab Sample ID: 61420007 Date Received: 07/30/99

Lab File ID: V5B3807 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYR12

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200541

Lab Sample ID: 61420007 Date Received: 07/30/99

Lab File ID: V5B3807 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
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28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR13

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200542

Lab Sample ID: 61420008 Date Received: 07/30/99

Lab File ID: V5B3808 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYR13

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200543

Lab Sample ID: 61420008 Date Received: 07/30/99

Lab File ID: V5B3808 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR14

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98 MTG-3.2 44

Lab Sample ID: 61420009 Date Received: 07/30/99

Lab File ID: V5B3809 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	0.9	J
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR14

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200545

Lab Sample ID: 61420009 Date Received: 07/30/99

Lab File ID: V5B3809 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR15

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.2[illegible]54(

Lab Sample ID: 61420010 Date Received: 07/30/99

Lab File ID: V5B3810 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYR15

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200547

Lab Sample ID: 61420010 Date Received: 07/30/99

Lab File ID: V5B3810 Date Analyzed: 08/08/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR16

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.2[illegible]548

Lab Sample ID: 61420011 Date Received: 07/30/99

Lab File ID: V5B3824 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYR16

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200549

Lab Sample ID: 61420011 Date Received: 07/30/99

Lab File ID: V5B3824 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR17

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200350

Lab Sample ID: 61420012 Date Received: 07/30/99

Lab File ID: V5B3825 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYR17

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200551

Lab Sample ID: 61420012 Date Received: 07/30/99

Lab File ID: V5B3825 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR18

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200352

Lab Sample ID: 61420013 Date Received: 07/30/99

Lab File ID: V5B3826 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	0.8	J
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR18

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200553

Lab Sample ID: 61420013 Date Received: 07/30/99

Lab File ID: V5B3826 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR19

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200554

Lab Sample ID: 61420014 Date Received: 07/30/99

Lab File ID: V5B3827 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYR19

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ98

MTG-3.200555

Lab Sample ID: 61420014 Date Received: 07/30/99

Lab File ID: V5B3827 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

MITKEM CASE #

EPA CASE # 27237

SAMPLE and TAG #s Affected TAG REQUIREMENT WAIVED

Fedral Express

Airbill #(s): 4811 72 7690

MITKEM CORPORATION
TELEPHONE LOGBOOK

MTG-3.200556

Call 1; Date/Time of call 7/30/99 12:00 pm Call made by: STEVE KADELSKI

Person of Contact: ~~Debbie~~ Nicole Coene

Reason for call: ① Recieved Sample BYR 19 - NOT LISTED ON CHAIN - ② Recieved Sample BYR10 but on chain listed AS BYR101 ③ ON CHAIN OF CUSTODY BYX50 IS crossed out ON chain - over extended line? please confirm & Mail CALL BACK, THANKS...

Result of call: FAXED Nicole PROBLEMS ON FRIDAY DID NOT GET FAX REFAXED Problem still NOT resolved CARRIED OVER TO SATURDAY - REC. MORE SAMPLES ON SAME PROJECT COULD NOT CONTINUE WITH PROJECT.

Call 2; Date/Time of call SATURDAY 7-31-99 10:00 Am Call made by: STEVE KADELSKI

Person of Contact: Nicole Coene

Reason for call: ON Friday July 30th 1999 we rec. CASE 27237 Page was Faxed twice on Friday SATURDAY LEFT VOICE MAIL MESSAGE Concerning our endevors with the project and please confirm and call with resolution.

Result of call: MONDAY AUG 2nd Nicole CALLED 9:00 Am Confirming our problem ① ADD SAMPLE BYR19 TO CHAIN. - FOR LOW LEVEL CONCEN. ② BYR11 ADDED FOR LOW LEVEL CONC.. TIMES ARE 19:44. ③ BYX50 NOT CROSSED OUT. GO WITH TEST. TAT TIMES START FROM DAY OF RESOLUTION PER. NICOLE ④ BYR11 - IS BYR10 - GO WITH TESTS

Call 3; Date/Time of call _____ Call made by: _____

Person of Contact: _____

Reason for call: _____

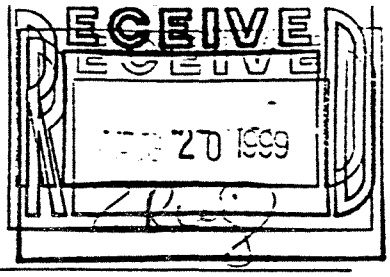
Result of call: _____

RESOLUTION: _____

Follow up: _____

275

MTG-3.200557



RECORD OF COMMUNICATION

TO: Smitha Sumbaly

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: August 19, 1999

SUBJECT: QUALITY ASSURED DATA

MESSAGE

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

(1) Monroe Township Groundwater Contamination
Case # 27237 Nitkem Organic
SDG # BXQ58 - low Conc VOA - 20 Water

Additional SDG's To Follow

REPLY BY: _____

SIGNATURE: Janet Trotter DATE: 20 August 1999

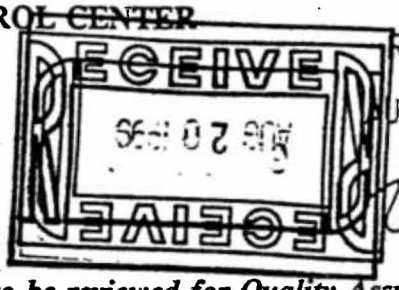
DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file

RECORD OF COMMUNICATION

MTG-3.200558

REGIONAL SAMPLE CONTROL CENTER



DATE: Aug. 13, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: George Karras, Hazardous Waste Support Section

Attached is the following ORGANIC Data Package to be reviewed for Quality Assurance

SITE Monroe Twp. G.W. Contam.	CASE# 27237/SDG# BYQ58
CONTRACTOR StartW	#SAMPLES MATRIX
PHASE IA	
LAB Mitkem	20 WATER
TURN-AROUND-TIME 14 DAYS	FRACTION Low Conc. VOA only
CERCLIS ID # NJD980769699	SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
John Bulich	8-13-99	John Bulich	8-12-99
Mark Jones	8-17-99	Mark Jones	8-16-99
John Bulich (DCR)	8-17-99	John Bulich	8-17-99
G Karras	8/18/99	G Karras	8/17/99
		J Bulich	8-18-99

(over for instructions) revised 3/99

ATTACHMENT 1
SOP NO. HW-13

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

CASE No.: 27237 **SDG No.: BYQ58**
LABORATORY: MITKEM **SITE: Monroe Township G.W. Contamination**

DATA ASSESSMENT

The current SOP HW-13 (Revision 2) June 1996, USEPA Region II Data Validation SOP for Statement of Work OLCO 2.1. for evaluating organic data have been applied.

All data are valid and acceptable except those analytes rejected "R"(unusable). Due to the detection of QC problems, some analytes may have the "J" (estimated), "N"(presumptive evidence for the presence of the material, "U" (non-detect) or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's
Signature: Mark Zambrowski Date: August 17, 1999

Verified By: _____ Date: 8/17/1999

CLP DATA ASSESSMENT

SDG 1, BYQ58

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.
VOA: No problems.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.
VOA: Sample BYQ69 was qualified "J" for tetrachloroethene due to the surrogate exceeding criteria.

3. LABORATORY CONTROL SAMPLE (LCS):

The LCS data is generated from a laboratory quality control sample. LCS data is intended to assess the ability of the contractor to perform the analytical method.
VOA: No problems.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank

CLP DATA ASSESSMENT

contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:
VOA: The following samples were raised to the CRQL and qualified "U" for methylene chloride due to contamination in the blank VBLK1N: BYQ73, BYQ74, BYQ75, BYQ76, and BYQ77.

The following sample was qualified "U" for methylene chloride due to contamination in the blank VBLK1N: BYQ69.

B) Field or rinse blank contamination:
VOA: Not applicable.

C) Trip blank contamination for VOA aqueous samples:
VOA: No problems.

D) Storage blank associated with VOA samples only
VOA: No problems.

E) Tics "R" rejected
VOA: No problems.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".
VOA: No problems.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is

CLP DATA ASSESSMENT

capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

VOA: The analytes acetone, 2-butanone, and 1,2-dibromo-3-chloropropane were qualified "J" for hits and "R" for non-detects in the following samples due to reported RRF5 values less than 0.050: VBLK1M, VLCS1M, BYQ58, BYQ59, BYQ60, BYQ61, BYQ62, BYQ63, BYQ64, BYQ65, BYQ66, BYQ67, BYQ68, BYQ71, and BYQ72.

The analytes acetone and 2-butanone were qualified "J" for hits and "R" for non-detects in the following samples due to reported RRF5 values less than 0.050: VBLK1N, BYQ69, BYQ73, BYQ74, BYQ75, BYQ76, BYQ77, and BWX49.

The analytes acetone and 2-butanone were qualified "J" for hits and "R" for non-detects in the following samples due to reported RRF5 values less than 0.050: VBLK10, BYQ69RE, and BYQ73DL.

The analytes acetone, 2-butanone, and 1,2-dibromo-3-chloropropane were qualified "J" for hits and "R" for non-detects in the following samples due to reported RRF5 values less than 0.050: VBLK5I and VHBLK5I.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these

CLP DATA ASSESSMENT

limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

For the PEST/PCB fraction, if %RSD exceeds 20% for all analytes except for the two surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the sample shown were qualified for %RSD and %D:

VOA: The analyte methylene chloride was qualified "J" for hits and "UJ" for non-detects in the following samples due to exceeding continuing calibration criteria: 0.050: VBLK1N, BYQ69, BYQ73, BYQ74, BYQ75, BYQ76, BYQ77, and BWX49.

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction.
VOA: No problems.

9. COMPOUND IDENTIFICATION:

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of

CLP DATA ASSESSMENT

the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

B) Pesticide Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10 ng/ml in the final sample extract.

10. CONTRACT PROBLEMS NON-COMPLIANCE:
VOA: The following samples exceeded the contractual holding time of 10 days as required by the SOW, D-23/VOA, Sect. 8.4: BYQ69RE and BYQ73DL.

An instrument blank was not analyzed as required by the SOW, D-52/VOA, Sect. 12.1.1.3 due to sample BYQ73 reporting an on column concentration of 83 ug/L for tetrachloroethene. Tetrachloroehtene was not reported in the following sample BYQ74, therefore no action was taken.

11. FIELD DOCUMENTATION:
VOA: No problems.

12. OTHER PROBLEMS
VOA: No problems.

13. **This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified not to be used.**

VOA: BYQ69RE and BYQ73DL.

DPO: []ACTION []FYI REGION__2_

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO._27237__ LABORATORY_MITKEM_____

SDG NO. BYQ58 _ DATA USER___EPA/Region II_____

SOW_OLCO2.1 _____ REVIEW COMPLETION DATE_8/17/99___

NO. OF SAMPLES____20__WATER _____SOIL _____OTHER

REVIEWER: [] ESD [x] ESAT [] OTHER, CONTRACTOR_____

QC ITEM	VOA	BNA	PEST		
HOLDING TIMES	O				
GC-MS PERFORMANCE	O				
INITIAL CALIBRATIONS	O				
CONTINUING CALIBRATIONS	Z				
FIELD BLANKS(F = N/A)	O				
LABORATORY BLANKS	O				
SURROGATES	O				
MATRIX SPIKE/DUPLICATES	O				
QC SAMPLES(LCS, PVS)	O				
INTERNAL STANDARDS	O				
COMPOUND IDENTIFICATION	O				
COMPOUND QUANTITATION	X				
SYSTEM PERFORMANCE	O				
OVERALL ASSESSMENT	Z				

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DATA REJECTION SUMMARY

Type of Review: Organic Date: 8/17/99 Case No. 27237, SDG# BYQ58

Site Name: Monroe Township Groundwater Contamination Lab Name: MITKEM Reviewer's Initials: MZ

Number of Samples: 20 H_2O, soils, +QC + reanalyses/dilutions

Analytes Rejected Due To Exceeding Review Criteria For:

No. of Compounds/No. of Fractions(Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standards	Other	Total # Samples	Total # Rejected/ Total # in All Samples
VOA(41)	0	0	71	0	0	0	0	28	71/1148 = 6%
ACID(14)	0	0	0	0	0	0	0	0	NA
B/N(45)	0	0	0	0	0	0	0	0	NA
PEST(21)	0	0	0	0	0	0	0	0	NA
PCB(7)	0	0	0	0	0	0	0	0	NA

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITIERIA.

Analytes Estimated Due To Exceeding Review Criteria For:

No. of Compounds/No. of Fractions(Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standards	Other	Total # Samples	Total # estimated/ Total # in All Samples
VOA(41)	1	0	10	0	0	0	0	28	11/1148 = <1%
ACID(14)	0	0	0	0	0	0	0	0	NA
B/N(45)	0	0	0	0	0	0	0	0	NA
PEST(21)	0	0	0	0	0	0	0	0	NA
PCB(7)	0	0	0	0	0	0	0	0	NA

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITIERIA.

MTG-3.200566

USEPA Region II
Method: CLP/SOW, OLC02.1

Date: October, 1996
SOP HW-13, Revision 2

	YES	NO	N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 27237 LAB: MITKEM

SITE NAME: Monroe Township Groundwater Contamination SDG No(s).: BYQ59

1.0 Chain of Custody and Sampling Trip Reports

1.1	Are the Traffic Reports/Chain-of-Custody Records present for all samples?	[✓]	___	___

ACTION: If no contact RSCC, or the WAM to obtain replacement of missing or illegible copies from the lab.

mj

1.2	Is the Sampling Trip Report present for all samples and all fractions?	[✓]	___	___

ACTION: If no, contact either RSCC or ask the WAM to obtain the necessary information from the prime contractor.

2.0 Data Completeness and Deliverables

2.1	Have any missing deliverables been received and added to the data package?	___	✓	

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the lab. If lab cannot provide them, note the effect on the review of the data package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2	Was CLASS CCS checklist included with the package?	[ ]	✓	___
2.3	Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report and Sample Tags?	___	[✓]	___

ACTION: If yes, contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory.

	YES	NO	N
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[✓]	___	___
3.2 Are the Case number and SDG number contained in the Narrative or Cover letter?	[✓]	___	___
3.3 Does the Narrative contain the following information (see SOW, page B-11, section 2.6.1):			
VOA: description or trap and column(s) used during sample analyses?	[✓]	___	___
BNA: descriptions of column(s) used during sample analyses?	[ ]	___	✓
PEST: description of columns used during sample analyses?	[ ]	___	✓
NOTE: As stated in the SOW, page D-11/PEST, section 6.1.1.3.7, packed columns cannot be used.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	___	✓
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler exceeded 10° C, the lab must list by fraction and sample number, all affected samples. 3°C from COC	[ ]	✓	___
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatiles analysis (SOW, page B-11, section 2.6.1.2)?	[✓]	___	___
3.7 Does the Case Narrative contain the "verbatim" statement as required on page B-11, section 2.6.1 of the SOW?	[✓]	___	___

ACTION: If "No", to any question in this section, contact the WAM to obtain necessary resubmittals. If the information is unavailable, document under the Contract Problems/Non-Compliance section of the Data Assessment.

	YES	NO	N/A

4.0 Data Validation Checklist

4.1 Check the package for the following (see SOW reporting requirements, section 2.1, page B-7):

a. Is the package paginated in ascending order starting from the SDG narrative?	[/]		
b. Are all forms and copies legible?	[/]		
c. Is each fraction assembled in the order set forth in the SOW?	[/]		
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[/]		

The following checklist is divided into three parts. Part A is filled out if the data package contains any Low Concentration Volatile analyses, Part B for any Low Concentration Semivolatile analyses and Part C for Low Concentration Pesticide/Aroclors.

Does this package contain:

Low Concentration Volatiles Data?	/	
Low Concentration Semivolatiles Data?		/
Low Concentration Pesticides/Aroclors data?		/

ACTION: Complete corresponding parts of checklist.

YES NO N/A

MTG-3.200571

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ [ ] ___

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the temperature of the cooler was > 10° C, then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ [ ] ___

Technical Holding Times: Unpreserved samples maintained at 4°C, being evaluated for aromatic hydrocarbons, must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4°C, then samples must be analyzed within 14 days of collection. If uncertain about preservation, notify the WAM to contact the sampler and determine whether or not samples were preserved.

ACTION: List sampling, VTSR, analysis dates and preservation for samples which missed holding time in the table below.

YES NO N

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R). If holding times are exceeded by more than 28 days, flag all non-detects "R".

NOTE: Contractual Holding Times: Sample must be analyzed within 10 days from validated time of sample receipt (VTSR) at the laboratory. ↗ BYQ69RE → BYQ73A

3.0 System Monitoring Compound (SMC) Recovery (Form II LCV)

3.1 Are the Volatile SMC Recovery Summaries (Form II LCV) present? [✓] ___ ___

ACTION: Call the WAM to obtain an explanation/resubmittal from the lab. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.2 Were outliers marked correctly with an asterisk? [✓] ___ _

ACTION: Circle all outliers in red.

	YES	NO	N/A
* 1319. BYQ6A MTG-3.200573			
3.3 Was the surrogate, p-bromofluorobenzene, recovery outside contract limits of 80 - 120% for any sample or method blank?	/	[ ]	
If yes, were samples re-analyzed?	[/]		
Were method blanks re-analyzed?	[ ]		/

ACTION: If p-bromofluorobenzene recovery was > 10%, but failed to meet SOW specifications:

1. Qualify all positive results estimated (J). BYQ6A
2. Flag all non-detects as estimated detection limits (UJ) where recovery is < 80%. tetrachloroethene 620 J
3. Do not qualify non-detects if surrogate recovery is > 120%.

If p-bromofluorobenzene recovery was < 10%:

1. Flag all positive results estimated (J).
2. Flag all non-detects unusable (R).

Professional judgement should be used to qualify data that only have an associated method blank with the SMC recovery out of specification in both the original and reanalysis. Check internal standard areas.

3.4 Are there any transcription/calculation errors between raw data and Form II?		[/]	

ACTION: If large errors exist, ask the WAM to obtain an explanation/resubmittal from the lab, make any necessary corrections and note errors in the data assessment.

4.0 Laboratory Control Sample (LCS) Recovery (Form III LCV)

4.1 Is the LCS Recovery Form (Form III LCV) present?	[/]		
4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples, whichever is more frequent) for the Low Concentration VOA method?	[/]		

ACTION: If any LCS data are missing, take action as specified in section 3.1 above.

YES NO N

4.3 How many VOA LCS recoveries are outside the specified QC limits of 60 - 140%?

0 out of 12

ACTION: Qualify associated samples for only the specific analytes included in the LCS solution in the following two situations:

1. If the LCS recovery is > 140%, flag positive results for the affected compound(s) estimated (J). Do not flag non-detects.

2. If the LCS recovery is < 60%, but mass spectral criteria were met, flag positive results for the affected compound(s) estimated (J) and non-detect(s) unusable (R).

Qualify all sample results in the following circumstances:

1. If 25% of the LCS recoveries were < 60%, qualify all positive results in the associated samples "J" and all non-detects "R".

2. If two or more LCS recoveries were < 10%, qualify all positive results in the associated samples "J" and all non-detects "R".

NOTE: It should be noted for TPO action (Organic Regional Data Assessment Summary Form) if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails LCS recovery criteria.

5.0 Method Blanks (Form IV LCV)

5.1 Is the Volatile Method Blank Summary (Form IV LCV) present? [✓] ___ ___

5.2 Frequency of Analysis: For the analysis of Low Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? [✓] ___ ___

5.3 Has a VOA method blank been analyzed at least once every twelve hours for each GC/MS system used? [✓] ___ ___

5.4 Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound

	YES	NO	N/A
at a concentration > 25 µg/ℓ (see SOW, page D-52/VOA, section 12.1.1.3)? none between BYQ73 / BYQ74	[ ]	/	

ACTION: If any method/instrument blank data are missing, notify the WAM to obtain resubmittals or an explanation from the lab. If method blank data are unavailable, reject (R) all associated positive results. However, the reviewer may use professional judgement and substitute field blank or trip blank data for missing method blank data.

no carryover though, so no effects

If an instrument blank was not analyzed after a sample containing > 25 µg/ℓ, inspect the sample chromatogram acquired immediately after this sample for possible carryover. Use professional judgement to determine if carryover occurred and qualify analyte(s) accordingly.

5.5 Was a storage blank analyzed once per SDG after all the samples were analyzed?	[/]		

ACTION: If storage blank data is missing, contact the WAM to obtain any missing deliverables from the laboratory. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for EPA blanks was used. (See SOW page B-31, section 3.3.7.3 for more information.)

Was the correct identification scheme used for all Low Concentration VOA blanks?	[/]		

ACTION: Contact the WAM to obtain corrections from the lab, or make the necessary corrections. Document in the "Contract Problems/Non-Compliance section of the Data Assessment all corrections made by the validator.

5.7 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports, data system printouts and spectra.

Also compare the storage blank raw data with the method blank. Determine if contamination in the storage blank is also present in the method blank.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Low

	YES	NO	!
Concentration VOAs?	[✓]	___	___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? Meth VOA/IN [✓] ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Does the storage blank contain positive results (TCL and/or TICs) for Low Concentration VOAs? [ ] [✓] ___

ACTION: If the storage blank contains target compounds at a concentration greater than the CRQL, positive sample results for those compounds should be flagged "J". If gross contamination occurred positive sample results for that compound may be rejected (R).

6.2 Do any method/reagent/instrument blanks contain positive results (including TICs) for Low Concentration VOAs? When applied as described in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. Meth [✓] ___ ___

NOTE: Contaminated instrument blanks are unacceptable under this SOW (see page D-52/VOA, section 12.1.2.3).

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance if a contaminated instrument blank was submitted.

YES NO N/A

MTG-3.200577

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Instrument cross-contamination should be noted for TPO action (Organic Regional Data Assessment Summary Form) if an effect on the data is suspected.

6.3 Do any field/trip/rinse blanks have positive Low Concentration VOA results (including TICs)? Chloroform Blanks [ ]

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Field blanks & trip blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated sample data should be qualified unusable (R).

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but < 10x blank value.	Sample conc. is < CRQL and < 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
Other Conta-minants	Sample conc. is > CRQL, but < 5x blank value.	Sample conc. is < CRQL and < 5x blank value.	Sample conc. is > CRQL and > 5x blank value.

NOTE: Analytes qualified "U" for blank contamination are treated as "hits" when qualifying for calibration criteria.

YES NO N

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.4 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V-LCV)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V-LCV) present for Bromofluorobenzene (BFB)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [✓] ___ ___

7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: List date, time, instrument ID and sample analyses for which associated GC/MS tuning data are missing.

DATE	TIME	INSTRUMENT ID	SAMPLE NUMBERS

ACTION: Notify the WAM to obtain missing data from the lab. If the lab cannot provide missing data, reject (R) all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 (see SOW, page D-60/VOA)? [✓] ___ ___

YES NO

MTG-3.200579

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable (R).

7.5 Have the ion abundance criteria been met for each instrument used? [✓] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

7.7 Is the number of significant figures for the reported relative abundances consistent with the number given in the ion abundance criteria column on Form V LCV? [✓] ___ ___

ACTION: If large errors exist, take action as specified in section 3.4 above.

7.8 Is the spectrum of the mass calibration compound acceptable? [✓] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (Form I LCV)

8.1 Are the Organic Analysis Data Sheets (Form I LCV) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [✓] ___ ___

b. Laboratory Control Samples? [✓] ___ ___

c. Blanks? [✓] ___ ___

8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the

		YES	NO	N/A
	data system printouts (Quant Reports) included in the sample package for each of the following:			
	a. Samples and/or fractions as appropriate?	[✓]	___	___
	b. Laboratory Control Samples?	[✓]	___	___
	c. Blanks?	[✓]	___	___
	ACTION: If any data are missing, take action specified in 3.1 above.			
8.3	Are the response factors shown in the quant report? area respons only	[ ]	✓	___
8.4	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[✓]	___	___
	Resolution?	[✓]	___	___
	Peak shape?	[✓]	___	___
	Full-scale graph (attenuation)?	[✓]	___	___
	Other: _____?	[ ]	___	✓
	ACTION: Use professional judgement to determine the acceptability of the data.			
8.5	Are lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	___	___
	ACTION: If any mass spectra are missing, take action as specified in 3.1 above. If lab does not generate their own standard spectra, make note under the "Contract Problems/Non-Compliance" section of the Data Assessment.			
8.6	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum?	[✓]	___	___
8.8	Do sample and standard relative ion intensities agree to within ±20%?	[✓]	___	___

YES NO N/A

MTG-3.200581

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R) flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in the SOW page VOA D-32, section 21.

ACTION: When sample carry-over is suspected, use professional judgement to determine if instrument cross-contamination has affected positive compound identifications.

9.0 Tentatively Identified Compounds (TIC)

9.1 Are all Tentatively Identified Compound Forms (Form I LCV-TIC) present? Do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? [✓] ___ ___

9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

a. Samples and/or fractions as appropriate? [ ] ___ ✓

b. Blanks? [ ] ___ ✓

b. Alkanes listed for each sample? [ ] ___ ✓

ACTION: If any TIC data are missing, take action specified in 3.1 above.

ACTION: Add "JN" qualifier to all chemically named TICs if missing.

BYQ66 Naphthalene

9.3 Are any target compounds (from any fraction) listed as TICs? (Example: 1,2-dimethylbenzene is xylene - a VOA target analyte - and should not be reported as a TIC.) ___ [✓] ___

ACTION: Flag with "R" any target compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than

	YES	NO	N
25% also present in the sample mass spectrum?	[ ]	___	✓
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[ ]	___	✓

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (I.e., common lab contaminants such as CO_2 - M/E 44, siloxanes - M/E 73, hexane, aldol condensation products, solvent preservatives, and related by-products. See the National Functional Guidelines for further guidance.)

10.0 Compound Quantitation and Reported Detection Limits

	YES	NO	N
10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRFs were used to calculate Form I results.)	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions?	[✓]	___	___

ACTION: If errors are large, take action as specified in section 3.4 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs data from the diluted sample). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's not to be used, including any in the data summary package.

11.0 Standards Data (GC/MS)

	YES	NO	N/A
MTG-3.200583			
11.1 Are the reconstructed ion chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[✓]	___	___

ACTION: If any calibration standard data are missing, take action specified in section 3.1 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI LCV) present and complete for the volatile fraction at concentrations of 1, 2, 5, 10, and 25 µg/ℓ?	[✓]	___	___

ACTION: If any Initial Calibration forms are missing, take action as specified in section 3.1 above.

12.2 Are response factors stable for VOA's over the concentration range of the calibration (e.g., %RSD ≤ 30.0)?	[ ]	[✓]	___

ACTION: Circle all outliers in red.

NOTE: Although 13 Low Conc. VOA compounds have no maximum %RSD and require only minimal $\overline{RRF}$ performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: If %RSD > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. If %RSD is > 90, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still treated as "hits" when qualifying for initial calibration criteria.

12.3 Are any $\overline{RRF}$s < 0.05?	[✓]	[ ]	___

ACTION: Circle all outliers in red.

ACTION: If any $\overline{RRF}$ values are < 0.05, qualify associated non-detects unusable (R) and associated positive results estimated (J).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI and Table D-3, page D-61/VOA) to fail contractual %RSD and RRF criteria, provided the %RSD is ≤ 40.0 and RRF ≥ 0.010.

YES NO N

ACTION: If more than two of the required analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.4 Are there any transcription/calculation errors in the reporting of RRFs, RRFs or %RSD values? (Check at least 2 values, but if errors are found, check more.) ___ [/] ___

ACTION: Circle errors in red.

ACTION: If errors are large, contact the WAM to obtain an explanation/resubmittal from the lab, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

13.0 GC/MS Continuing Calibration (Form VII LCV)

13.1 Are the Continuing Calibration Forms (Form VII LCV) present and complete for the volatile fraction? [/] ___ ___

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [/] ___ ___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, ask the WAM to obtain explanation/resubmittal from the laboratory. If continuing calibration data are unavailable, flag all associated sample data as unusable (R).

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

13.3 Do any volatile compounds have a % Difference (%D) between the initial RRF and continuing RRF which exceeds the ± 30% criteria? / [ ] _

ACTION: Circle all outliers in red.

YES NO N/A

MTG-3.200585

NOTE: Although 13 Low Conc. VOA compounds have no maximum %D and require only minimal RRF performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When % D is above 90%, reject all non-detects for that analyte as unusable (R).

13.4 Do any volatile compounds have a RRF < 0.05? ___ [ ] ___

ACTION: Circle all outliers in red.

ACTION: If the RRF < 0.05, qualify associated positive results as estimated (J) and associated non-detects unusable (R).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI, or Table D-3, page D-61/VOA) to fail or RRF criteria, provided %D is within ±40.0 and RRF ≥ 0.010.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary if more than two of the required analytes failed the above acceptance criteria.

13.5 Are there any transcription/calculation errors in the reporting of RRFs, or %D between initial RRFs and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, notify the WAM to obtain explanation/resubmittals from the lab. Document errors in the Contract Problems/Non-Compliance section of the Data Assessment.

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (± 40%) for each continuing calibration? [✓] ___ ___

If no, was the sample reanalyzed? [ ] ___ [✓]

YES NO N,

ACTION: 1. Circle all outliers in red.

2. List all the outliers below.

Sample #	Int. Std.	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > +40%.

3. If the IS area is less than the lower limit (-40%), qualify all associated non-detects "UJ". If extremely low area counts are reported, (< 20%) or if performance exhibits a major, abrupt drop- off, flag all associated non-detects as unusable (R).

14.2 Are the retention times of the internal standards within ±20 seconds of the associated calibration standard? ✓ ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

NOTE: Contract Requirements: The SOW (section 11.8.4, page D-51/VOA) states that any sample which fails the acceptance criteria for IS response must be reanalyzed.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance any sample(s) which failed the above IS acceptance criteria.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low

	YES	NO	N/A
• Concentration VOA analysis?	✓		

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. If large differences exist, contact the WAM to confirm identification of field duplicates with the sampler.

BYQ66
BYQ71

RECEIVED
AUG. 1 2 1999.

SDG Narrative

Mitkem Corporation submits the enclosed data package in response to USEPA Case # 27237 and SDG# BYQ58. Analyses were performed for twenty aqueous samples that were received on July 28 and 29, 1999. The analyses were performed under USEPA Contract # 68-D6-0063.

The following samples are submitted in this data package:

Client ID	Lab ID	Analysis	VOA sample pH
BYQ58	61412001	V	<2
BYQ59	61412002	V	<2
BYX60	61412003	V	<2
BYX61	61412004	V	<2
BYQ62	61412005	V	<2
BYQ63	61412006	V	<2
BYQ64	61412007	V	<2
BYQ65	61412008	V	<2
BYQ66	61412009	V	<2
BYQ67	61412010	V	<2
BYQ68	61412011	V	<2
BYQ69	61412012	V	<2
BYQ71	61412013	V	<2
BYQ72	61412014	V	<2
BYQ73	61412015	V	<2
BYQ74	61412016	V	<2
BYQ75	61412017	V	<2
BYQ76	61412018	V	<2
BYQ77	61412019	V	<2
BWX49	61412020	V	<2

V = Volatile Organics

The analyses were performed using USEPA CLP Low Concentration Water (OLC02.1) protocols. The analyses were performed with strict adherence to the SOW with the following exceptions and observations:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required.

2. Volatile Analysis:

Traps used: for instrument V1: OI Analytical #10 trap containing 8 cm each of Tenax, silica gel and carbon molecular sieve, for instrument V5: Vocarb 3000 trap containing 10 cm carbopack B, 6 cm carboxen 1000 and 1 cm carboxen 1001.

GC column used: 30 m x 0.25 mm id (1.4 um film thickness) DB-624 capillary column.

Sample BYQ69 was analyzed within holding time with non-compliant surrogate recovery. The sample was re-analyzed 1 day out of the hold with compliant surrogate recovery. Sample BYQ73 was analyzed with one analyte exceeding the calibration range within holding time. The sample was re-analyzed at dilution 1 day out of hold. For these two samples, both sets of data are submitted. Please also note that due to high concentration of target analytes, Sample BYW69 and its re-analysis were analyzed at 50x dilution.

No other unusual observation was made for the analysis other than those discussed above.

All of the submittals to the region are originals other than log book pages and copies of tunes and standard files which are shared by many other cases. For these, the original copies are archived in the laboratory.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Kin Chiu

Kin Chiu
Technical Director
8/10/99

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Mitkem Corporation Contract No.: 68-D6-0063

Lab Code: Mitkem Case No.: 27237

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: BVQ58 Sample Receipt Date: 07/28/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: BVQX49 Sample Receipt Date: 07/29/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	BVQX49	11	BVQ67
2	BVQ58	12	BVQ68
3	BVQ59	13	BVQ69
4	BVQ60	14	BVQ71
5	BVQ61	15	BVQ72
6	BVQ62	16	BVQ73
7	BVQ63	17	BVQ74
8	BVQ64	18	BVQ75
9	BVQ65	19	BVQ76
10	BVQ66	20	BVQ77

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Kimberly Ahern
Signature

08/04/99
Date

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET TB

EPA SAMPLE NO.

BWX49

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200591

Lab Sample ID: 61412020 Date Received: 07/29/99

Lab File ID: V1C4740 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	~~B~~	
67-64-1	Acetone	~~5~~	~~U~~	R4
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	6		
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	~~5~~	~~U~~	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	1	U	
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWX49

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200592

Lab Sample ID: 61412020 Date Received: 07/29/99

Lab File ID: V1C4740 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					
23.					
24.					
25.					
26.					
27.					
28.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ58

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200593

Lab Sample ID: 61412001 Date Received: 07/28/99

Lab File ID: V1C4708 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	~~5~~	~~U~~	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	~~5~~	~~U~~	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ58

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200594

Lab Sample ID: 61412001 Date Received: 07/28/99

Lab File ID: V1C4708 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ59

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200595

Lab Sample ID: 61412002 Date Received: 07/28/99

Lab File ID: V1C4709 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	~~5~~	~~U~~	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	~~5~~	~~U~~	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ59

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200596

Lab Sample ID: 61412002 Date Received: 07/28/99

Lab File ID: V1C4709 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ60

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200597

Lab Sample ID: 61412003 Date Received: 07/28/99

Lab File ID: V1C4710 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	~~8~~	~~U~~	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	~~8~~	~~U~~	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ60

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200598

Lab Sample ID: 61412003 Date Received: 07/28/99

Lab File ID: V1C4710 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ61

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200599

Lab Sample ID: 61412004 Date Received: 07/28/99

Lab File ID: V1C4711 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	~~5~~	~~U~~	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	~~5~~	~~U~~	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ61

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200600

Lab Sample ID: 61412004 Date Received: 07/28/99

Lab File ID: V1C4711 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
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EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

BYQ62

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200601

Lab Sample ID: 61412005 Date Received: 07/28/99

Lab File ID: V1C4712 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	4	J	J
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	5	U	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	1	U	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ62

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200602

Lab Sample ID: 61412005 Date Received: 07/28/99

Lab File ID: V1C4712 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ63

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200603

Lab Sample ID: 61412006 Date Received: 07/28/99

Lab File ID: V1C4713 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	~~5~~	~~U~~	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	~~5~~	~~U~~	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ63

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200604

Lab Sample ID: 61412006 Date Received: 07/28/99

Lab File ID: V1C4713 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ64

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200605

Lab Sample ID: 61412007 Date Received: 07/28/99

Lab File ID: V1C4714 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	~~5~~	~~U~~	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	~~5~~	~~U~~	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ64

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200606

Lab Sample ID: 61412007 Date Received: 07/28/99

Lab File ID: V1C4714 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. MTG-3.200607

BYQ65

b Name: MITKEM CORPORATION Contract: 68-D6-0063

b Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

o Sample ID: 61412008 Date Received: 07/28/99

o File ID: V1C4715 Date Analyzed: 08/06/99

ge Volume: 25 (mL) Dilution Factor: 1.0

Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	5	U	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	5	U	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	1	U	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ65

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200608

Lab Sample ID: 61412008 Date Received: 07/28/99

Lab File ID: V1C4715 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ66

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200609

Lab Sample ID: 61412009 Date Received: 07/28/99

Lab File ID: V1C4716 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	5	U	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	5	U	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	1	U	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ66

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200610

Lab Sample ID: 61413009 Date Received: 07/28/99

Lab File ID: V1C4716 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ67

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200611

Lab Sample ID: 61412010 Date Received: 07/28/99

Lab File ID: V1C4717 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	5	U	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	5	U	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	2	U	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ67

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.20[illegible]12

Lab Sample ID: 61412010 Date Received: 07/28/99

Lab File ID: V1C4717 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ68

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200613

Lab Sample ID: 61412011 Date Received: 07/28/99

Lab File ID: V1C4718 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	~~5~~	~~U~~	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	~~5~~	~~U~~	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ68

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200614

Lab Sample ID: 61412013

Date Received: 07/28/99

Lab File ID: V1C4718

Date Analyzed: 08/06/99

Purge Volume: 25 (mL)

Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

BYQ69

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200615

Lab Sample ID: 61412012 Date Received: 07/28/99

Lab File ID: V1C4734 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene chloride	110	~~B~~ U J
67-64-1	Acetone	~~250~~	~~B~~ R
75-15-0	Carbon disulfide	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
156-59-2	cis-1,2-Dichloroethene	50	U
156-60-5	trans-1,2-Dichloroethene	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	~~250~~	~~U~~ R
74-97-5	Bromochloromethane	50	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon tetrachloride	50	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
75-25-2	Bromoform	50	U
108-10-1	4-Methyl-2-pentanone	250	U
591-78-6	2-Hexanone	250	U
127-18-4	Tetrachloroethene	620	J
79-34-5	1,1,2,2-Tetrachloroethane	50	U
106-93-4	1,2-Dibromoethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
100-42-5	Styrene	50	U
1330-20-7	Xylenes (total)	50	U
541-73-1	1,3-Dichlorobenzene	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-50-1	1,2-Dichlorobenzene	50	U
96-12-8	1,2-Dibromo-3-chloropropane	50	U
120-82-1	1,2,4-Trichlorobenzene	50	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ69

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200816

Lab Sample ID: 61412012 Date Received: 07/28/99

Lab File ID: V1C4734 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ71

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200617

Lab Sample ID: 61412013 Date Received: 07/28/99

Lab File ID: V1C4720 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	5	U	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	5	U	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	1	U	
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	2	U	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ71

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200618

Lab Sample ID: 61412013 Date Received: 07/28/99

Lab File ID: V1C4720 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ72

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200619

Lab Sample ID: 61412014 Date Received: 07/28/99

Lab File ID: V1C4723 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q	
74-87-3	Chloromethane	1	U	
74-83-9	Bromomethane	1	U	
75-01-4	Vinyl chloride	1	U	
75-00-3	Chloroethane	1	U	
75-09-2	Methylene chloride	2	U	
67-64-1	Acetone	~~5~~	~~U~~	R
75-15-0	Carbon disulfide	1	U	
75-35-4	1,1-Dichloroethene	1	U	
75-34-3	1,1-Dichloroethane	1	U	
156-59-2	cis-1,2-Dichloroethene	1	U	
156-60-5	trans-1,2-Dichloroethene	1	U	
67-66-3	Chloroform	1	U	
107-06-2	1,2-Dichloroethane	1	U	
78-93-3	2-Butanone	~~5~~	~~U~~	R
74-97-5	Bromochloromethane	1	U	
71-55-6	1,1,1-Trichloroethane	1	U	
56-23-5	Carbon tetrachloride	1	U	
75-27-4	Bromodichloromethane	1	U	
78-87-5	1,2-Dichloropropane	1	U	
10061-01-5	cis-1,3-Dichloropropene	1	U	
79-01-6	Trichloroethene	1	U	
124-48-1	Dibromochloromethane	1	U	
79-00-5	1,1,2-Trichloroethane	1	U	
71-43-2	Benzene	1	U	
10061-02-6	trans-1,3-Dichloropropene	1	U	
75-25-2	Bromoform	1	U	
108-10-1	4-Methyl-2-pentanone	5	U	
591-78-6	2-Hexanone	5	U	
127-18-4	Tetrachloroethene	15		
79-34-5	1,1,2,2-Tetrachloroethane	1	U	
106-93-4	1,2-Dibromoethane	1	U	
108-88-3	Toluene	1	U	
108-90-7	Chlorobenzene	1	U	
100-41-4	Ethylbenzene	1	U	
100-42-5	Styrene	1	U	
1330-20-7	Xylenes (total)	1	U	
541-73-1	1,3-Dichlorobenzene	1	U	
106-46-7	1,4-Dichlorobenzene	1	U	
95-50-1	1,2-Dichlorobenzene	1	U	
96-12-8	1,2-Dibromo-3-chloropropane	~~2~~	~~U~~	R
120-82-1	1,2,4-Trichlorobenzene	1	U	

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ72

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200620

Lab Sample ID: 61412014 Date Received: 07/28/99

Lab File ID: V1C4723 Date Analyzed: 08/06/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ73

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200621

Lab Sample ID: 61412015 Date Received: 07/28/99

Lab File ID: V1C4735 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	1	B J
67-64-1	Acetone	5	U R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene *	61	E
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

* From Dilution

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ73

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200622

Lab Sample ID: 61412015 Date Received: 07/28/99

Lab File ID: V1C4735 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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28.					
29.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ74

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200623

Lab Sample ID: 61412016 Date Received: 07/28/99

Lab File ID: V1C4736 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2 ~~2~~ ~~B~~	U J
67-64-1	Acetone	~~B~~ ~~B~~	R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~ ~~B~~	R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ74

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200624

Lab Sample ID: 61412016 Date Received: 07/28/99

Lab File ID: V1C4736 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ75

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200625

Lab Sample ID: 61412017 Date Received: 07/28/99

Lab File ID: V1C4737 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	4	U
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ75

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200626

Lab Sample ID: 61412017 Date Received: 07/28/99

Lab File ID: V1C4737 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ76

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200627

Lab Sample ID: 61412018 Date Received: 07/28/99

Lab File ID: V1C4738 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	BU J
67-64-1	Acetone	5	B R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	B R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ76

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200628

Lab Sample ID: 61412018 Date Received: 07/28/99

Lab File ID: V1C4738 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
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30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ77

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200629

Lab Sample ID: 61412019 Date Received: 07/28/99

Lab File ID: V1C4739 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2 2 ~~5~~ 4	U
67-64-1	Acetone	~~5~~ ~~5~~	R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~ ~~5~~	R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ77

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ58

MTG-3.200630

Lab Sample ID: 61412019 Date Received: 07/28/99

Lab File ID: V1C4739 Date Analyzed: 08/07/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
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RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

MTG-3.200631

DATE: AUG. 18, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: George Karras, Hazardous Waste Support Section

RECEIVED
AUG 2 3 1999

Attached is the following ORGANIC Data Package to be reviewed for Quality Assurance

SITE MONROE TWP. GW CONTAM. CASE# 27237/SDG# BYR04

CONTRACTOR STARTW #SAMPLES MATRIX

PHASE IA

LAB MITKEM 14 WATER

TURN-AROUND-TIME 14 DAYS FRACTION LOW CONC VOA ONLY

CERCLIS ID # NJD980769699 SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	8-17-99
John Bulich	8-18-99	[signature]	8/18/99
[signature]	8/20/99	J Bulich (DCR)	8-20-99
J Bulich (DCR)	8-20-99	D Karras	8/20/99
D Karras	8/23/99	J Trimble	8/23/99

(over for instructions) revised 3/99

ATTACHMENT 1
SOP NO. HW-13

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

CASE No.: 27237 SDG No.: BYR04 LABORATORY: MITKEM

SITE: Monroe Township Ground Water Contamination

DATA ASSESSMENT

The current SOP HW-13 (Revision 2) October 1996, USEPA Region II Data Validation SOP for Statement of Work OLCO 2.1. for evaluating organic data have been applied.

All data are valid and acceptable except those analytes rejected "R"(unusable). Due to the detection of QC problems, some analytes may have the "J" (estimated), "N"(presumptive evidence for the presence of the material, "U" (non-detect) or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's Signature: _____ Date: 8/20/99

Verified By: _____ Date: 8/20/99

CLP DATA ASSESSMENT

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.

Technical and contractual holding times were met.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.

No problems.

3. LABORATORY CONTROL SAMPLE (LCS):

The LCS data is generated from a laboratory quality control sample. LCS data is intended to assess the ability of the contractor to perform the analytical method.

No problems.

CLP DATA ASSESSMENT

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:

There were no problems.

B) Field or rinse blank contamination:

There are no field blanks associated with this SDG.

C) Trip blank contamination:

Qualification of the data was not necessary.

D) Storage Blank:

There were no problems.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all

CLP DATA ASSESSMENT

circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenylphosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".

There were no problems.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

VBLK1Q, VHBLK1Q, BYR26, BYR27, BYR31, BWX51 - Hits were qualified "J" and non-detects were qualified "R" for acetone, 2-butanone and 1,2-dibromo-3-chloropropane due to continuing calibration RRF criteria.

VBLK5J, BYR04, BYR05, BYR10, BYR20, BYR21, BYR22, BYR23, BYR24, BYR25, VLCS5, BYX50 - Hits were qualified "J" and non-detects were qualified "R" for acetone, 2-butanone, 2-hexanone and 1,2-dibromo-3-chloropropane due to continuing calibration RRF criteria.

CLP DATA ASSESSMENT

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be $\leq$ 30% and %D must be $\pm$30%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

The following analytes in the sample shown were qualified for %RSD and %D:

Qualification of the data for this criteria was not necessary.

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. For each continuing calibration standard, the internal standard area count must not vary by more than $\pm$40% for VOAs, or by a factor of 2 (-50% to +100%) for BNAs. The retention time of the internal standard must not vary by more than $\pm$20 seconds from the associated continuing calibration standard. If the IS area count is outside the specified range, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 20 seconds, the reviewer will use professional judgement to determine

CLP DATA ASSESSMENT

either partial or total rejection of the data for that sample fraction.

There were no problems.

9. COMPOUND IDENTIFICATION:

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

There were no problems.

10. CONTRACT PROBLEMS NON-COMPLIANCE:

11. FIELD DOCUMENTATION:

BYX50 was not listed on the Trip Report.

12. OTHER PROBLEMS:

13. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified to be used:

USEPA Region II
Method: CLP/SOW, OLC02.1

Date: October, 1996
SOP HW-13, Revision 2

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 27237 LAB: MITKEM

SITE NAME: Monroe Twp GW Prot. SDG No(s).: ~~BYR43~~ BYR04

8/26/99

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [✓] ___ ___

ACTION: If no contact RSCC, or the WAM to obtain replacement of missing or illegible copies from the lab.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [✓] ___ ___

ACTION: If no, contact either RSCC or ask the WAM to obtain the necessary information from the prime contractor.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ ✓

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the lab. If lab cannot provide them, note the effect on the review of the data package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with the package? [ ] ✓ ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report and Sample Tags? ✓ [ ] ___

ACTION: If yes, contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory.

STANDARD OPERATING PROCEDURE

USEPA Region II
Method: CLP/SOW, OLC02.1

Date: October, 199[illegible]
SOP HW-13, Revisio[illegible]2

	YES	NO	N/A
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[✓]	___	___
3.2 Are the Case number and SDG number contained in the Narrative or Cover letter?	[✓]	___	___
3.3 Does the Narrative contain the following information (see SOW, page B-11, section 2.6.1):			
VOA: description or trap and column(s) used during sample analyses?	[✓]	___	___
BNA: descriptions of column(s) used during sample analyses?	[ ]	___	/
PEST: description of columns used during sample analyses?	[ ]	___	/
NOTE: As stated in the SOW, page D-11/PEST, section 6.1.1.3.7, packed columns cannot be used.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[✓]	___	___
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler exceeded 10° C, the lab must list by fraction and sample number, all affected samples.	[✓]	___	___
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatiles analysis (SOW, page B-11, section 2.6.1.2)?	[✓]	___	___
3.7 Does the Case Narrative contain the "verbatim" statement as required on page B-11, section 2.6.1 of the SOW?	[✓]	___	___
ACTION: If "No", to any question in this section, contact the WAM to obtain necessary resubmittals. If the information is unavailable, document under the Contract Problems/Non-Compliance section of the Data Assessment.			

YES NO N/A

4.0 Data Validation Checklist

4.1 Check the package for the following (see SOW reporting requirements, section 2.1, page B-7):

	YES	NO	N/A
a. Is the package paginated in ascending order starting from the SDG narrative?	[✓]		
b. Are all forms and copies legible?	[✓]		
c. Is each fraction assembled in the order set forth in the SOW?	[✓]		
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[ ]	✓	

The following checklist is divided into three parts. Part A is filled out if the data package contains any Low Concentration Volatile analyses, Part B for any Low Concentration Semivolatile analyses and Part C for Low Concentration Pesticide/Aroclors.

Does this package contain:

Low Concentration Volatiles Data?	✓	
Low Concentration Semivolatiles Data?		✓
Low Concentration Pesticides/Aroclors data?		✓

ACTION: Complete corresponding parts of checklist.

STANDARD OPERATING PROCEDURE

USEPA Region II
Method: CLP/SOW, OLC02.1

Date: October, 1996
SOP HW-13, Revisio[illegible]

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ [✓] ___

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the temperature of the cooler was > 10° C, then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ [✓] ___

Technical Holding Times: Unpreserved samples maintained at 4°C, being evaluated for aromatic hydrocarbons, must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4°C, then samples must be analyzed within 14 days of collection. If uncertain about preservation, notify the WAM to contact the sampler and determine whether or not samples were preserved.

ACTION: List sampling, VTSR, analysis dates and preservation for samples which missed holding time in the table below.

YES NO N/A

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R). If holding times are exceeded by more than 28 days, flag all non-detects "R".

NOTE: Contractual Holding Times: Sample must be analyzed within 10 days from validated time of sample receipt (VTSR) at the laboratory.

3.0 System Monitoring Compound (SMC) Recovery (Form II LCV)

3.1 Are the Volatile SMC Recovery Summaries (Form II LCV) present? [✓] ___ ___

ACTION: Call the WAM to obtain an explanation/resubmittal from the lab. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.2 Were outliers marked correctly with an asterisk? [✓] ___ ___

ACTION: Circle all outliers in red.

	YES	NO	N/A
3.3 Was the surrogate, p-bromofluorobenzene, recovery outside contract limits of 80 - 120% for any sample or method blank?		[ ]	
If yes, were samples re-analyzed?	[ ]		
Were method blanks re-analyzed?	[ ]		

ACTION: If p-bromofluorobenzene recovery was > 10%, but failed to meet SOW specifications:

1. Qualify all positive results estimated (J).
2. Flag all non-detects as estimated detection limits (UJ) where recovery is < 80%.
3. Do not qualify non-detects if surrogate recovery is > 120%.

If p-bromofluorobenzene recovery was < 10%:

1. Flag all positive results estimated (J).
2. Flag all non-detects unusable (R).

Professional judgement should be used to qualify data that only have an associated method blank with the SMC recovery out of specification in both the original and reanalysis. Check internal standard areas.

3.4 Are there any transcription/calculation errors between raw data and Form II?		[ ]	

ACTION: If large errors exist, ask the WAM to obtain an explanation/resubmittal from the lab, make any necessary corrections and note errors in the data assessment.

4.0 Laboratory Control Sample (LCS) Recovery (Form III LCV)

4.1 Is the LCS Recovery Form (Form III LCV) present?	[ ]		
4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples, whichever is more frequent) for the Low Concentration VOA method?	[ ]		

ACTION: If any LCS data are missing, take action as specified in section 3.1 above.

YES NO N/A

4.3 How many VOA LCS recoveries are outside the specified QC limits of 60 - 140%?

0 out of 12

ACTION: Qualify associated samples for only the specific analytes included in the LCS solution in the following two situations:

1. If the LCS recovery is > 140%, flag positive results for the affected compound(s) estimated (J). Do not flag non-detects.

2. If the LCS recovery is < 60%, but mass spectral criteria were met, flag positive results for the affected compound(s) estimated (J) and non-detect(s) unusable (R).

Qualify all sample results in the following circumstances:

1. If 25% of the LCS recoveries were < 60%, qualify all positive results in the associated samples "J" and all non-detects "R".

2. If two or more LCS recoveries were < 10%, qualify all positive results in the associated samples "J" and all non-detects "R".

NOTE: It should be noted for TPO action (Organic Regional Data Assessment Summary Form) if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails LCS recovery criteria.

5.0 Method Blanks (Form IV LCV)

5.1 Is the Volatile Method Blank Summary (Form IV LCV) present? [ ] ___ ___

5.2 Frequency of Analysis: For the analysis of Low Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? [ ] ___ ___

5.3 Has a VOA method blank been analyzed at least once every twelve hours for each GC/MS system used? [ ] ___ ___

5.4 Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound

	YES	NO	N/A
at a concentration > 25 µg/ℓ (see SOW, page D-52/VOA, section 12.1.1.3)?	[ ]	___	___

ACTION: If any method/instrument blank data are missing, notify the WAM to obtain resubmittals or an explanation from the lab. If method blank data are unavailable, reject (R) all associated positive results. However, the reviewer may use professional judgement and substitute field blank or trip blank data for missing method blank data.

If an instrument blank was not analyzed after a sample containing > 25 µg/ℓ, inspect the sample chromatogram acquired immediately after this sample for possible carryover. Use professional judgement to determine if carryover occurred and qualify analyte(s) accordingly.

5.5 Was a storage blank analyzed once per SDG after all the samples were analyzed?	[ ]	___	___

ACTION: If storage blank data is missing, contact the WAM to obtain any missing deliverables from the laboratory. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for EPA blanks was used. (See SOW page B-31, section 3.3.7.3 for more information.)

Was the correct identification scheme used for all Low Concentration VOA blanks?	[ ]	___	___

ACTION: Contact the WAM to obtain corrections from the lab, or make the necessary corrections. Document in the "Contract Problems/Non-Compliance section of the Data Assessment all corrections made by the validator.

5.7 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports, data system printouts and spectra.

Also compare the storage blank raw data with the method blank. Determine if contamination in the storage blank is also present in the method blank.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Low

	YES	NO	N/A
Concentration VOAs?	[✓]	___	___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? [✓] ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Does the storage blank contain positive results (TCL and/or TICs) for Low Concentration VOAs? ___ [✓] ___

ACTION: If the storage blank contains target compounds at a concentration greater than the CRQL, positive sample results for those compounds should be flagged "J". If gross contamination occurred positive sample results for that compound may be rejected (R).

6.2 Do any method/reagent/instrument blanks contain positive results (including TICs) for Low Concentration VOAs? When applied as described in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. ___ [✓] ___

NOTE: Contaminated instrument blanks are unacceptable under this SOW (see page D-52/VOA, section 12.1.2.3).

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance if a contaminated instrument blank was submitted.

YES NO N/A

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Instrument cross-contamination should be noted for TPO action (Organic Regional Data Assessment Summary Form) if an effect on the data is suspected.

6.3 Do any field/trip/rinse blanks have positive Low Concentration VOA results (including TICs)? ___ ✓ ___

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Field blanks & trip blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated sample data should be qualified unusable (R).

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but < 10x blank value.	Sample conc. is < CRQL and < 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
Other Conta-minants	Sample conc. is > CRQL, but < 5x blank value.	Sample conc. is < CRQL and < 5x blank value.	Sample conc. is > CRQL and > 5x blank value.

NOTE: Analytes qualified "U" for blank contamination are treated as "hits" when qualifying for calibration criteria.

YES NO N/A

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.4 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V-LCV)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V-LCV) present for Bromofluorobenzene (BFB)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [ ] ___ ___

7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: List date, time, instrument ID and sample analyses for which associated GC/MS tuning data are missing.

DATE	TIME	INSTRUMENT ID	SAMPLE NUMBERS

ACTION: Notify the WAM to obtain missing data from the lab. If the lab cannot provide missing data, reject (R) all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 (see SOW, page D-60/VOA)? [✓] ___ ___

	YES	NO	N/A

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable (R).

7.5 Have the ion abundance criteria been met for each instrument used? [ ] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ [ ] ___

7.7 Is the number of significant figures for the reported relative abundances consistent with the number given in the ion abundance criteria column on Form V LCV? [ ] ___ ___

ACTION: If large errors exist, take action as specified in section 3.4 above.

7.8 Is the spectrum of the mass calibration compound acceptable? [ ] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (Form I LCV)

8.1 Are the Organic Analysis Data Sheets (Form I LCV) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [ ] ___ ___

b. Laboratory Control Samples? [ ] ___ ___

c. Blanks? [ ] ___ ___

8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the

	YES	NO	N/A
data system printouts (Quant Reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[✓]	___	___
b. Laboratory Control Samples?	[✓]	___	___
c. Blanks?	[✓]	___	___

ACTION: If any data are missing, take action specified in 3.1 above.

8.3	Are the response factors shown in the quant report?	[ ]	✓	___
8.4	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[✓]	___	___
	Resolution?	[✓]	___	___
	Peak shape?	[✓]	___	___
	Full-scale graph (attenuation)?	[✓]	___	___
	Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[ ]	___	___

ACTION: If any mass spectra are missing, take action as specified in 3.1 above. If lab does not generate their own standard spectra, make note under the "Contract Problems/Non-Compliance" section of the Data Assessment.

8.6	Is the RRT of each reported compound within 0.0 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum?	[✓]	___	___
8.8	Do sample and standard relative ion intensities agree to within ±20%?	[ ]	___	___

YES NO N/A

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R) flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in the SOW page VOA D-32, section 21.

ACTION: When sample carry-over is suspected, use professional judgement to determine if instrument cross-contamination has affected positive compound identifications.

9.0 Tentatively Identified Compounds (TIC)

9.1 Are all Tentatively Identified Compound Forms (Form I LCV-TIC) present? Do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? [ ] ___ ___

9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

a. Samples and/or fractions as appropriate? [ ] ___ ___

b. Blanks? [ ] ___ ___

b. Alkanes listed for each sample? [ ] ___ ___

ACTION: If any TIC data are missing, take action specified in 3.1 above.

ACTION: Add "JN" qualifier to all chemically named TICs if missing.

9.3 Are any target compounds (from any fraction) listed as TICs? (Example: 1,2-dimethylbenzene is xylene - a VOA target analyte - and should not be reported as a TIC.) ___ [ ] ___

ACTION: Flag with "R" any target compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than

	YES	NO	N/A
25% also present in the sample mass spectrum?	[ ]	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (I.e., common lab contaminants such as CO_2 - M/E 44, siloxanes - M/E 73, hexane, aldol condensation products, solvent preservatives, and related by-products. See the National Functional Guidelines for further guidance.)

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRFs were used to calculate Form I results.)	___	[ ]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions?	[ ]	___	___

ACTION: If errors are large, take action as specified in section 3.4 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs data from the diluted sample). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's not to be used, including any in the data summary package.

11.0 Standards Data (GC/MS)

YES NO N/A

NOTE: Although 13 Low Conc. VOA compounds have no maximum %D and require only minimal RRF performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When % D is above 90%, reject all non-detects for that analyte as unusable (R).

13.4 Do any volatile compounds have a RRF < 0.05? ___ [ ] ___

ACTION: Circle all outliers in red.

ACTION: If the RRF < 0.05, qualify associated positive results as estimated (J) and associated non-detects unusable (R).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI, or Table D-3, page D-61/VOA) to fail %D or RRF criteria, provided %D is within ±40.0 and RRF ≥ 0.010.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary if more than two of the required analytes failed the above acceptance criteria.

13.5 Are there any transcription/calculation errors in the reporting of RRFs, or %D between initial RRFs and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [ ] ___

ACTION: Circle errors in red.

ACTION: If errors are large, notify the WAM to obtain explanation/resubmittals from the lab. Document errors in the Contract Problems/Non-Compliance section of the Data Assessment.

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (± 40%) for each continuing calibration? [ ] ___ ___

If no, was the sample reanalyzed? [ ] ___ ___

	YES	NO	N/A

ACTION: If more than two of the required analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.4 Are there any transcription/calculation errors in the reporting of RRFs, RRFs or %RSD values? (Check at least 2 values, but if errors are found, check more.) — [✓]

ACTION: Circle errors in red.

ACTION: If errors are large, contact the WAM to obtain an explanation/resubmittal from the lab, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

13.0 GC/MS Continuing Calibration (Form VII LCV)

13.1 Are the Continuing Calibration Forms (Form VII LCV) present and complete for the volatile fraction? — [✓]

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? — [✓]

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, ask the WAM to obtain explanation/resubmittal from the laboratory. If continuing calibration data are unavailable, flag all associated sample data as unusable (R).

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

13.3 Do any volatile compounds have a % Difference (%D) between the initial RRF and continuing RRF which exceeds the ± 30% criteria? — [✓]

ACTION: Circle all outliers in red.

YES NO N/A

NOTE: Although 13 Low Conc. VOA compounds have no maximum %D and require only minimal RRF performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When % D is above 90%, reject all non-detects for that analyte as unusable (R).

13.4 Do any volatile compounds have a RRF < 0.05? ___ [ ] ___

ACTION: Circle all outliers in red.

ACTION: If the RRF < 0.05, qualify associated positive results as estimated (J) and associated non-detects unusable (R).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI, or Table D-3, page D-61/VOA) to fail %D or RRF criteria, provided %D is within ±40.0 and RRF ≥ 0.010.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary if more than two of the required analytes failed the above acceptance criteria.

13.5 Are there any transcription/calculation errors in the reporting of RRFs, or %D between initial RRFs and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [ ] ___

ACTION: Circle errors in red.

ACTION: If errors are large, notify the WAM to obtain explanation/resubmittals from the lab. Document errors in the Contract Problems/Non-Compliance section of the Data Assessment.

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (± 40%) for each continuing calibration? [ ] ___ ___

If no, was the sample reanalyzed? [ ] ___ ___

YES NO N/A

ACTION: 1. Circle all outliers in red.

2. List all the outliers below.

Sample #	Int. Std.	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > ÷40%.

3. If the IS area is less than the lower limit (-40%), qualify all associated non-detects "UJ". If extremely low area counts are reported, (< 20%) or if performance exhibits a major, abrupt drop- off, flag all associated non-detects as unusable (R).

14.2 Are the retention times of the internal standards within ±20 seconds of the associated calibration standard? [ ] ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

NOTE: Contract Requirements: The SOW (section 11.8.4, page D-51/VOA) states that any sample which fails the acceptance criteria for IS response must be reanalyzed.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance any sample(s) which failed the above IS acceptance criteria.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low

	YES	NO	N/A
Concentration VOA analysis?	[✓]	___	___

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. If large differences exist, contact the WAM to confirm identification of field duplicates with the sampler.

DPO: [ ]ACTION [ ]FYI REGION II

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO.: 27237 LABORATORY: MITKEM

SDG NO.: BYR04 DATA USER: USEPA Region II

SOW: OLC2.1 REVIEW COMPLETION DATE: 8/20/99

NO. OF SAMPLES: 14 WATER

REVIEWER: [ ] ESD [X] ESAT [ ] OTHER, CONTRACTOR: _____

QC ITEM	VOA	
HOLDING TIMES	O	
GC-MS PERFORMANCE	O	
INITIAL CALIBRATIONS	O	
CONTINUING CALIBRATIONS	Z	
FIELD BLANKS(F = N/A)	O	
LABORATORY BLANKS	O	
SURROGATES	O	
LAB CONTROL SAMPLE (LCS)	O	
QC SAMPLES (LES)	NA	
INTERNAL STANDARDS	O	
COMPOUND IDENTIFICATION	O	
COMPOUND QUANTITATION	O	
SYSTEM PERFORMANCE	O	
OVERALL ASSESSMENT	Z	

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS:

One sample was not listed on the Trip Report.

AREAS OF CONCERN:

DATA REJECTION SUMMARY

Type of Review: Organic **Date:** 8/20/99 **Case/SDG No.:** 27237

Site Name: Monroe Twp. G.W. Cont. **Lab Name:** MITKEM

Reviewer's Initials: _____ **Number of Samples, including REs, DLs and QC:** 14

Analytes Rejected Due to Exceeding Review Criteria For:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	LCS	ID	Internal Standards	Other	Total # of Samples	Total # Estimated/Total # in All Samples
VOA(33)			48						14	48 / 462 = 10.4 %

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITERIA.

Analytes Estimated Due to Exceeding Review Criteria For:

No. of Compounds/No. of Fractions (Samples)

	Surrogates	Holding Time	Calibration	Contamination	LCS	ID	Internal Standards	Other	Total # of Samples	Total # Estimated/Total # in All Samples
VOA(33)			4						14	4 / 462 = 0.9 %

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITERIA.

MTG-3.200660

RECEIVED
AUG 17 1999

SDG Narrative

Mitkem Corporation submits the enclosed data package in response to USEPA Case # 27237 and SDG# BYR04. Analyses were performed for fourteen aqueous samples that were received on July 30 and 31, 1999. The analyses were performed under USEPA Contract # 68-D6-0063.

Please note that BYX50 was received on 7/30/99 but crossed out in the chain of custody. Per DynCorp's directive, the sample was included in the SDG.

The following samples are submitted in this data package:

Client ID	Lab ID	Analysis	VOA sample pH
BYR10	61432001	V	< 2
BYR04	61432002	V	< 2
BYR05	61432003	V	< 2
BYR20	61432004	V	< 2
BYX50	61432005	V	< 2
BYR21	61432006	V	< 2
BYR22	61432007	V	< 2
BYR23	61432008	V	< 2
BYR24	61432009	V	< 2
BYR25	61432010	V	< 2
BYR26	61432011	V	< 2
BYR27	61432012	V	< 2
BYR31	61432013	V	< 2
BWX51	61432014	V	< 2

V = Volatile Organics

The analyses were performed using USEPA CLP Low Concentration Water (OLC02.1) protocols. The analyses were performed with strict adherence to the SOW with the following exceptions and observations:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required.

2. Volatile Analysis:

Traps used: for instrument V1: OI Analytical #10 trap containing 8 cm each of Tenax, silica gel and carbon molecular sieve, for instrument V5: Vocarb 3000 trap containing 10 cm carbopack B, 6 cm carboxen 1000 and 1 cm carboxen 1001.

GC column used: 30 m x 0.25 mm id (1.4 um film thickness) DB-624 capillary column.

No unusual observation was made for the analysis.

All of the submittals to the region are originals other than log book pages and copies of tunes and standard files which are shared by many other cases. For these, the original copies are archived in the laboratory.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Kin Chiu

Kin Chiu
Technical Director
8/13/99

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Mitkem Corporation Contract No.: 68-D6-0063

Lab Code: Mitkem Case No.: 27237

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: BYR04 Sample Receipt Date: 07/30/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: BYR31 Sample Receipt Date: 07/31/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	BLOX51	11	BYR26
2	BYR04	12	BYR27
3	BYR05	13	BYR31
4	BYR10	14	BYX50
5	BYR20	15	
6	BYR21	16	
7	BYR22	17	
8	BYR23	18	
9	BYR24	19	
10	BYR25	20	

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Kimberly Ahles 08/05/99

Signature Date

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BWX51

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432014 Date Received: 07/31/99

Lab File ID: V1C4807 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

MTG-3.200665

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	4	
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWX51

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432014 Date Received: 07/31/99 MTG-3.200666

Lab File ID: V1C4807 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
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22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR04

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432002 Date Received: 07/30/99 MTG-3.200667

Lab File ID: V5B3836 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR04

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432002 Date Received: 07/30/99

Lab File ID: V5B3836 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

MTG-3.200668

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
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22.					
23.					
24.					
25.					
26.					
27.					
28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR05

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432003 Date Received: 07/30/99

Lab File ID: V5B3837 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

MTG-3.200669

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

130

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR05

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432003 Date Received: 07/30/99

Lab File ID: V5B3837 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

MTG-3.200670

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR10

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432001 Date Received: 07/30/99

MTG-3.200671

Lab File ID: V5B3835 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR10

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432001 Date Received: 07/30/99

MTG-3.20067

Lab File ID: V5B3835 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR20

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04 MTG-3.20067

Lab Sample ID: 61432004 Date Received: 07/30/99

Lab File ID: V5B3838 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR20

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432004 Date Received: 07/30/99

MTG-3.200674

Lab File ID: V5B3838 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR21

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432006 Date Received: 07/31/99

MTG-3.200675

Lab File ID: V5B3840 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR21

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

MTG-3.20067

Lab Sample ID: 61432006 Date Received: 07/31/99

Lab File ID: V5B3840 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR22

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432007 Date Received: 07/31/99

MTG-3.200677

Lab File ID: V5B3841 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR22

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432007 Date Received: 07/31/99

MTG-3.200678

Lab File ID: V5B3841 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR23

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432008 Date Received: 07/31/99 MTG-3.200679

Lab File ID: V5B3842 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	2	J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR23

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432008 Date Received: 07/31/99

Lab File ID: V5B3842 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

MTG-3.200680

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR24

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432009 Date Received: 07/31/99 MTG-3.200681

Lab File ID: V5B3843 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~ R
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR24

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432009 Date Received: 07/31/99

MTG-3.200682

Lab File ID: V5B3843 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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5.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR25

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432010 Date Received: 07/31/99 MTG-3.200683

Lab File ID: V5B3844 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR25

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

MTG-3.200684

Lab Sample ID: 61432010 Date Received: 07/31/99

Lab File ID: V5B3844 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR26

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

MTG-3.200685

Lab Sample ID: 61432011 Date Received: 07/31/99

Lab File ID: V1C4804 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	U F
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U F
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U F
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR26

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432011 Date Received: 07/31/99 MTG-3.200686

Lab File ID: V1C4804 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR27

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

MTG-3.20068

Lab Sample ID: 61432012 Date Received: 07/31/99

Lab File ID: V1C4805 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR27

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

MTG-3.200688

Lab Sample ID: 61432012 Date Received: 07/31/99

Lab File ID: V1C4805 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYR31

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432013 Date Received: 07/31/99 MTG-3.200689

Lab File ID: V1C4806 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	U f
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U f
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U f
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYR31

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432013 Date Received: 07/31/99 MTG-3.200690

Lab File ID: V1C4806 Date Analyzed: 08/10/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYX50 FB

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

Lab Sample ID: 61432005 Date Received: 07/30/99 MTG-3.200691

Lab File ID: V5B3839 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	5	
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	~~5~~	~~U~~
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYX50

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYR04

MTG-3.200692

Lab Sample ID: 61432005 Date Received: 07/30/99

Lab File ID: V5B3839 Date Analyzed: 08/09/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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MITKEM CASE #

EPA CASE # 27237

SAMPLE and TAG #s Affected TAG REQUIREMENT WAIVED

Fedral Express

Airbill #(s): 4811727690

MITKEM CORPORATION
TELEPHONE LOGBOOK

MTG-3.200693

Low conc.

Call 1; Date/Time of call 7/30/99 12:00pm Call made by: STEVEKADELSKI

Person of Contact: ~~Debbie~~ Nicole Coene

Reason for call: (1) Recieved Sample BYR19 - NOT LISTED ON CHAIN - (2) Recieved Sample BYR10 but on chain listed AS BYR101 (3) ON CHAIN OF CUSTODY BYX50 is crossed out on chain - over extended line? please confirm and CALL BACK. THANKS...

Result of call: FAXED NICOLE PROBLEMS ON FRIDAY DID NOT GET FAX REFAXED Problem still not resolved CARRIED OVER TO SATURDAY - REC MORE SAMPLES ON SAME PROJECT COULD NOT CONTINUE WITH PROJECT.

Call 2; Date/Time of call SATURDAY 7-31-99 10:00AM Call made by: STEVEKADELSKI

Person of Contact: Nicole Coenen

Reason for call: ON Friday July 30th 1999 we rec. CASE 27237 Page was Faxed twice on Friday SATURDAY LEFT VOICE MAIL MESSAGE Concerning out endevors with the project and please confirm and call with resolution.

Result of call: MONDAY AUG 2ND Nicole CALLED 9:00AM Confirming our problem (1) ADD SAMPLE BYR19 TO CHAIN - FOR LOW LEVEL CONCEN. (2) BYR11 ADDED FOR LOW LEVEL CONC. TIMES ARE 19:44. (3) BYX50 NOT CROSSED OUT. GO WITH TEST. TAT TIMES START FROM DAY OF RESOLUTION PER - NICOLE (4) BYR11 - IS BYR10 - GO WITH TESTS

Call 3; Date/Time of call Call made by:

Person of Contact:

Reason for call:

Result of call:

RESOLUTION:

Follow up:

131

RECORD OF COMMUNICATION

TO: Smita Sumbaly

FROM: *JANET TROTTER*
Region II ESAT/RSCC

DATE: August 18, 1999

SUBJECT: QUALITY ASSURED DATA

MESSAGE

PLEASE SIGN BELOW IN ACKNOWLEDGEMENT OF RECEIPT OF THE FOLLOWING AND RETURN ONE COPY OF THIS RECORD OF COMMUNICATION TO THE RSCC-REGION II.

Monroe Township Groundwater Contamination
Case # 27237 Mitkem Organic
SDG # BYQ 20 - Low Conc VOA - 20 Water
SDG # BWX 47 - Low Conc VOA - 20 Water

Additional SDG's To Follow

REPLY BY: _____

SIGNATURE: S. Yhisaraye DATE: 19 August 1999

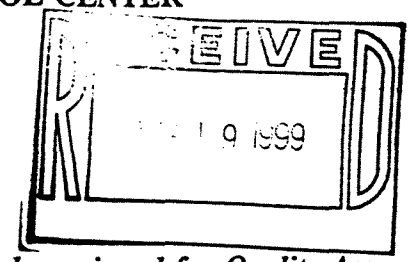
DATE RECEIVED BY RSCC: / /

cc: EPA TASK MONITOR
ESAT, MANAGER
file

MTG-3.200696

RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER



RECEIVED
AUG 1 3 1999

DATE: AUG. 11, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: George Karras, Hazardous Waste Support Section

Attached is the following ORGANIC Data Package to be reviewed for Quality Assurance

SITE MONROE TWP. G.W. CONTAM. CASE# 27237 / SDG # BYQ20

CONTRACTOR STARTW #SAMPLES MATRIX

PHASE IA

LAB MITKEM 20 WATER

TURN-AROUND-TIME 14 DAYS FRACTION LOW CONC. VOA ONLY

CERCLIS ID # NJD980769699 SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	8-10-99
John Bulich	8-11-99	Maureen Hammill	8/11/99
M. Hammill	8/12/99	J. Hunter	8/13/99
J. Hunter		G Karras	8/12/99
G Karras	8/13/99	J. Hunter	8/13/99

(over for instructions) revised 3/99

ATTACHMENT 1
SOP NO. HW-13

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

CASE No.:27237 SDG No.: BSL53, BYQ20
LABORATORY: MITKEM SITE: MONROE TWP. G.W. CONTAMINATION

DATA ASSESSMENT

The current SOP HW-13 (Revision 2) October 1996, USEPA Region II Data Validation SOP for Statement of Work OLCO 2.1. for evaluating organic data have been applied.

All data are valid and acceptable except those analytes rejected "R"(unusable). Due to the detection of QC problems, some analytes may have the "J" (estimated), "N"(presumptive evidence for the presence of the material, "U" (non-detect) or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's Signature: Maureen Hammill Date: August 12, 1999

Verified By: S Karras Date: 8/24/99

CLP DATA ASSESSMENT

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.
No problems.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.
No problems.

3. LABORATORY CONTROL SPIKE, LCS:

The LCS data is generated to determine the long term precision and accuracy of the analytical method in various matrices. The LCS may be used in conjunction with other QC criteria for additional qualification of data.
No problems.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:

No contamination in associated method blanks.

B) Field or rinse blank contamination:
Field blank located in SDG BWX47. Associated field blank sample BXW47 is clean.

C) Trip blank contamination:
Not applicable.

CLP DATA ASSESSMENT

D) Storage Blank
Contaminant in storage blank did not affect the samples.

E) Tics "R" rejected
None.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".
No problems.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

Acetone: "R"-Q20, Q21, Q23, Q25, Q26, Q27, Q28, Q29, Q30, Q32, Q33, Q36, Q37, Q41, VBLK1G, VLCS1G, VBLK1H, VBLK1I, VHBLK1H
"J": Q22, Q24, Q31, Q34, Q35, Q39,

2-butanone: Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28, Q29, Q30, Q31, Q32, Q33, Q34, Q35, Q36, Q37, Q39, Q41, VBLK1G, VLCS1G, VBLK1H, VBLK1I, VHBLK1H

1,2 dibromo-3-chloropropane: VBLK1I, Q26, Q27, Q32, Q33, Q34, Q35, Q36, Q37, Q39, Q41, VHBLK1H

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

CLP DATA ASSESSMENT

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

For the PEST/PCB fraction, if %RSD exceeds 20% for all analytes except for the two surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the sample shown were qualified for %RSD and %D:

%D: VINYL CHLORIDE, CHLOROETHANE: Q21, Q22, Q23, Q24, VBLK1G, VLCS1G

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction.
No problems.

9. COMPOUND IDENTIFICATION:

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.
No problems.

B) Pesticide Fraction:

CLP DATA ASSESSMENT

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic columns and a GC/MS confirmation is required if the concentration exceeds 10ng/ml in the final sample extract.

10. CONTRACT PROBLEMS NON-COMPLIANCE:

11. FIELD DOCUMENTATION:

12. OTHER PROBLEMS

13. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified to be used.

DPO: []ACTION []FYI REGION__2_

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO._27237__ LABORATORY__MITKEM_____

SDG NO. BYQ20_ DATA USER___EPA/Region II_____

SOW_OLC02.1 _____ REVIEW COMPLETION DATE:August 12, 1999____

NO. OF SAMPLES___20___WATER _____SOIL _____OTHER

REVIEWER: [] ESD [x] ESAT [] OTHER, CONTRACTOR_____

QC ITEM	VOA		
HOLDING TIMES	O		
GC-MS PERFORMANCE	O		
INITIAL CALIBRATIONS	M		
CONTINUING CALIBRATIONS	M		
FIELD BLANKS(F = N/A)	O		
LABORATORY BLANKS	O		
SURROGATES	O		
MATRIX SPIKE/DUPLICATES	O		
QC SAMPLES(LCS, PVS)	O		
INTERNAL STANDARDS	O		
COMPOUND IDENTIFICATION	O		
COMPOUND QUANTITATION	O		
SYSTEM PERFORMANCE	O		
OVERALL ASSESSMENT	O		

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DPO ACTION ITEMS:
AREAS OF CONCERN:

DATA REJECTION SUMMARY

Type of Review: Organic Date : August 12, 1999 Case : 27237
Site Name: Monroe Twp. GW Contam. Lab Name: MITKEM Reviewer"s Initial : MH
Number of Samples: 20 Waters, + QC +Dilutions/Reanalyses

Analytes Rejected Due To Exceeding Review Criteria For: Number of Compounds /Number of Fractions (Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standard	Other	Total # Samples	Total # REJECTED/ Total Analytes in samples Percent		
VOA(41)	0	0	55	0	0	0	0	25	55	1025	5
AE(14)	0	0	0	0	0	0	0	0	0	0	??
BN(50)	0	0	0	0	0	0	0	0	0	0	??
PEST(21)	0	0	0	0	0	0	0	0	0	0	??
PCB(7)	0	0	0	0	0	0	0	0	0	0	??

Analytes Estimated Due To Exceeding Review Criteria For: Number of Compounds /Number of Fractions (Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standard	Other	Total # Samples	Total # ESTIMATED/ Total Analytes in samples Percent		
VOA(41)	0	0	18	0	0	0	0	25	18	1025	2
AE(14)	0	0	0	0	0	0	0	0	0	0	??
BN(50)	0	0	0	0	0	0	0	0	0	0	??
PEST(21)	0	0	0	0	0	0	0	0	0	0	??
PCB(7)	0	0	0	0	0	0	0	0	0	0	??

Note: Asterisk (*) indicates additional Exceedances of Review Criteria

STANDARD OPERATING PROCEDURE

USEPA Region II
Method: CLP/SOW, OLC02.1

Date: October, 1996
SOP HW-13, Revision 2

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 27237 LAB: Mitkem

SITE NAME: Monroe Twp GW Cont. SDG No(s).: BXQ20

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [X] ___ ___

ACTION: If no contact RSCC, or the WAM to obtain replacement of missing or illegible copies from the lab.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [X] ___ ___

ACTION: If no, contact either RSCC or ask the WAM to obtain the necessary information from the prime contractor.

.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ ___

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the lab. If lab cannot provide them, note the effect on the review of the data package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with the package? [ ] X ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report and Sample Tags? ___ [X] ___

ACTION: If yes, contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory.

STANDARD OPERATING PROCEDURE

USEPA Region II
Method: CLP/SOW, OLC02.1

Date: October, 1996
SOP HW-13, Revision 2

	YES	NO	N/A
3.0 Cover Letter SDG Narrative			
3.1 Is the Narrative or Cover Letter Present?	[X]	___	___
3.2 Are the Case number and SDG number contained in the Narrative or Cover letter?	[X]	___	___
3.3 Does the Narrative contain the following information (see SOW, page B-11, section 2.6.1):			
VOA: description or trap and column(s) used during sample analyses?	[X]	___	___
BNA: descriptions of column(s) used during sample analyses?	[ ]	___	X
PEST: description of columns used during sample analyses?	[ ]	___	X
NOTE: As stated in the SOW, page D-11/PEST, section 6.1.1.3.7, packed columns cannot be used.			
3.4 Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?	[ ]	___	X
3.5 Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler exceeded 10° C, the lab must list by fraction and sample number, all affected samples.	[X]	___	___
3.6 Does the narrative contain a list of the pH values determined for each water sample submitted for volatiles analysis (SOW, page B-11, section 2.6.1.2)?	[X]	___	___
3.7 Does the Case Narrative contain the "verbatim" statement as required on page B-11, section 2.6.1 of the SOW?	[X]	___	___

ACTION: If "No", to any question in this section, contact the WAM to obtain necessary resubmittals. If the information is unavailable, document under the Contract Problems/Non-Compliance section of the Data Assessment.

	YES	NO	N/A

4.0 Data Validation Checklist

4.1 Check the package for the following (see SOW reporting requirements, section 2.1, page B-7):

a. Is the package paginated in ascending order starting from the SDG narrative?	X		
b. Are all forms and copies legible?	X		
c. Is each fraction assembled in the order set forth in the SOW?	X		
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?		X	

The following checklist is divided into three parts. Part A is filled out if the data package contains any Low Concentration Volatile analyses, Part B for any Low Concentration Semivolatile analyses and Part C for Low Concentration Pesticide/Aroclors.

Does this package contain:

Low Concentration Volatiles Data?	X	
Low Concentration Semivolatiles Data?		X
Low Concentration Pesticides/Aroclors data?		X

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ X ___

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the temperature of the cooler was > 10° C, then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ X ___

Technical Holding Times: Unpreserved samples maintained at 4°C, being evaluated for aromatic hydrocarbons, must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4°C, then samples must be analyzed within 14 days of collection. If uncertain about preservation, notify the WAM to contact the sampler and determine whether or not samples were preserved.

ACTION: List sampling, VTSR, analysis dates and preservation for samples which missed holding time in the table below.

YES NO N/..

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R). If holding times are exceeded by more than 28 days, flag all non-detects "R".

NOTE: Contractual Holding Times: Sample must be analyzed within 10 days from validated time of sample receipt (VTSR) at the laboratory.

3.0 System Monitoring Compound (SMC) Recovery (Form II LCV)

3.1 Are the Volatile SMC Recovery Summaries (Form II LCV) present? [X] ___ ___

ACTION: Call the WAM to obtain an explanation/resubmittal from the lab. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.2 Were outliers marked correctly with an asterisk? [X] ___ _

ACTION: Circle all outliers in red.

	YES	NO	N/A
3.3 Was the surrogate, p-bromofluorobenzene, recovery outside contract limits of 80 - 120% for any sample or method blank?	___	[X]	___
If yes, were samples re-analyzed?	[ ]	___	X
Were method blanks re-analyzed?	[ ]	___	X

ACTION: If p-bromofluorobenzene recovery was > 10%, but failed to meet SOW specifications:

1. Qualify all positive results estimated (J).
2. Flag all non-detects as estimated detection limits (UJ) where recovery is < 80%.
3. Do not qualify non-detects if surrogate recovery is > 120%.

If p-bromofluorobenzene recovery was < 10%:

1. Flag all positive results estimated (J).
2. Flag all non-detects unusable (R).

Professional judgement should be used to qualify data that only have an associated method blank with the SMC recovery out of specification in both the original and reanalysis. Check internal standard areas.

3.4 Are there any transcription/calculation errors between raw data and Form II?	___	[X]	___

ACTION: If large errors exist, ask the WAM to obtain an explanation/resubmittal from the lab, make any necessary corrections and note errors in the data assessment.

4.0 Laboratory Control Sample (LCS) Recovery (Form III LCV)

4.1 Is the LCS Recovery Form (Form III LCV) present?	[X]	___	___
4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples, whichever is more frequent) for the Low Concentration VOA method?	[X]	___	___

ACTION: If any LCS data are missing, take action as specified in section 3.1 above.

YES NO N/..

4.3 How many VOA LCS recoveries are outside the specified QC limits of 60 - 140%?

0 out of 12

ACTION: Qualify associated samples for only the specific analytes included in the LCS solution in the following two situations:

1. If the LCS recovery is > 140%, flag positive results for the affected compound(s) estimated (J). Do not flag non-detects.

2. If the LCS recovery is < 60%, but mass spectral criteria were met, flag positive results for the affected compound(s) estimated (J) and non-detect(s) unusable (R).

Qualify all sample results in the following circumstances:

1. If 25% of the LCS recoveries were < 60%, qualify all positive results in the associated samples "J" and all non-detects "R".

2. If two or more LCS recoveries were < 10%, qualify all positive results in the associated samples "J" and all non-detects "R".

NOTE: It should be noted for TPO action (Organic Regional Data Assessment Summary Form) if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails LCS recovery criteria.

5.0 Method Blanks (Form IV LCV)

5.1 Is the Volatile Method Blank Summary (Form IV LCV) present? ✓ ___ ___

5.2 Frequency of Analysis: For the analysis of Low Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? ✓ ___ ___

5.3 Has a VOA method blank been analyzed at least once every twelve hours for each GC/MS system used? ✓ ___ ___

5.4 Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound

	YES	NO	N/A
at a concentration > 25 µg/ℓ (see SOW, page D-52/VOA, section 12.1.1.3)?	X		

ACTION: If any method/instrument blank data are missing, notify the WAM to obtain resubmittals or an explanation from the lab. If method blank data are unavailable, reject (R) all associated positive results. However, the reviewer may use professional judgement and substitute field blank or trip blank data for missing method blank data.

If an instrument blank was not analyzed after a sample containing > 25 µg/ℓ, inspect the sample chromatogram acquired immediately after this sample for possible carryover. Use professional judgement to determine if carryover occurred and qualify analyte(s) accordingly.

	YES	NO	N/A
5.5 Was a storage blank analyzed once per SDG after all the samples were analyzed?	X		

ACTION: If storage blank data is missing, contact the WAM to obtain any missing deliverables from the laboratory. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for EPA blanks was used. (See SOW page B-31, section 3.3.7.3 for more information.)

	YES	NO	N/A
Was the correct identification scheme used for all Low Concentration VOA blanks?	X		

ACTION: Contact the WAM to obtain corrections from the lab, or make the necessary corrections. Document in the "Contract Problems/Non-Compliance section of the Data Assessment all corrections made by the validator.

5.7 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports, data system printouts and spectra.

Also compare the storage blank raw data with the method blank. Determine if contamination in the storage blank is also present in the method blank.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Low

	YES	NO	N/A
Concentration VOAs?	[X]	___	___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? [X] ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Does the storage blank contain positive results (TCL and/or TICs) for Low Concentration VOAs? [X] ___ ___

ACTION: If the storage blank contains target compounds at a concentration greater than the CRQL, positive sample results for those compounds should be flagged "J". If gross contamination occurred positive sample results for that compound may be rejected (R).

6.2 Do any method/reagent/instrument blanks contain positive results (including TICs) for Low Concentration VOAs? When applied as described in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. [ ] [X] ___

NOTE: Contaminated instrument blanks are unacceptable under this SOW (see page D-52/VOA, section 12.1.2.3).

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance if a contaminated instrument blank was submitted.

YES NO N/A

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Instrument cross-contamination should be noted for TPO action (Organic Regional Data Assessment Summary Form) if an effect on the data is suspected.

6.3 Do any field/trip/rinse blanks have positive Low Concentration VOA results (including TICs)? ___ [ ] X

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Field blanks & trip blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated sample data should be qualified unusable (R).

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but < 10x blank value.	Sample conc. is < CRQL and < 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
Other Conta-minants	Sample conc. is > CRQL, but < 5x blank value.	Sample conc. is < CRQL and < 5x blank value.	Sample conc. is > CRQL and > 5x blank value.

NOTE: Analytes qualified "U" for blank contamination are treated as "hits" when qualifying for calibration criteria.

	YES	NO	N/A

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.4 Are there field/rinse/equipment blanks associated with every sample? [X] ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V-LCV)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V-LCV) present for Bromofluorobenzene (BFB)? [X] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [X] ___ ___

7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument? [X] ___ ___

ACTION: List date, time, instrument ID and sample analyses for which associated GC/MS tuning data are missing.

DATE	TIME	INSTRUMENT ID	SAMPLE NUMBERS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

ACTION: Notify the WAM to obtain missing data from the lab. If the lab cannot provide missing data, reject (R) all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 (see SOW, page D-60/VOA)? [X] ___ ___

	YES	NO	N/A

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable (R).

7.5 Have the ion abundance criteria been met for each instrument used? X ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ X ___

7.7 Is the number of significant figures for the reported relative abundances consistent with the number given in the ion abundance criteria column on Form V LCV? X ___ ___

ACTION: If large errors exist, take action as specified in section 3.4 above.

7.8 Is the spectrum of the mass calibration compound acceptable? X ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (Form I LCV)

8.1 Are the Organic Analysis Data Sheets (Form I LCV) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? X ___ ___

b. Laboratory Control Samples? X ___ ___

c. Blanks? X ___ ___

8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the

	YES	NO	N/A
data system printouts (Quant Reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[X]	___	___
b. Laboratory Control Samples?	[X]	___	___
c. Blanks?	[X]	___	___

ACTION: If any data are missing, take action specified in 3.1 above.

8.3	Are the response factors shown in the quant report?	[X]	___	___
8.4	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[X]	___	___
	Resolution?	[ ]	___	___
	Peak shape?	[ ]	___	___
	Full-scale graph (attenuation)?	[ ]	___	___
	Other: _____?	[ ]	___	___

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[X]	___	___

ACTION: If any mass spectra are missing, take action as specified in 3.1 above. If lab does not generate their own standard spectra, make note under the "Contract Problems/Non-Compliance" section of the Data Assessment.

8.6	Is the RRT of each reported compound within 0.0 RRT units of the standard RRT in the continuing calibration?	[X]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum?	[X]	___	___
8.8	Do sample and standard relative ion intensities agree to within ±20%?	[X]	___	___

YES NO N/A

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R) flagged "N" (presumptive evidenc · of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in the SOW page VOA D-32, section 21.

ACTION: When sample carry-over is suspected, use professional judgement to determine if instrument cross-contamination has affected positive compound identifications.

9.0 Tentatively Identified Compounds (TIC)

9.1 Are all Tentatively Identified Compound Forms (Form I LCV-TIC) present? Do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? [X] ___ ___

9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

a. Samples and/or fractions as appropriate? [X] ___ ___

b. Blanks? [X] ___ ___

b. Alkanes listed for each sample? [X] ___ ___

ACTION: If any TIC data are missing, take action specified in 3.1 above.

ACTION: Add "JN" qualifier to all chemically named TICs if missing.

9.3 Are any target compounds (from any fraction) listed as TICs? (Example: 1,2-dimethylbenzene is xylene - a VOA target analyte - and should not be reported as a TIC.) ___ [X] ___

ACTION: Flag with "R" any target compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than

	YES	NO	N/A
25% also present in the sample mass spectrum?	X	___	___
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	X	___	___

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (I.e., common lab contaminants such as CO_2 - M/E 44, siloxanes - M/E 73, hexane, aldol condensation products, solvent preservatives, and related by-products. See the National Functional Guidelines for further guidance.)

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRFs were used to calculate Form I results.)	___	X	___
10.2 Are the CRQLs adjusted to reflect sample dilutions?	X	___	___

ACTION: If errors are large, take action as specified in section 3.4 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs data from the diluted sample). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's not to be used, including any in the data summary package.

11.0 Standards Data (GC/MS)

	YES	NO	N/A
11.1 Are the reconstructed ion chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	☒	___	___

ACTION: If any calibration standard data are missing, take action specified in section 3.1 above.

12.0 GC/MS Initial Calibration (Form VI)

	YES	NO	N/A
12.1 Are the Initial Calibration Forms (Form VI LCV) present and complete for the volatile fraction at concentrations of 1, 2, 5, 10, and 25 µg/ℓ?	☒	___	___

ACTION: If any Initial Calibration forms are missing, take action as specified in section 3.1 above.

	YES	NO	N/A
12.2 Are response factors stable for VOA's over the concentration range of the calibration (e.g., %RSD ≤ 30.0)?	☒	___	___

ACTION: Circle all outliers in red.

NOTE: Although 13 Low Conc. VOA compounds have no maximum %RSD and require only minimal $\overline{RRF}$ performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: If %RSD > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. If %RSD is > 90, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still treated as "hits" when qualifying for initial calibration criteria.

	YES	NO	N/A
12.3 Are any $\overline{RRF}$s < 0.05?	___	☒	___

ACTION: Circle all outliers in red.

ACTION: If any $\overline{RRF}$ values are < 0.05, qualify associated non-detects unusable (R) and associated positive results estimated (J).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI and Table D-3, page D-61/VOA) to fail contractual %RSD and RRF criteria, provided the %RSD is ≤ 40.0 and RRF ≥ 0.010.

YES NO N/A

ACTION: If more than two of the required analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.4 Are there any transcription/calculation errors in the reporting of RRFs, RRFs or %RSD values? (Check at least 2 values, but if errors are found, check more.) — [X] —

ACTION: Circle errors in red.

ACTION: If errors are large, contact the WAM to obtain an explanation/resubmittal from the lab, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

13.0 GC/MS Continuing Calibration (Form VII LCV)

13.1 Are the Continuing Calibration Forms (Form VII LCV) present and complete for the volatile fraction? [X] — —

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [X] — —

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, ask the WAM to obtain explanation/resubmittal from the laboratory. If continuing calibration data are unavailable, flag all associated sample data as unusable (R).

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

13.3 Do any volatile compounds have a % Difference (%D) between the initial RRF and continuing RRF which exceeds the ± 30% criteria? X [ ]

ACTION: Circle all outliers in red.

YES NO N/A

NOTE: Although 13 Low Conc. VOA compounds have no maximum %D and require only minimal RRF performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When % D is above 90%, reject all non-detects for that analyte as unusable (R).

13.4 Do any volatile compounds have a RRF < 0.05? ___ [X] ___

ACTION: Circle all outliers in red.

ACTION: If the RRF < 0.05, qualify associated positive results as estimated (J) and associated non-detects unusable (R).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI, or Table D-3, page D-61/VOA) to fail

) or RRF criteria, provided %D is within ±40.0 and RRF ≥ 0.010.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary if more than two of the required analytes failed the above acceptance criteria.

13.5 Are there any transcription/calculation errors in the reporting of RRFs, or %D between initial RRFs and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [X] ___

ACTION: Circle errors in red.

ACTION: If errors are large, notify the WAM to obtain explanation/resubmittals from the lab. Document errors in the Contract Problems/Non-Compliance section of the Data Assessment.

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (± 40%) for each continuing calibration? [X] ___ ___

If no, was the sample reanalyzed? [ ] ___ [X]

YES NO N/A

ACTION: 1. Circle all outliers in red.

2. List all the outliers below.

Sample #	Int. Std.	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > +40%.

3. If the IS area is less than the lower limit (-40%), qualify all associated non-detects "UJ". If extremely low area counts are reported, (< 20%) or if performance exhibits a major, abrupt drop- off, flag all associated non-detects as unusable (R).

14.2 Are the retention times of the internal standards within ±20 seconds of the associated calibration standard? — —

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

NOTE: Contract Requirements: The SOW (section 11.8.4, page D-51/VOA) states that any sample which fails the acceptance criteria for IS response must be reanalyzed.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance any sample(s) which failed the above IS acceptance criteria.

15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low

	YES	NO	N/A
Concentration VOA analysis?	✓ 1		

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. If large differences exist, contact the WAM to confirm identification of field duplicates with the sampler.

21 & 31 replicates

RECEIVED
AUG 10 1999

SDG Narrative MTG-3.200726

Mitkem Corporation submits the enclosed data package in response to USEPA Case # 27237 and SDG# BYQ20. Analyses were performed for twenty aqueous samples that were received on July 27, 1999. The analyses were performed under USEPA Contract # 68-D6-0063.

The following samples are submitted in this data package:

Client ID	Lab ID	Analysis	VOA sample pH
BYQ20	61400001	V	< 2
BYQ21	61400002	V	< 2
BYQ22	61400003	V	< 2
BYQ23	61400004	V	< 2
BYQ24	61400005	V	< 2
BYQ25	61400006	V	< 2
BYQ26	61400007	V	< 2
BYQ27	61400008	V	< 2
BYQ28	61400009	V	< 2
BYQ29	61400010	V	< 2
BYQ30	61400011	V	< 2
BYQ31	61400012	V	< 2
BYQ32	61400013	V	< 2
BYQ33	61400014	V	< 2
BYQ34	61400015	V	< 2
BYQ35	61400016	V	< 2
BYQ36	61400017	V	< 2
BYQ37	61400018	V	< 2
BYQ39	61400019	V	< 2
BYQ41	61400020	V	< 2

V = Volatile Organics

The analyses were performed using USEPA CLP Low Concentration Water (OLC02.1) protocols. The analyses were performed with strict adherence to the SOW with the following exceptions and observations:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required.

2. Volatile Analysis:

Traps used: for instrument V1: OI Analytical #10 trap containing 8 cm each of Tenax, silica gel and carbon molecular sieve

GC column used: 30 m x 0.25 mm id (1.4 um film thickness) DB-624 capillary column.

Due to presence of high concentration of target analytes, the following samples were analyzed at dilution: BYQ20 (10x), BYQ26 (100x), BYQ27 (50x) and BYW32 (50x).

No other unusual observation was made for the analysis.

All of the submittals to the region are originals other than log book pages and copies of tunes and standard files which are shared by many other cases. For these, the original copies are archived in the laboratory.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Kin Chiu

Kin Chiu
Technical Director
8/9/99

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Mitkem Corporation Contract No.: 68-D6-0063

Lab Code: Mitkem Case No.: 27237

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: BVQ20 Sample Receipt Date: 07/27/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: BVQ41 Sample Receipt Date: 07/27/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	BVQ20	11	BVQ30
2	BVQ21	12	BVQ31
3	BVQ22	13	BVQ32
4	BVQ23	14	BVQ33
5	BVQ24	15	BVQ34
6	BVQ25	16	BVQ35
7	BVQ26	17	BVQ36
8	BVQ27	18	BVQ37
9	BVQ28	19	BVQ39
10	BVQ29	20	BVQ41

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Kimberly Allen
Signature

08/04/99
Date

003

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ20

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200729

Lab Sample ID: 61400001 Date Received: 07/27/99

Lab File ID: V1C4565 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene chloride	20	U
67-64-1	Acetone	~~50~~	~~U~~ R
75-15-0	Carbon disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
156-59-2	cis-1,2-Dichloroethene	10	U
156-60-5	trans-1,2-Dichloroethene	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	~~50~~	~~U~~ R
74-97-5	Bromochloromethane	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	50	U
591-78-6	2-Hexanone	50	U
127-18-4	Tetrachloroethene	60	
79-34-5	1,1,2,2-Tetrachloroethane	10	U
106-93-4	1,2-Dibromoethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylenes (total)	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
96-12-8	1,2-Dibromo-3-chloropropane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ20

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.20[illegible]30

Lab Sample ID: 61400001 Date Received: 07/27/99

Lab File ID: V1C4565 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 10.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
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25.					
26.					
27.					
28.					
29.					
30.					

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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ21

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20 MTG-3.200731

Lab Sample ID: 61400002 Date Received: 07/27/99

Lab File ID: V1C4546 Date Analyzed: 07/31/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ21

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.2[illegible]/32

Lab Sample ID: 61400002 Date Received: 07/27/99

Lab File ID: V1C4546 Date Analyzed: 07/31/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
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27.					
28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ22

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20 MTG-3.200733

Lab Sample ID: 61400003 Date Received: 07/27/99

Lab File ID: V1C4547 Date Analyzed: 07/31/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	U
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ22

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200754

Lab Sample ID: 61400003 Date Received: 07/27/99

Lab File ID: V1C4547 Date Analyzed: 07/31/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ23

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200735

Lab Sample ID: 61400004 Date Received: 07/27/99

Lab File ID: V1C4549 Date Analyzed: 07/31/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ23

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20 MTG-3.2 736

Lab Sample ID: 61400004 Date Received: 07/27/99

Lab File ID: V1C4549 Date Analyzed: 07/31/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ24

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20 MTG-3.200737

Lab Sample ID: 61400005 Date Received: 07/27/99

Lab File ID: V1C4550 Date Analyzed: 07/31/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	✓
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	
78-93-3	2-Butanone	5	~~U~~ ✓
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ24

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20 MTG-3.2[illegible]738

Lab Sample ID: 61400005 Date Received: 07/27/99

Lab File ID: V1C4550 Date Analyzed: 07/31/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
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EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

BYQ25

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200739

Lab Sample ID: 61400006 Date Received: 07/27/99

Lab File ID: V1C4566 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ25

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20 MTG-3.200740

Lab Sample ID: 61400006 Date Received: 07/27/99

Lab File ID: V1C4566 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ26

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200741

Lab Sample ID: 61400007 Date Received: 07/27/99

Lab File ID: V1C4584 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 100.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	100	U
74-83-9	Bromomethane	100	U
75-01-4	Vinyl chloride	100	U
75-00-3	Chloroethane	100	U
75-09-2	Methylene chloride	200	U
67-64-1	Acetone	~~500~~	~~U~~ R
75-15-0	Carbon disulfide	100	U
75-35-4	1,1-Dichloroethene	100	U
75-34-3	1,1-Dichloroethane	100	U
156-59-2	cis-1,2-Dichloroethene	100	U
156-60-5	trans-1,2-Dichloroethene	100	U
67-66-3	Chloroform	100	U
107-06-2	1,2-Dichloroethane	100	U
78-93-3	2-Butanone	~~500~~	~~U~~ R
74-97-5	Bromochloromethane	100	U
71-55-6	1,1,1-Trichloroethane	100	U
56-23-5	Carbon tetrachloride	100	U
75-27-4	Bromodichloromethane	100	U
78-87-5	1,2-Dichloropropane	100	U
10061-01-5	cis-1,3-Dichloropropene	100	U
79-01-6	Trichloroethene	100	U
124-48-1	Dibromochloromethane	100	U
79-00-5	1,1,2-Trichloroethane	100	U
71-43-2	Benzene	100	U
10061-02-6	trans-1,3-Dichloropropene	100	U
75-25-2	Bromoform	100	U
108-10-1	4-Methyl-2-pentanone	500	U
591-78-6	2-Hexanone	500	U
127-18-4	Tetrachloroethene	1000	
79-34-5	1,1,2,2-Tetrachloroethane	100	U
106-93-4	1,2-Dibromoethane	100	U
108-88-3	Toluene	100	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	100	U
100-42-5	Styrene	100	U
1330-20-7	Xylenes (total)	100	U
541-73-1	1,3-Dichlorobenzene	100	U
106-46-7	1,4-Dichlorobenzene	100	U
95-50-1	1,2-Dichlorobenzene	100	U
96-12-8	1,2-Dibromo-3-chloropropane	~~100~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	100	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ26

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.20074

Lab Sample ID: 51400007 Date Received: 07/27/99

Lab File ID: V1C4584 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 100.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ27

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200743

Lab Sample ID: 61400008 Date Received: 07/27/99

Lab File ID: V1C4587 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene chloride	100	U
67-64-1	Acetone	~~250~~	~~U~~ R
75-15-0	Carbon disulfide	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
156-59-2	cis-1,2-Dichloroethene	50	U
156-60-5	trans-1,2-Dichloroethene	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	~~250~~	~~U~~ R
74-97-5	Bromochloromethane	50	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon tetrachloride	50	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
75-25-2	Bromoform	50	U
108-10-1	4-Methyl-2-pentanone	250	U
591-78-6	2-Hexanone	250	U
127-18-4	Tetrachloroethene	480	
79-34-5	1,1,2,2-Tetrachloroethane	50	U
106-93-4	1,2-Dibromoethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
100-42-5	Styrene	50	U
1330-20-7	Xylenes (total)	50	U
541-73-1	1,3-Dichlorobenzene	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-50-1	1,2-Dichlorobenzene	50	U
96-12-8	1,2-Dibromo-3-chloropropane	~~50~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	50	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ27

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

Lab Sample ID: 61400008 Date Received: 07/27/99 MTG-3.200744

Lab File ID: V1C4587 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ28

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

Lab Sample ID: 61400009 Date Received: 07/27/99 MTG-3.200745

Lab File ID: V1C4569 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ28

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200746

Lab Sample ID: 614[illegible]0009 Date Received: 07/27/99

Lab File ID: V1C4569 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ29

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20 MTG-3.200747

Lab Sample ID: 61400010 Date Received: 07/27/99

Lab File ID: V1C4570 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	6	
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ29

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20 MTG-3.200748

Lab Sample ID: 61400010 Date Received: 07/27/99

Lab File ID: V1C4570 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ30

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200749

Lab Sample ID: 61400011 Date Received: 07/27/99

Lab File ID: V1C4571 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ30

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200750

Lab Sample ID: 61400011 Date Received: 07/27/99

Lab File ID: V1C4571 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ31

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200751

Lab Sample ID: 61400012 Date Received: 07/27/99

Lab File ID: V1C4572 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	~~B~~ J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ31

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200752

Lab Sample ID: 61400012 Date Received: 07/27/99

Lab File ID: V1C4572 Date Analyzed: 08/01/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ32

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200753

Lab Sample ID: 61400013 Date Received: 07/27/99

Lab File ID: V1C4588 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	Methylene chloride	100	U
67-64-1	Acetone	~~250~~	~~U~~ R
75-15-0	Carbon disulfide	50	U
75-35-4	1,1-Dichloroethene	50	U
75-34-3	1,1-Dichloroethane	50	U
156-59-2	cis-1,2-Dichloroethene	50	U
156-60-5	trans-1,2-Dichloroethene	50	U
67-66-3	Chloroform	50	U
107-06-2	1,2-Dichloroethane	50	U
78-93-3	2-Butanone	~~250~~	~~U~~ R
74-97-5	Bromochloromethane	50	U
71-55-6	1,1,1-Trichloroethane	50	U
56-23-5	Carbon tetrachloride	50	U
75-27-4	Bromodichloromethane	50	U
78-87-5	1,2-Dichloropropane	50	U
10061-01-5	cis-1,3-Dichloropropene	50	U
79-01-6	Trichloroethene	50	U
124-48-1	Dibromochloromethane	50	U
79-00-5	1,1,2-Trichloroethane	50	U
71-43-2	Benzene	50	U
10061-02-6	trans-1,3-Dichloropropene	50	U
75-25-2	Bromoform	50	U
108-10-1	4-Methyl-2-pentanone	250	U
591-78-6	2-Hexanone	250	U
127-18-4	Tetrachloroethene	260	
79-34-5	1,1,2,2-Tetrachloroethane	50	U
106-93-4	1,2-Dibromoethane	50	U
108-88-3	Toluene	50	U
108-90-7	Chlorobenzene	50	U
100-41-4	Ethylbenzene	50	U
100-42-5	Styrene	50	U
1330-20-7	Xylenes (total)	50	U
541-73-1	1,3-Dichlorobenzene	50	U
106-46-7	1,4-Dichlorobenzene	50	U
95-50-1	1,2-Dichlorobenzene	50	U
96-12-8	1,2-Dibromo-3-chloropropane	~~50~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	50	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ32

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200754

Lab Sample ID: 61400013 Date Received: 07/27/99

Lab File ID: V1C4588 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 50.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ33

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200755

Lab Sample ID: 61400014 Date Received: 07/27/99

Lab File ID: V1C4589 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ33

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.20075(

Lab Sample ID: 61400014 Date Received: 07/27/99

Lab File ID: V1C4589 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ34

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200757

Lab Sample ID: 61400015 Date Received: 07/27/99

Lab File ID: V1C4590 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	~~U~~ J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	2	
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ34

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200758

Lab Sample ID: 61400015 Date Received: 07/27/99

Lab File ID: V1C4590 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ35

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200759

Lab Sample ID: 61400016 Date Received: 07/27/99

Lab File ID: V1C4591 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	4	J 17
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ35

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200760

Lab Sample ID: 61400016 Date Received: 07/27/99

Lab File ID: V1C4591 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ36

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200761

Lab Sample ID: 61400017 Date Received: 07/27/99

Lab File ID: V1C4592 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	~~1~~	~~U~~ R
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ36

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200762

Lab Sample ID: 61400017 Date Received: 07/27/99

Lab File ID: V1C4592 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ37

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200763

Lab Sample ID: 61400018 Date Received: 07/27/99

Lab File ID: V1C4593 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	U R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ37

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200764

Lab Sample ID: 61400018 Date Received: 07/27/99

Lab File ID: V1C4593 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ39

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200765

Lab Sample ID: 61400019 Date Received: 07/23/99

Lab File ID: V1C4594 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	~~U~~ J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	0.8	J
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ39

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200766

Lab Sample ID: 61400019 Date Received: 07/27/99

Lab File ID: V1C4594 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ41

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200767

Lab Sample ID: 61400020 Date Received: 07/27/99

Lab File ID: V1C4595 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ41

Lab Name: MITKEM CORP. Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BYQ20

MTG-3.200768

Lab Sample ID: 61400020 Date Received: 07/27/99

Lab File ID: V1C4595 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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RECORD OF COMMUNICATION

MTG-3.200769

REGIONAL SAMPLE CONTROL CENTER

RECEIVED
AUG 19 1999

RECEIVED
AUG 13 1999

DATE: AUG. 11, 1999
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: George Karras, Hazardous Waste Support Section

Attached is the following ORGANIC Data Package to be reviewed for Quality Assurance

SITE MONROE TWP. G.W. CONTAM. CASE# 27237/SDG# BWX47

CONTRACTOR STARTW #SAMPLES MATRIX

PHASE IA

LAB MITKEM 20 WATER

TURN-AROUND-TIME 14 DAYS FRACTION LOW CONC. VOA ONLY

CERCLIS ID # NJD980769699 SITE SPILL # MQ

REGION II RSCC DATA TRANSFER LOG

Relinquished By		Received By	
Signature	Date/Time	Signature	Date/Time
		John Bulich	8-10-99
John Bulich	8-11-99	Mark Faulk	8-11-99
Mark Faulk	8-13-99	J. Trutter	8/13/99
J. Trutter	8/13/99	G Karras	8/13/99
G Karras	8/13/99	J. Trutter	8/13/99

(over for instructions) revised 3/99

ATTACHMENT 1
SOP NO. HW-13

CLP DATA ASSESSMENT

Functional Guidelines for Evaluating Organic Analysis

CASE No.: 27237 SDG No.: BWX47
LABORATORY: MITKEM SITE: Monroe Township G.W. Contamination

DATA ASSESSMENT

The current SOP HW-13 (Revision 2) June 1996, USEPA Region II Data Validation SOP for Statement of Work OLCO 2.1. for evaluating organic data have been applied.

All data are valid and acceptable except those analytes rejected "R"(unusable). Due to the detection of QC problems, some analytes may have the "J" (estimated), "N"(presumptive evidence for the presence of the material, "U" (non-detect) or "JN" (presumptive evidence for the presence of the material at an estimated value) flag. All action is detailed on the attached sheets.

The "R" flag means that the associated value is unusable. In other words, significant data bias is evident and the reported analyte concentration is unreliable.

Reviewer's
Signature: Mark Zambrowski Date: August 12, 1999

Verified By: G Karras Date: 8/13/1999

CLP DATA ASSESSMENT

SDG 1, BWX47

1. HOLDING TIME:

The amount of an analyte in a sample can change with time due to chemical instability, degradation, volatilization, etc. If the specified holding time is exceeded, the data may not be valid. Those analytes detected in the samples whose holding time has been exceeded will be qualified as estimated, "J". The non-detects (sample quantitation limits) will be flagged as estimated, "J", or unusable, "R", if the holding times are grossly exceeded.

The following action was taken in the samples and analytes shown due to excessive holding time.
VOA: No problems.

2. SURROGATES

All samples are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique. If the measured surrogate concentrations were outside contract specifications, qualifications were applied to the samples and analytes as shown below.
VOA: No problems.

3. LABORATORY CONTROL SAMPLE (LCS):

The LCS data is generated from a laboratory quality control sample. LCS data is intended to assess the ability of the contractor to perform the analytical method.
VOA: No problems.

4. BLANK CONTAMINATION:

Quality assurance (QA) blanks, i.e., method, trip, field, or rinse blanks are prepared to identify any contamination which may have been introduced into the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Trip blanks measure cross-contamination of samples during shipment. Field and rinse blanks measure cross-contamination of samples during field operations. If the concentration of the analyte is less than 5 times the blank contaminant level (10 times for common contaminants), the

CLP DATA ASSESSMENT

analytes are qualified as non-detects, "U". The following analytes in the sample shown were qualified with "U" for these reasons:

A) Method blank contamination:
VOA: No problems.

B) Field or rinse blank contamination:
VOA: Not applicable.

C) Trip blank contamination for VOA aqueous samples:
VOA: No problems.

D) Storage blank associated with VOA samples only
VOA: No problems.

E) Tics "R" rejected
VOA: No problems.

5. MASS SPECTROMETER TUNING:

Tuning and performance criteria are established to ensure adequate mass resolution, proper identification of compounds and to some degree, sufficient instrument sensitivity. These criteria are not sample specific. Instrument performance is determined using standard materials. Therefore, these criteria should be met in all circumstances. The tuning standard for volatile organics is (BFB) Bromofluorobenzene and for semi-volatiles Decafluorotriphenyl-phosphine (DFTPP).

If the mass calibration is in error, all associated data will be classified as unusable "R".
VOA: No problems.

6. CALIBRATION:

Satisfactory instrument calibration is established to ensure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration checks document that the instrument is giving satisfactory daily performance.

A) Response Factor GC/MS:

CLP DATA ASSESSMENT

The response factor measures the instrument's response to specific chemical compounds. The response factor for the Target Compound List (TCL) must be ≥ 0.05 in both initial and continuing calibrations. A value < 0.05 indicates a serious detection and quantitation problem (poor sensitivity). Analytes detected in the sample will be qualified as estimated, "J". All non-detects for that compound will be rejected "R".

VOA: The analytes acetone, 2-butanone, and 1,2-dibromo-3-chloropropane were qualified "J" for hits and "R" for non-detects in the following samples due to reported RRF5 values less than 0.050: VBLK1I, BYQ42, BYQ51, BW~~X~~47, BW~~X~~48, and BYQ38.

The analytes acetone, 2-butanone, and 1,2-dibromo-3-chloropropane were qualified "J" for hits and "R" for non-detects in the following samples due to reported RRF5 values less than 0.050: VBLK1J, VLCS1J, BYQ40, BYQ43, BYQ44, BYQ45, BYQ46, BYQ47, BYQ48, BYQ49, BYQ50, BYQ52, BYQ53, BYQ54, BYQ55, BYQ56, and BYQ57.

The analytes acetone, 2-butanone, and 1,2-dibromo-3-chloropropane were qualified "J" for hits and "R" for non-detects in the following samples due to reported RRF5 values less than 0.050: VBLK1M and VHBLK1M.

B) Percent Relative Standard Deviation (%RSD) and Percent Difference (%D):

Percent RSD is calculated from the initial calibration and is used to indicate the stability of the specific compound response factor over increasing concentration. Percent D compares the response factor of the continuing calibration check to the mean response factor (RRF) from the initial calibration. Percent D is a measure of the instrument's daily performance. Percent RSD must be < 30% and %D must be < 25%. A value outside of these limits indicates potential detection and quantitation errors. For these reasons, all positive results are flagged as estimated, "J" and non-detects are flagged "UJ". If %RSD and %D grossly exceed QC criteria, non-detects data may be qualified "R".

For the PEST/PCB fraction, if %RSD exceeds 20% for all analytes except for the two surrogates (which must not exceed 30% RSD), qualify all associated positive results "J" and non-detects "UJ".

The following analytes in the sample shown were qualified for %RSD and %D:

CLP DATA ASSESSMENT

VOA: The analyte chloroethane was qualified "J" for hits and "UJ" for non-detects in the following samples due to %D exceeding continuing calibration criteria: VBLK1J, VLCS1J, BYQ40, BYQ43, BYQ44, BYQ45, BYQ46, BYQ47, BYQ48, BYQ49, BYQ50, BYQ52, BYQ53, BYQ54, BYQ55, BYQ56, and BYQ57.

8. INTERNAL STANDARDS PERFORMANCE GC/MS:

Internal standards (IS) performance criteria ensure that the GC/MS sensitivity and response are stable during every experimental run. The internal standard area count must not vary by more than a factor of 2 (-50% to +100%) from the associated continuing calibration standard. The retention time of the internal standard must not vary more than ±30 seconds from the associated continuing calibration standard. If the area count is outside the (-50% to +100%) range of the associated standard, all of the positive results for compounds quantitated using that IS are qualified as estimated, "J", and all non-detects as "UJ", or "R" if there is a severe loss of sensitivity.

If an internal standard retention time varies by more than 30 seconds, the reviewer will use professional judgement to determine either partial or total rejection of the data for that sample fraction.
VOA: No problems.

9. COMPOUND IDENTIFICATION:

A) Volatile and Semi-Volatile Fractions:

TCL compounds are identified on the GC/MS by using the analyte's relative retention time (RRT) and by comparison to the ion spectra obtained from known standards. For the results to be a positive hit, the sample peak must be within ± 0.06 RRT units of the standard compound and have an ion spectra which has a ratio of the primary and secondary m/e intensities within 20% of that in the standard compound. For the tentatively identified compounds (TIC) the ion spectra must match accurately. In the cases where there is not an adequate ion spectrum match, the laboratory may have provided false positive identifications.

B) Pesticide Fraction:

The retention times of reported compounds must fall within the calculated retention time windows for the two chromatographic

CLP DATA ASSESSMENT

columns and a GC/MS confirmation is required if the concentration exceeds 10 ng/ml in the final sample extract.

10. CONTRACT PROBLEMS NON-COMPLIANCE:
VOA: No problems.

11. FIELD DOCUMENTATION:
VOA: No problems.

12. OTHER PROBLEMS
VOA: No problems.

13. This package contains reextractions, reanalyses or dilutions. Upon reviewing the QA results, the following Form 1(s) are identified not to be used.
VOA: No problems.

DPO: []ACTION []FYI REGION__2_

ORGANIC REGIONAL DATA ASSESSMENT SUMMARY

CASE NO._27237__ LABORATORY_MITKEM_____

SDG NO. BWX47 _ DATA USER___EPA/Region II_____

SOW_OLCO2.1 _____ REVIEW COMPLETION DATE_8/12/99___

NO. OF SAMPLES____20__WATER _____SOIL _____OTHER

REVIEWER: [] ESD [x] ESAT [] OTHER, CONTRACTOR_____

QC ITEM	VOA	BNA	PEST		
HOLDING TIMES	O				
GC-MS PERFORMANCE	O				
INITIAL CALIBRATIONS	O				
CONTINUING CALIBRATIONS	Z				
FIELD BLANKS(F = N/A)	O				
LABORATORY BLANKS	O				
SURROGATES	O				
MATRIX SPIKE/DUPLICATES	O				
QC SAMPLES(LCS, PVS)	O				
INTERNAL STANDARDS	O				
COMPOUND IDENTIFICATION	O				
COMPOUND QUANTITATION	X				
SYSTEM PERFORMANCE	O				
OVERALL ASSESSMENT	Z				

O = No problems or minor problems that do not affect data usability.
X = No more than about 5% of the data points are qualified as either estimated or unusable.
M = More than about 5% of the data points are qualified as either estimated or unusable.
Z = More than about 5% of the data points are qualified as unusable.

DATA REJECTION SUMMARY

Type of Review: Organic Date: 8/12/99 Case No. 27237, SDG# BWX47

Site Name: Monroe Township Groundwater Contamination Lab Name: MITKEM Reviewer's Initials: MZ

Number of Samples: 20 H_2O, soils, +QC + reanalyses/dilutions

Analytes Rejected Due To Exceeding Review Criteria For:

No. of Compounds/No. of Fractions(Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standards	Other	Total # Samples	Total # Rejected/ Total # in All Samples
VOA(41)	0	0	70	0	0	0	0	25	70/1025 = 7%
ACID(14)	0	0	0	0	0	0	0	0	NA
B/N(45)	0	0	0	0	0	0	0	0	NA
PEST(21)	0	0	0	0	0	0	0	0	NA
PCB(7)	0	0	0	0	0	0	0	0	NA

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITIERIA.

Analytes Estimated Due To Exceeding Review Criteria For:

No. of Compounds/No. of Fractions(Samples)

	Surrogates	Holding Times	Calibration	Contamination	ID	Internal Standards	Other	Total # Samples	Total # estimated/ Total # in All Samples
VOA(41)	0	0	19	0	0	0	0	25	19/1025 = 2%
ACID(14)	0	0	0	0	0	0	0	0	NA
B/N(45)	0	0	0	0	0	0	0	0	NA
PEST(21)	0	0	0	0	0	0	0	0	NA
PCB(7)	0	0	0	0	0	0	0	0	NA

NOTE: ASTERISK (*) INDICATES ADDITIONAL EXCEEDANCES OF REVIEW CRITIERIA.

MTG-3.200777

USEPA Region II
Method: CLP/SOW, OLC02.1

Date: October, 1996
SOP HW-13, Revision 2

YES NO N/A

PACKAGE COMPLETENESS AND DELIVERABLES

CASE NUMBER: 27237 LAB: MITKEM

SITE NAME: Monroe Township Groundwater Contamination SDG No(s).: BWX47

1.0 Chain of Custody and Sampling Trip Reports

1.1 Are the Traffic Reports/Chain-of-Custody Records present for all samples? [✓] ___ ___

ACTION: If no contact RSCC, or the WAM to obtain replacement of missing or illegible copies from the lab.

1.2 Is the Sampling Trip Report present for all samples and all fractions? [✓] ___ ___

ACTION: If no, contact either RSCC or ask the WAM to obtain the necessary information from the prime contractor.

2.0 Data Completeness and Deliverables

2.1 Have any missing deliverables been received and added to the data package? ___ ✓ ___

ACTION: Contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the lab. If lab cannot provide them, note the effect on the review of the data package in the Contract Problems/Non-compliance section of the Data Assessment and the Organic Regional Data Assessment Summary form.

2.2 Was CLASS CCS checklist included with the package? [ ] ✓ ___

2.3 Are there any discrepancies between the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report and Sample Tags? ___ [✓] ___

ACTION: If yes, contact the WAM to obtain an explanation or resubmittal of any missing deliverables from the laboratory.

		YES	NO	N
3.0 Cover Letter SDG Narrative				
3.1	Is the Narrative or Cover Letter Present?	✓		
3.2	Are the Case number and SDG number contained in the Narrative or Cover letter?	✓		
3.3	Does the Narrative contain the following information (see SOW, page B-11, section 2.6.1):			
	VOA: description or trap and column(s) used during sample analyses?	✓		
	BNA: descriptions of column(s) used during sample analyses?			✓
	PEST: description of columns used during sample analyses?			✓
NOTE:	As stated in the SOW, page D-11/PEST, section 6.1.1.3.7, packed columns cannot be used.			
3.4	Does the narrative, VOA and BNA sections, contain a list of all TICs identified as alkanes and their estimated concentrations?			✓
3.5	Does the narrative contain a record of all cooler temperatures? If the temperature of a cooler exceeded 10° C, the lab must list by fraction and sample number, all affected samples. 3°C ok COC		✓	
3.6	Does the narrative contain a list of the pH values determined for each water sample submitted for volatiles analysis (SOW, page B-11, section 2.6.1.2)?	✓		
3.7	Does the Case Narrative contain the "verbatim" statement as required on page B-11, section 2.6.1 of the SOW?	✓		

ACTION: If "No", to any question in this section, contact the WAM to obtain necessary resubmittals. If the information is unavailable, document under the Contract Problems/Non-Compliance section of the Data Assessment.

	YES	NO	N/

4.0 Data Validation Checklist

4.1 Check the package for the following (see SOW reporting requirements, section 2.1, page B-7):

a. Is the package paginated in ascending order starting from the SDG narrative?	[✓]	___	___
b. Are all forms and copies legible?	[✓]	___	___
c. Is each fraction assembled in the order set forth in the SOW?	[✓]	___	___
d. Is a Sample Data Summary Package submitted immediately preceding the Sample Data Package?	[✓]	___	___

The following checklist is divided into three parts. Part A is filled out if the data package contains any Low Concentration Volatile analyses, Part B for any Low Concentration Semivolatile analyses and Part C for Low Concentration Pesticide/Aroclors.

Does this package contain:

Low Concentration Volatiles Data?	✓	___
Low Concentration Semivolatiles Data?	___	✓
Low Concentration Pesticides/Aroclors data?	___	✓

ACTION: Complete corresponding parts of checklist.

YES NO N/A

PART A: VOA ANALYSES

1.0 Sample Conditions/Problems

1.1 Do the Traffic Reports/Chain-of-Custody Records, Sampling Trip Report or Lab Narrative indicate any problems with sample receipt, condition of samples, analytical problems or special circumstances affecting the quality of the data? ___ ✓ ___

ACTION: If samples were not iced or the ice was melted upon arrival at the laboratory and the temperature of the cooler was > 10° C, then flag all positive results with a "J" and all non-detects "UJ".

ACTION: If both VOA vials for a sample have air bubbles or the VOA vial analyzed had air bubbles, flag all positive results "J" and all non-detects "R".

2.0 Holding Times

2.1 Have any VOA technical holding times, determined from date of collection to date of analysis, been exceeded? ___ ✓ ___

Technical Holding Times: Unpreserved samples maintained at 4°C, being evaluated for aromatic hydrocarbons, must be analyzed within 7 days of collection. If preserved with HCl (pH < 2) and stored at 4°C, then samples must be analyzed within 14 days of collection. If uncertain about preservation, notify the WAM to contact the sampler and determine whether or not samples were preserved.

ACTION: List sampling, VTSR, analysis dates and preservation for samples which missed holding time in the table below.

YES NO N

Table of Holding Time Violations
(See Chain-of-Custody Records)

Sample ID	Was Sample Preserved?	Date Sampled	Date Lab Received	Date Analyzed

ACTION: If technical holding times were exceeded, flag all positive results as estimated (J) and sample quantitation limits as estimated (UJ), and document in the narrative that holding times were exceeded. If analyses were done more than 14 days beyond holding time, either on the first analysis or upon re-analysis, the reviewer must use professional judgement to determine the reliability of the data and the effects of additional storage on the sample results. At a minimum, all results must be qualified "J", but the reviewer may determine that non-detect data are unusable (R). If holding times are exceeded by more than 28 days, flag all non-detects "R".

NOTE: Contractual Holding Times: Sample must be analyzed within 10 days from validated time of sample receipt (VTSR) at the laboratory.

3.0 System Monitoring Compound (SMC) Recovery (Form II LCV)

3.1 Are the Volatile SMC Recovery Summaries (Form II LCV) present? [ ] ___ ___

ACTION: Call the WAM to obtain an explanation/resubmittal from the lab. If missing deliverables are unavailable, document the effect in the Data Assessment.

3.2 Were outliers marked correctly with an asterisk? [ ] ___ /

ACTION: Circle all outliers in red.

	YES	NO	N/A
3.3 Was the surrogate, p-bromofluorobenzene, recovery outside contract limits of 80 - 120% for any sample or method blank?	___	[/]	___
If yes, were samples re-analyzed?	[ ]	___	/
Were method blanks re-analyzed?	[ ]	___	/

ACTION: If p-bromofluorobenzene recovery was > 10%, but failed to meet SOW specifications:

1. Qualify all positive results estimated (J).
2. Flag all non-detects as estimated detection limits (UJ) where recovery is < 80%.
3. Do not qualify non-detects if surrogate recovery is > 120%.

If p-bromofluorobenzene recovery was < 10%:

1. Flag all positive results estimated (J).
2. Flag all non-detects unusable (R).

Professional judgement should be used to qualify data that only have an associated method blank with the SMC recovery out of specification in both the original and reanalysis. Check internal standard areas.

3.4 Are there any transcription/calculation errors between raw data and Form II?	___	[/]	___

ACTION: If large errors exist, ask the WAM to obtain an explanation/resubmittal from the lab, make any necessary corrections and note errors in the data assessment.

4.0 Laboratory Control Sample (LCS) Recovery (Form III LCV)

4.1 Is the LCS Recovery Form (Form III LCV) present?	[/]	___	___
4.2 Was the LCS analyzed at the required frequency (once per SDG, or every 20 samples, whichever is more frequent) for the Low Concentration VOA method?	[/]	___	___

ACTION: If any LCS data are missing, take action as specified in section 3.1 above.

YES NO N

4.3 How many VOA LCS recoveries are outside the specified QC limits of 60 - 140%?

0 out of 12

ACTION: Qualify associated samples for only the specific analytes included in the LCS solution in the following two situations:

1. If the LCS recovery is > 140%, flag positive results for the affected compound(s) estimated (J). Do not flag non-detects.

2. If the LCS recovery is < 60%, but mass spectral criteria were met, flag positive results for the affected compound(s) estimated (J) and non-detect(s) unusable (R).

Qualify all sample results in the following circumstances:

1. If 25% of the LCS recoveries were < 60%, qualify all positive results in the associated samples "J" and all non-detects "R".

2. If two or more LCS recoveries were < 10%, qualify all positive results in the associated samples "J" and all non-detects "R".

NOTE: It should be noted for TPO action (Organic Regional Data Assessment Summary Form) if a laboratory fails to analyze an LCS with each SDG, or if a laboratory consistently fails LCS recovery criteria.

5.0 Method Blanks (Form IV LCV)

5.1 Is the Volatile Method Blank Summary (Form IV LCV) present? ✓ ___ ___

5.2 Frequency of Analysis: For the analysis of Low Concentration VOA TCL compounds, has a method blank been analyzed for each SDG or every 20 samples, whichever is more frequent? ✓ ___ ___

5.3 Has a VOA method blank been analyzed at least once every twelve hours for each GC/MS system used? ✓ ___ ___

5.4 Was a VOA instrument blank analyzed after each sample/dilution which contained a target compound

	YES	NO	N/A
at a concentration > 25 µg/ℓ (see SOW, page D-52/VOA, section 12.1.1.3)?	[ ]	___	___

ACTION: If any method/instrument blank data are missing, notify the WAM to obtain resubmittals or an explanation from the lab. If method blank data are unavailable, reject (R) all associated positive results. However, the reviewer may use professional judgement and substitute field blank or trip blank data for missing method blank data.

If an instrument blank was not analyzed after a sample containing > 25 µg/ℓ, inspect the sample chromatogram acquired immediately after this sample for possible carryover. Use professional judgement to determine if carryover occurred and qualify analyte(s) accordingly.

5.5 Was a storage blank analyzed once per SDG after all the samples were analyzed?	[/]	___	___

ACTION: If storage blank data is missing, contact the WAM to obtain any missing deliverables from the laboratory. If unavailable, note in the Contract Problems/Non-Compliance section of the Data Assessment.

5.6 The validator should verify that the correct identification scheme for EPA blanks was used. (See SOW page B-31, section 3.3.7.3 for more information.)

Was the correct identification scheme used for all Low Concentration VOA blanks?	[/]	___	___

ACTION: Contact the WAM to obtain corrections from the lab, or make the necessary corrections. Document in the "Contract Problems/Non-Compliance section of the Data Assessment all corrections made by the validator.

5.7 Chromatography: review the blank raw data - chromatograms (RICs), quant. reports, data system printouts and spectra.

Also compare the storage blank raw data with the method blank. Determine if contamination in the storage blank is also present in the method blank.

Is the chromatographic performance (baseline stability) for each instrument acceptable for Low

	YES	NO	
Concentration VOAs?	[✓]	___	___

ACTION: Use professional judgement to determine the effect on the data.

5.8 Are all detected hits for target compounds in method, instrument and storage blanks less than the CRQL for that analyte? [✓] ___ ___

Exception: Acetone and 2-butanone must be less than 5 times the CRQL, and methylene chloride must be less than 2.5 times its CRQL.

ACTION: If no, an explanation and laboratory's corrective actions must be addressed in the case narrative. If the narrative contains no explanation, then make a note in the Contract Problems/Non-Compliance section of the Data Assessment.

6.0 Contamination

NOTE: "Water blanks", "drill blanks", and distilled water blanks" are validated like any other sample, and are not used to qualify data. Do not confuse them with the other QC blanks discussed below.

6.1 Does the storage blank contain positive results (TCL and/or TICs) for Low Concentration VOAs? [ ] ✓ ___

ACTION: If the storage blank contains target compounds at a concentration greater than the CRQL, positive sample results for those compounds should be flagged "J". If gross contamination occurred positive sample results for that compound may be rejected (R).

6.2 Do any method/reagent/instrument blanks contain positive results (including TICs) for Low Concentration VOAs? When applied as described in the table below, the contaminant concentration in these blanks are multiplied by the sample dilution factor. [ ] ✓ ___

NOTE: Contaminated instrument blanks are unacceptable under this SOW (see page D-52/VOA, section 12.1.2.3).

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance if a contaminated instrument blank was submitted.

YES NO N/A

ACTION: Sample analysis results after the high concentration sample must be evaluated for carryover. Instrument cross-contamination should be noted for TPO action (Organic Regional Data Assessment Summary Form) if an effect on the data is suspected.

6.3 Do any field/trip/rinse blanks have positive Low Concentration ~~VOA~~ results (including TICs)? / [ ]

ACTION: Prepare a list of the samples associated with each of the contaminated blanks. (Attach a separate sheet.)

NOTE: All field blank results associated with a particular group of samples (may exceed one per case) must be used to qualify data. Trip blanks are used to qualify only those samples with which they were shipped. Blanks may not be qualified because of contamination in another blank. Field blanks & trip blanks must be qualified for system monitoring compound, instrument performance criteria, spectral or calibration QC problems.

ACTION: Follow the directions in the table below to qualify TCL results due to contamination. Use the largest value from all the associated blanks. If any blanks are grossly contaminated, all associated sample data should be qualified unusable (R).

For:	Flag sample result with a "U" when:	Report CRQL & qualify "U" when:	No qualification is needed when:
Methylene Chloride Acetone Toluene 2-Butanone	Sample conc. is > CRQL, but < 10x blank value.	Sample conc. is < CRQL and < 10x blank value.	Sample conc. is > CRQL and > 10x blank value.
Other Conta-minants	Sample conc. is > CRQL, but < 5x blank value.	Sample conc. is < CRQL and < 5x blank value.	Sample conc. is > CRQL and > 5x blank value.

NOTE: Analytes qualified "U" for blank contamination are treated as "hits" when qualifying for calibration criteria.

YES NO N/

ACTION: For TIC compounds, if the concentration in the sample is less than five times the concentration in the most contaminated associated blank, flag the sample data "R" (unusable).

6.4 Are there field/rinse/equipment blanks associated with every sample? [✓] ___ ___

ACTION: Note in data assessment that there is no associated field/rinse/equipment blank.

Exception: samples taken from a drinking water tap do not have associated field blanks.

7.0 GC/MS Instrument Performance Check (Form V-LCV)

7.1 Are the GC/MS Instrument Performance Check Forms (Form V-LCV) present for Bromofluorobenzene (BFB)? [✓] ___ ___

7.2 Are the enhanced bar graph spectrum and mass/charge (m/z) listing for the BFB provided for each twelve hour shift? [✓] ___ ___

7.3 Has an instrument performance compound been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: List date, time, instrument ID and sample analyses for which associated GC/MS tuning data are missing.

DATE	TIME	INSTRUMENT ID	SAMPLE NUMBERS
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

ACTION: Notify the WAM to obtain missing data from the lab. If the lab cannot provide missing data, reject (R) all data generated outside an acceptable twelve hour calibration interval.

7.4 Have the ion abundances been normalized to m/z 95 (see SOW, page D-60/VOA)? [✓] ___ ___

YES NO

NOTE: All ion abundance ratios must be normalized to m/z 95, the nominal base peak, even though the ion abundance of m/z 174 may be up to 120% that of m/z 95.

ACTION: If mass assignment is in error, qualify all associated data as unusable (R).

7.5 Have the ion abundance criteria been met for each instrument used? [✓] ___ ___

ACTION: List all data which do not meet ion abundance criteria (attach a separate sheet).

ACTION: If ion abundance criteria are not met, the Region II TPO must be notified.

7.6 Are there any transcription/calculation errors between mass lists and Form Vs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

7.7 Is the number of significant figures for the reported relative abundances consistent with the number given in the ion abundance criteria column on Form V LCV? [✓] ___ ___

ACTION: If large errors exist, take action as specified in section 3.4 above.

7.8 Is the spectrum of the mass calibration compound acceptable? [✓] ___ ___

ACTION: Use professional judgement to determine whether associated data should be accepted, qualified, or rejected.

8.0 Target Compound List (TCL) Analytes (Form I LCV)

8.1 Are the Organic Analysis Data Sheets (Form I LCV) present with required header information on each page, for each of the following:

a. Samples and/or fractions as appropriate? [✓] ___ ___

b. Laboratory Control Samples? [✓] ___ ___

c. Blanks? [✓] ___ ___

8.2 Are the VOA Reconstructed Ion Chromatograms, the mass spectra for the identified compounds, and the

	YES	NO	N
data system printouts (Quant Reports) included in the sample package for each of the following:			
a. Samples and/or fractions as appropriate?	[✓]	___	___
b. Laboratory Control Samples?	[✓]	___	___
c. Blanks?	[✓]	___	___

ACTION: If any data are missing, take action specified in 3.1 above.

8.3	Are the response factors shown in the quant report? area response only	[ ]	✓	___
8.4	Is chromatographic performance acceptable with respect to:			
	Baseline stability?	[✓]	___	___
	Resolution?	[✓]	___	___
	Peak shape?	[✓]	___	___
	Full-scale graph (attenuation)?	[✓]	___	___
	Other: _____?	[ ]	___	✓

ACTION: Use professional judgement to determine the acceptability of the data.

8.5	Are lab-generated standard mass spectra of the identified VOA compounds present for each sample?	[✓]	___	___

ACTION: If any mass spectra are missing, take action as specified in 3.1 above. If lab does not generate their own standard spectra, make note under the "Contract Problems/Non-Compliance" section of the Data Assessment.

8.6	Is the RRT of each reported compound within 0.06 RRT units of the standard RRT in the continuing calibration?	[✓]	___	___
8.7	Are all ions present in the standard mass spectrum at a relative intensity greater than 25% also present in the sample mass spectrum?	[✓]	___	___
8.8	Do sample and standard relative ion intensities agree to within ±20%?	[✓]	___	___

YES NO N/A

ACTION: Use professional judgement to determine acceptability of data. If it is determined that incorrect identifications were made, all such data should be rejected (R) flagged "N" (presumptive evidence of the presence of the compound) or changed to not detected (U) at the calculated detection limit. In order to be positively identified, the data must comply with the criteria listed in the SOW page VOA D-32, section 21.

ACTION: When sample carry-over is suspected, use professional judgement to determine if instrument cross-contamination has affected positive compound identifications.

9.0 Tentatively Identified Compounds (TIC)

9.1 Are all Tentatively Identified Compound Forms (Form I LCV-TIC) present? Do listed TICs include scan number or retention time, estimated concentration and "JN" qualifier? [/] ___ ___

9.2 Are the mass spectra for the tentatively identified compounds and associated "best match" spectra included in the sample package for each of the following:

a. Samples and/or fractions as appropriate? [ ] ___ /

b. Blanks? [ ] ___ /

b. Alkanes listed for each sample? [ ] ___ /

ACTION: If any TIC data are missing, take action specified in 3.1 above.

ACTION: Add "JN" qualifier to all chemically named TICs if missing.

9.3 Are any target compounds (from any fraction) listed as TICs? (Example: 1,2-dimethylbenzene is xylene - a VOA target analyte - and should not be reported as a TIC.) ___ [ ] /

ACTION: Flag with "R" any target compound listed as a TIC.

9.4 Are all ions present in the reference mass spectrum with a relative intensity greater than

	YES	NO	N
25% also present in the sample mass spectrum?	[ ]	___	✓
9.5 Do TIC and "best match" standard relative ion intensities agree within 20%?	[ ]	___	✓

ACTION: Use professional judgement to determine the acceptability of TIC identifications. If it is determined that an incorrect identification was made, change its identification to "unknown" or to some less specific identification (example: "C3 substituted benzene") as appropriate. Also, when a compound is not found in any blank, but is detected in a sample and is a suspected artifact of a common laboratory contaminant, the result should be qualified as unusable (R). (I.e., common lab contaminants such as CO_2 - M/E 44, siloxanes - M/E 73, hexane, aldol condensation products, solvent preservatives, and related by-products. See the National Functional Guidelines for further guidance.)

10.0 Compound Quantitation and Reported Detection Limits

10.1 Are there any transcription/calculation errors in Form I results? (Check at least two positive values. Verify that the correct internal standards, quantitation ions, and RRFs were used to calculate Form I results.)	___	[✓]	___
10.2 Are the CRQLs adjusted to reflect sample dilutions?	[✓]	___	___

ACTION: If errors are large, take action as specified in section 3.4 above.

ACTION: When a sample is analyzed at more than one dilution, the lowest CRQLs are used (unless a QC exceedance dictates the use of the higher CRQLs data from the diluted sample). Replace concentrations that exceed the calibration range in the original analysis by crossing out the "E" and its corresponding value on the original Form I and substituting the data from the diluted sample. Specify which Form I is to be used, then draw a red "X" across the entire page of all Form I's not to be used, including any in the data summary package.

11.0 Standards Data (GC/MS)

	YES	NO	N/A
11.1 Are the reconstructed ion chromatograms, and data system printouts (quant. reports) present for each initial and continuing calibration?	[✓]		

ACTION: If any calibration standard data are missing, take action specified in section 3.1 above.

12.0 GC/MS Initial Calibration (Form VI)

12.1 Are the Initial Calibration Forms (Form VI LCV) present and complete for the volatile fraction at concentrations of 1, 2, 5, 10, and 25 µg/ℓ?	[✓]		

ACTION: If any Initial Calibration forms are missing, take action as specified in section 3.1 above.

12.2 Are response factors stable for VOA's over the concentration range of the calibration (e.g., %RSD ≤ 30.0)?	[ ]		

ACTION: Circle all outliers in red.

NOTE: Although 13 Low Conc. VOA compounds have no maximum %RSD and require only minimal $\overline{RRF}$ performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: If %RSD > 30.0%, qualify associated positive results for that analyte "J" (estimated) and non-detects using professional judgement. If %RSD is > 90, flag all non-detects for that analyte "R" (unusable) and positive hits "J".

NOTE: Analytes previously qualified "U" for blank contamination are still treated as "hits" when qualifying for initial calibration criteria.

12.3 Are any $\overline{RRF}$s < 0.05?		[ ]	

ACTION: Circle all outliers in red.

ACTION: If any $\overline{RRF}$ values are < 0.05, qualify associated non-detects unusable (R) and associated positive results estimated (J).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI and Table D-3, page D-61/VOA) to fail contractual %RSD and RRF criteria, provided the %RSD is ≤ 40.0 and RRF ≥ 0.010.

YES NO N

ACTION: If more than two of the required analytes failed %RSD or RRF criteria, document in the Data Assessment under Contract Problems/Non-Compliance and the Organic Regional Data Assessment Summary.

12.4 Are there any transcription/calculation errors in the reporting of $\overline{RRF}$s, RRFs or %RSD values? (Check at least 2 values, but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, contact the WAM to obtain an explanation/resubmittal from the lab, document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary.

13.0 GC/MS Continuing Calibration (Form VII LCV)

13.1 Are the Continuing Calibration Forms (Form VII LCV) present and complete for the volatile fraction? [✓] ___ _

13.2 Has a continuing calibration standard been analyzed for every twelve hours of sample analysis per instrument? [✓] ___ ___

ACTION: If any forms are missing or no continuing calibration standard has been analyzed within twelve hours of every sample analysis, ask the WAM to obtain explanation/resubmittal from the laboratory. If continuing calibration data are unavailable, flag all associated sample data as unusable (R).

ACTION: List below all sample analyses that were not within twelve hours of the previous continuing calibration analysis.

_____

_____

13.3 Do any volatile compounds have a % Difference (%D) between the initial $\overline{RRF}$ and continuing RRF which exceeds the ± 30% criteria? ✓ [ ] _

ACTION: Circle all outliers in red.

YES NO N/A

NOTE: Although 13 Low Conc. VOA compounds have no maximum %D and require only minimal RRF performance (see Table D-3, page D-61/VOA), the technical acceptance criteria are the same for all analytes.

ACTION: Qualify both positive results and non-detects for the outlier compound(s) as estimated (J). When % D is above 90%, reject all non-detects for that analyte as unusable (R).

13.4 Do any volatile compounds have a RRF < 0.05? ✓ [ ] ___

ACTION: Circle all outliers in red.

ACTION: If the RRF < 0.05, qualify associated positive results as estimated (J) and associated non-detects unusable (R).

NOTE: Contract Requirements: The SOW allows up to two of the required analytes (see compounds marked with a "*" on Form VI, or Table D-3, page D-61/VOA) to fail or RRF criteria, provided %D is within ±40.0 and RRF ≥ 0.010.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance and in the Organic Regional Data Assessment Summary if more than two of the required analytes failed the above acceptance criteria.

13.5 Are there any transcription/calculation errors in the reporting of RRFs, or %D between initial RRFs and continuing RRFs? (Check at least two values but if errors are found, check more.) ___ [✓] ___

ACTION: Circle errors in red.

ACTION: If errors are large, notify the WAM to obtain explanation/resubmittals from the lab. Document errors in the Contract Problems/Non-Compliance section of the Data Assessment.

14.0 Internal Standard (Form VIII LCV)

14.1 Are the internal standard areas (Form VIII LCV) of every sample and blank within the upper and lower limits (± 40%) for each continuing calibration? [✓] ___ ___

If no, was the sample reanalyzed? [ ] ___ ✓

YES NO N,

ACTION: 1. Circle all outliers in red.

2. List all the outliers below.

Sample #	Int. Std.	Area	Lower Limit	Upper Limit

(Attach additional sheets if necessary, or attach copies of Form VIIIs.)

ACTION: 1. If the internal standard area count is outside the upper or lower limit, flag with "J" all positive results quantitated with this internal standard.

2. Do not qualify non-detects when associated IS area counts are > ÷40%.

3. If the IS area is less than the lower limit (-40%), qualify all associated non-detects "UJ". If extremely low area counts are reported, (< 20%) or if performance exhibits a major, abrupt drop- off, flag all associated non-detects as unusable (R).

14.2 Are the retention times of the internal standards within ±20 seconds of the associated calibration standard? ✓ ___ ___

ACTION: Professional judgement should be used to qualify data if the retention times differ by more than 20 seconds.

NOTE: Contract Requirements: The SOW (section 11.8.4, page D-51/VOA) states that any sample which fails the acceptance criteria for IS response must be reanalyzed.

ACTION: Document in the Data Assessment under Contract Problems/Non-Compliance any sample(s) which failed the above IS acceptance criteria.

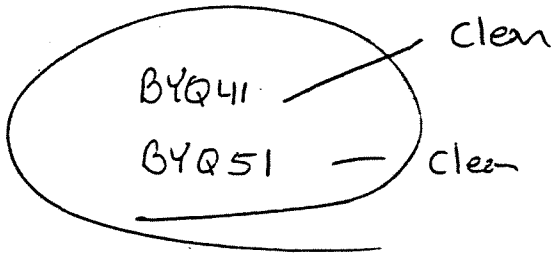
15.0 Field Duplicates

15.1 Were any field duplicates submitted for Low

	YES	NO	N/A
Concentration VOA analysis?	✓ 1		

ACTION: Compare the reported results for field duplicates and calculate the relative percent difference.

ACTION: Any gross variation between duplicate results must be addressed in the reviewer narrative. If large differences exist, contact the WAM to confirm identification of field duplicates with the sampler.



RECEIVED
AUG 10 1999

SDG Narrative

Mitkem Corporation submits the enclosed data package in response to USEPA Case # 27237 and SDG# BWX47. Analyses were performed for twenty aqueous samples that were received on July 27 and 28, 1999. The analyses were performed under USEPA Contract # 68-D6-0063.

The following samples are submitted in this data package:

Client ID	Lab ID	Analysis	VOA sample pH
BYQ42	61402001	V	< 2
BYQ51	61402002	V	< 2
BYX47	61402003	V	< 2
BYX48	61402004	V	< 2
BYQ38	61402005	V	< 2
BYQ40	61402006	V	< 2
BYQ43	61402007	V	< 2
BYQ44	61402008	V	< 2
BYQ45	61402009	V	< 2
BYQ46	61402010	V	< 2
BYQ47	61402011	V	< 2
BYQ48	61402012	V	< 2
BYQ49	61402013	V	< 2
BYQ50	61402014	V	< 2
BYQ52	61402015	V	< 2
BYQ53	61402016	V	< 2
BYQ54	61402017	V	< 2
BYQ55	61402018	V	< 2
BYQ56	61402019	V	< 2
BYQ57	61402020	V	< 2

V = Volatile Organics

The analyses were performed using USEPA CLP Low Concentration Water (OLC02.1) protocols. The analyses were performed with strict adherence to the SOW with the following exceptions and observations:

1. Overall Observation:

Where needed, manual integrations were performed to improve data quality. The corrections were reviewed and associated hardcopies generated and reported as required.

2. Volatile Analysis:

Traps used: for instrument V1: OI Analytical #10 trap containing 8 cm each of Tenax, silica gel and carbon molecular sieve

GC column used: 30 m x 0.25 mm id (1.4 um film thickness) DB-624 capillary column.

No unusual observation was made for the analysis.

All of the submittals to the region are originals other than log book pages and copies of tunes and standard files which are shared by many other cases. For these, the original copies are archived in the laboratory.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package has been authorized by the laboratory manager or his designee, as verified by the following signature.

Kin Chiu

Kin Chiu
Technical Director
8/9/99

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Mitkem Corporation Contract No.: 68-D6-0063

Lab Code: Mitkem Case No.: 27237

Full Sample Analysis Price in Contract: $ _____

SDG No./First Sample in SDG: BVX47 Sample Receipt Date: 07/27/99
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY

Last Sample in SDG: BVQ57 Sample Receipt Date: 07/28/99
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	BVX47	11	BVQ48
2	BVX48	12	BVQ49
3	BVQ38	13	BVQ50
4	BVQ40	14	BVQ51
5	BVQ42	15	BVQ52
6	BVQ43	16	BVQ53
7	BVQ44	17	BVQ54
8	BVQ45	18	BVQ55
9	BVQ46	19	BVQ56
10	BVQ47	20	BVQ57

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order (i.e., the order listed on this form).

Kimberly Akins
Signature

08/04/99
Date

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB

BWX47

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

MTG-3.200803

Lab Sample ID: 61402003 Date Received: 07/27/99

Lab File ID: V1C4598 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	3	~~U~~ 4
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	5	
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BWX47

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

MTG-3.2[illegible]804

Lab Sample ID: 61402003 Date Received: 07/27/99

Lab File ID: V1C4598 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
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27.					
28.					
29.					
30.					

1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB

BWX48

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402004 Date Received: 07/28/99

MTG-3.200805

Lab File ID: V1C4599 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~8~~	~~B~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	5	
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~8~~	~~B~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~2~~	~~B~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BWX48

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402004 Date Received: 07/28/99 MTG-3.200806

Lab File ID: V1C4599 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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5.					
6.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ38

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402005 Date Received: 07/28/99 MTG-3.200807

Lab File ID: V1C4601 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~2~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ38

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402005 Date Received: 07/28/99 MTG-3.200808

Lab File ID: V1C4601 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ40

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402006 Date Received: 07/28/99 MTG-3.200809

Lab File ID: V1C4614 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	U R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	8	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ40

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

MTG-3.20081

Lab Sample ID: 61402006 Date Received: 07/28/99

Lab File ID: V1C4614 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ42

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

MTG-3.200811

Lab Sample ID: 61402001 Date Received: 07/27/99

Lab File ID: V1C4596 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	U R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ42

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402001 Date Received: 07/27/99 MTG-3.200812

Lab File ID: V1C4596 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
7.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ43

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402007 Date Received: 07/28/99 MTG-3.200813

Lab File ID: V1C4615 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ43

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402007 Date Received: 07/28/99 MTG-3.200814

Lab File ID: V1C4615 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ44

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402008 Date Received: 07/28/99 MTG-3.200815

Lab File ID: V1C4616 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~8~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~8~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ44

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402008 Date Received: 07/28/99 MTG-3.200816

Lab File ID: V1C4616 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ45

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402009 Date Received: 07/28/99 MTG-3.200817

Lab File ID: V1C4617 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~8~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~8~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ45

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402009 Date Received: 07/28/99 MTG-3.200818

Lab File ID: V1C4617 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ46

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402010 Date Received: 07/28/99 MTG-3.200819

Lab File ID: V1C4618 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ46

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402010 Date Received: 07/28/99 MTG-3.200820

Lab File ID: V1C4618 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ47

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402011 Date Received: 07/28/99 MTG-3.200821

Lab File ID: V1C4619 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	U R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ47

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402011 Date Received: 07/28/99

MTG-3.200822

Lab File ID: V1C4619 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ48

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402012 Date Received: 07/28/99 MTG-3.200823

Lab File ID: V1C4620 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	UJ
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~8~~	~~U~~R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~8~~	~~U~~R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ48

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402012 Date Received: 07/28/99 MTG-3.200824

Lab File ID: V1C4620 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ49

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 6140203 Date Received: 07/28/99 MTG-3.200825

Lab File ID: V1C4621 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ49

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402013 Date Received: 07/28/99 MTG-3.200826

Lab File ID: V1C4621 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ50

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402014 Date Received: 07/28/99 MTG-3.200827

Lab File ID: V1C4622 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	UJ
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	UR
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	UR
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	UR
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ50

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402014 Date Received: 07/28/99 MTG-3.200828

Lab File ID: V1C4622 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ51

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402002 Date Received: 07/27/99 MTG-3.200829

Lab File ID: V1C4597 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	UR
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	UR
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	UR
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ51

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402002 Date Received: 07/27/99 MTG-3.200830

Lab File ID: V1C4597 Date Analyzed: 08/02/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.: BYQ52

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402015 Date Received: 07/28/99 MTG-3.200831

Lab File ID: V1C4623 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	4	U J
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ52

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402015 Date Received: 07/28/99 MTG-3.200832

Lab File ID: V1C4623 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
4.					
5.					
6.					
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1LCA

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ53

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402016 Date Received: 07/28/99 MTG-3.200833

Lab File ID: V1C4624 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	8	B R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	8	B R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ53

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402016 Date Received: 07/28/99

Lab File ID: V1C4624 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

MTG-3.200834

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ54

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402017 Date Received: 07/28/99 MTG-3.200835

Lab File ID: V1C4625 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	UJ
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ54

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402017 Date Received: 07/28/99 MTG-3.200836

Lab File ID: V1C4625 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ55

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402018 Date Received: 07/28/99 MTG-3.200837

Lab File ID: V1C4626 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	UJ
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	5	UR
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	UR
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	2	
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	1	UR
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ55

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402018 Date Received: 07/28/99 MTG-3.200838

Lab File ID: V1C4626 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
1.					
2.					
3.					
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6.					
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ56

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402019 Date Received: 07/28/99 MTG-3.200839

Lab File ID: V1C4627 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	~~5~~	~~U~~ R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	~~5~~	~~U~~ R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	~~1~~	~~U~~ R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BYQ56

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402019 Date Received: 07/28/99 MTG-3.200840

Lab File ID: V1C4627 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC. (ug/L)	Q
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LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BYQ57

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402020 Date Received: 07/28/99 MTG-3.200841

Lab File ID: V1C4628 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

CAS NO.	COMPOUND	CONCENTRATION (ug/L)	Q
74-87-3	Chloromethane	1	U
74-83-9	Bromomethane	1	U
75-01-4	Vinyl chloride	1	U
75-00-3	Chloroethane	1	U J
75-09-2	Methylene chloride	2	U
67-64-1	Acetone	8	U R
75-15-0	Carbon disulfide	1	U
75-35-4	1,1-Dichloroethene	1	U
75-34-3	1,1-Dichloroethane	1	U
156-59-2	cis-1,2-Dichloroethene	1	U
156-60-5	trans-1,2-Dichloroethene	1	U
67-66-3	Chloroform	1	U
107-06-2	1,2-Dichloroethane	1	U
78-93-3	2-Butanone	5	U R
74-97-5	Bromochloromethane	1	U
71-55-6	1,1,1-Trichloroethane	1	U
56-23-5	Carbon tetrachloride	1	U
75-27-4	Bromodichloromethane	1	U
78-87-5	1,2-Dichloropropane	1	U
10061-01-5	cis-1,3-Dichloropropene	1	U
79-01-6	Trichloroethene	1	U
124-48-1	Dibromochloromethane	1	U
79-00-5	1,1,2-Trichloroethane	1	U
71-43-2	Benzene	1	U
10061-02-6	trans-1,3-Dichloropropene	1	U
75-25-2	Bromoform	1	U
108-10-1	4-Methyl-2-pentanone	5	U
591-78-6	2-Hexanone	5	U
127-18-4	Tetrachloroethene	1	U
79-34-5	1,1,2,2-Tetrachloroethane	1	U
106-93-4	1,2-Dibromoethane	1	U
108-88-3	Toluene	1	U
108-90-7	Chlorobenzene	1	U
100-41-4	Ethylbenzene	1	U
100-42-5	Styrene	1	U
1330-20-7	Xylenes (total)	1	U
541-73-1	1,3-Dichlorobenzene	1	U
106-46-7	1,4-Dichlorobenzene	1	U
95-50-1	1,2-Dichlorobenzene	1	U
96-12-8	1,2-Dibromo-3-chloropropane	2	U R
120-82-1	1,2,4-Trichlorobenzene	1	U

1LCE

EPA SAMPLE NO.

LOW CONC. WATER VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BYQ57

Lab Name: MITKEM CORPORATION Contract: 68-D6-0063

Lab Code: MITKEM Case No.: 27237 SAS No.: SDG No.: BWX47

Lab Sample ID: 61402020 Date Received: 07/28/99 MTG-3.200842

Lab File ID: V1C4628 Date Analyzed: 08/03/99

Purge Volume: 25 (mL) Dilution Factor: 1.0

GC Column: DB-624 ID: 0.25 (mm) Length: 30 (m)

Number TICs found: 0

	CAS NUMBER	COMPOUND NAME	RT	EST.CONC. (ug/L)	Q
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Roy F. Weston, Inc.
Federal Programs Division
Suite 201
1090 King Georges Post Road
Edison, New Jersey 08837-3703
732-225-6116 • Fax 732-225-7037

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019

4 August 1999

Mr. Dennis Munhall, Task Monitor
U.S. Environmental Protection Agency
290 Broadway - 18th Floor
New York, NY 10007

TDD NO: 02-99-06-0029
DOCUMENT CONTROL NO: START-02-F-03732
SUBJECT: SAMPLING TRIP REPORT - MONROE TOWNSHIP GROUNDWATER CONTAMINATION

Dear Mr. Munhall:

Attached please find the Sampling Trip Report for the tap water samples collected during the Integrated Assessment conducted at the Monroe Township Groundwater Contamination site from 26 through 30 August 1999. These samples were analyzed for TCL volatile organic compounds and TAL metals under U.S. Environmental Protection Agency Contract Laboratory Program Case No. 27237. Most of the samples were also analyzed for pH and chlorides under RFP Case No. 4934. If you have any questions, do not hesitate to call me at (732) 225-6116.

Very truly yours,

ROY F. WESTON, INC.

Diane Minsavage
Project Manager

Attachment

cc: J. Haklar, Ph.D., OSC, U.S. EPA, w/ attachments
C. Agnihotri, OSC, U.S. EPA, w/ attachments
J. Bulich, ESAT, w/ attachments
W.S. Butterfield, START, w/o attachments
D. Foerter, START, w/o attachments
S. Sumbaly, START ASC, w/ attachments
START TDD File, w/ attachments

SAMPLING TRIP REPORT

SITE NAME: Monroe Township Groundwater Contamination
DCN #: START-02-F-03732
TDD #: 02-99-06-0029
CLP CASE No.: 27237
RFP CASE No.: 4934

EPA I.D. NO.: NJD980769699

SAMPLING DATES: 26 through 30 July 1999

1. Site Location: Three areas located within Monroe Township, Gloucester County, New Jersey (Refer to Figure 1).

2. Sample Descriptions: One-hundred fourteen aqueous samples (including 5 trip blanks and 6 duplicate samples) were collected for low concentration TCL volatile organics analysis (VOA). One-hundred seven aqueous samples were collected for TAL metals analyses. Ninety-three aqueous samples were collected for pH and chlorides analyses. Refer to Table 1 for specific sample information.

4. Laboratories Receiving Samples:

Sample Type	Name and Address of Laboratory
Low Concentration Target Compound List (TCL) Organics	Mitkem Corporation 175 Metro Center Blvd. Warwick, RI 02886
Target Analyte List (TAL) Metals (excluding cyanide)	Sentinel, Inc. 2800 Bob Wallace Ave.; Suite L3 Huntsville, AL 35805
pH and chlorides	Accutest Labs 2235 Route 130 Dayton, NJ 68810

5. Sample Dispatch Data:

Twenty-two groundwater samples (including one MS/MSD and two field duplicates) and one aqueous trip blank were shipped to Mitkem Corporation for Low Concentration TCL VOA analyses on 26 July 1999 at 1830 hours via FedEx (Airbill No. 4811727620). Twenty-two groundwater samples (including one MS/MSD and two field duplicates) were

shipped to Sentinel, Inc. for TAL metals analyses on 26 July 1999 at 1830 hours via FedEx (Airbill No. 4811727631). Accutest Labs picked up 20 groundwater samples for pH and chlorides analyses at 1715 hours on 26 July 1999.

Thirty-five groundwater samples (including two MS/MSDs and one field duplicate) and one aqueous trip blank were shipped to Mitkem Corporation for Low Concentration TCL VOA analyses on 27 July 1999 at 1900 hours via FedEx (Airbill No. 4811727653). Thirty-four groundwater samples (including two MS/MSDs and one field duplicate) were shipped to Sentinel, Inc. for TAL metals analyses on 27 July 1999 at 1900 hours via FedEx (Airbill No. 4811727664). Document Courier Express picked up 33 groundwater samples at 1810 hours on 27 July 1999 for pH and chlorides analyses by Accutest Labs.

Twenty-four groundwater samples (including two MS/MSDs and two field duplicates) and one aqueous trip blank were shipped to Mitkem Corporation for Low Concentration TCL VOA analyses on 28 July 1999 at 1915 hours via FedEx (Airbill No. 4811727675). Twenty-four groundwater samples (including two MS/MSDs and two field duplicates) were shipped to Sentinel, Inc. for TAL metals analyses on 28 July 1999 at 1915 hours via FedEx (Airbill No. 4811727686). Accutest Labs picked up 27 groundwater samples for pH and chlorides analyses at 2000 hours on 28 July 1999.

Nine groundwater samples were shipped to Mitkem Corporation for Low Concentration TCL VOA analyses on 29 July 1999 at 1200 hours via FedEx (Airbill No. 4811727690). Nine groundwater samples were shipped to Sentinel, Inc. for TAL metals analyses on 29 July 1999 at 1200 hours via FedEx (Airbill No. 4811727701).

Eleven groundwater samples (including one MS/MSD) and one aqueous trip blank were shipped to Mitkem Corporation for Low Concentration TCL VOA analyses on 29 July 1999 at 1915 hours via FedEx (Airbill No. 4811727723). Eleven groundwater samples (including one MS/MSD and two field duplicates) were shipped to Sentinel, Inc. for TAL metals analyses on 29 July 1999 at 1915 hours via FedEx (Airbill No. 4811727734). Accutest Labs picked up 13 groundwater samples for pH and chlorides analyses at 1800 hours on 29 July 1999.

Eight groundwater samples (including one field duplicate) and one aqueous trip blank were shipped to Mitkem Corporation for Low Concentration TCL VOA analyses on 30 July 1999 at 1250 hours via FedEx (Airbill No. 4811727712). Eight groundwater samples (including one field duplicate) were shipped to Sentinel, Inc. for TAL metals analyses on 30 July 1999 at 1250 hours via FedEx (Airbill No. 813458392924).

6. On-Site Personnel:

Name	Company	Duties on Site
Dennis Munhall	Region II EPA	Task Monitor (Site Assessment)
James Haklar	Region II EPA	OSC (Removal Support)
Chait Agnihotri	Region II EPA	OSC (Removal Support)
Diane Minsavage	Region II START	Project Manager/Site Health and Safety Coordinator /Sample Management Officer (SMO)
Gerry Gilliland	Region II START	SMO/Sampler
Melissa Kaplan	Region II START	DatabaseManagement/Sampler
Kiersten Dorneman	Region II START	Sampler
Harry Allen	Region II START	Sampler

7. Additional Comments:

From 26 through 30 July 1999, the Region II Superfund Technical Assessment and Response Team (START) collected tap samples from residences and businesses located in Monroe Township, Gloucester County, New Jersey. These samples were collected as part of an Integrated Assessment conducted at the site. The samples were collected directly into sample containers; therefore, no rinsate blanks were required. Samples collected by Region II START personnel were analyzed for Low Concentration TCL VOAs and TAL metals, excluding cyanide, through the U.S. EPA CLP. The majority of the samples were also analyzed for pH and chlorides. Copies of the Organic and Inorganic Traffic Reports and Chain of Custodies for this sampling event are presented in Attachment 1. Copies of the FedEx Air Bills are presented in Attachment 2.

Samples were collected as described in the Sampling Quality Assurance Project Plan.

7. Report Prepared by: Diane Minsavage Date: 3 August 1999
Diane Minsavage

8. Report Approved by: Dennis Foerter Date: 4 August 1999
Dennis Foerter, CHMM

SITE LOCATION MAP

Figure 1
Site Location Map

This page replaces the original page which contains information that EPA considers to be confidential. The complete document is located at the EPA Region II Removal Records Center, 2890 Woodbridge Avenue, Edison, NJ 08837.

SITE LOCATION MAP

TABLE 1

Table 1
Ground Water Sampling
Monroe Township Groundwater Contamination Site
July 26-30, 1999

Sample Number MGC-9907-	Organic CLP No.	Inorganic CLP No.	pH & Chlorides (Y/N)	Date	Time	Comments
TW 01	BYQ 20	MBTC 49	Y	26-Jul-99	1325	Matrix Spike/Matrix Spike Duplicate (MS/MSD)
TW 02	BYQ 21	MBTC 50	Y	26-Jul-99	1317	
TW 03	BYQ 22	MBTC 51	Y	26-Jul-99	1305	
TW 04	BYQ 23	MBTC 52	Y	26-Jul-99	1345	
TW 05	BYQ 24	MBTC 53	Y	26-Jul-99	1355	
TW 06	BYQ 25	MBTC 54	Y	26-Jul-99	1320	
TW 07	BYQ 26	MBTC 55	Y	26-Jul-99	1415	
TW 08	BYQ 27	MBTC 56	Y	26-Jul-99	1408	
TW 09	BYQ 28	MBTC 57	Y	26-Jul-99	1355	
TW 10	BYQ 29	MBTC 58	Y	26-Jul-99	1440	
TW 11	BYQ 30	MBTC 59	Y	26-Jul-99	1440	
TW 12	BYQ 31	MBTC 60	N	26-Jul-99	1317	Duplicate of TW02 for QA/QC purposes
TW 13	BYQ 32	MBTC 61	Y	26-Jul-99	1520	
TW 14	BYQ 33	MBTC 62	Y	26-Jul-99	1505	
TW 15	BYQ 34	MBTC 63	Y	26-Jul-99	1510	
TW 16	BYQ 35	MBTC 64	Y	26-Jul-99	1535	
TW 17	BYQ 36	MBTC 65	Y	26-Jul-99	1620	
TW 18	BYQ 37	MBTC 66	Y	26-Jul-99	1640	
TW 19	BYQ 38	MBTC 67	Y	27-Jul-99	1008	
TW 20	BYQ 39	MBTC 68	Y	26-Jul-99	1636	
TW 21	BYQ 40	MBTC 69	Y	27-Jul-99	1011	MS/MSD
TW 22	BYQ 41	MBTC 70	Y	26-Jul-99	1700	
TW 23	BYQ 42	MBTC 71	Y	26-Jul-99	1635	
TW 24	BYQ 43	MBTC 72	Y	27-Jul-99	1015	

Table 1
Ground Water Sampling
Monroe Township Groundwater Contamination Site
July 26-30, 1999

Sample Number MGC-9907-	Organic CLP No.	Inorganic CLP No.	pH & Chlorides (Y/N)	Date	Time	Comments
TW 25	BYQ 44	MBTC 73	Y	27-Jul-99	1030	
TW 26	BYQ 45	MBTC 74	Y	27-Jul-99	1045	
TW 27	BYQ 46	MBTC 75	Y	27-Jul-99	1057	
TW 28	BYQ 47	MBTC 76	Y	27-Jul-99	1209	
TW 29	BYQ 48	MBTC 77	Y	27-Jul-99	1230	Sample collected after carbon treatment system; Refer to TW36
TW 30	BYQ 49	MBTC 78	Y	27-Jul-99	1035	
TW 31	BYQ 50	MBTC 79	Y	27-Jul-99	1107	
TW 32	BYQ 51	MBTC 80	N	26-Jul-99	1700	Duplicate of TW22
TW 33	BYQ 52	MBTC 81	Y	27-Jul-99	1110	
TW 34	BYQ 53	MBTC 82	Y	27-Jul-99	1100	
TW 35	BYQ 54	MBTC 83	Y	27-Jul-99	1115	
TW 36	BYQ 55	MBTC 84	Y	27-Jul-99	1236	Sample collected prior to carbon treatment system; Refer to TW29
TW 37	BYQ 56	MBTC 85	Y	27-Jul-99	1203	
TW 38	BYQ 57	MBTC 86	Y	27-Jul-99	1415	
TW 39	BYQ 58	MBTC 87	Y	27-Jul-99	1440	
TW 40	BYQ 59	MBTC 88	Y	27-Jul-99	1520	
TW 41	BYQ 60	MBTC 89	Y	27-Jul-99	1245	MS/MSD
TW 42	BYQ 61	MBTC 90	Y	27-Jul-99	1300	
TW 43	BYQ 62	MBTC 91	Y	27-Jul-99	1320	
TW 44	BYQ 63	MBTC 92	Y	27-Jul-99	1330	
TW 45	BYQ 64	MBTC 93	Y	27-Jul-99	1405	
TW 46	BYQ 65	MBTC 94	Y	27-Jul-99	1332	
TW 47	BYQ 66	MBTC 95	Y	27-Jul-99	1620	
TW 48	BYQ 67	MBTC 96	Y	27-Jul-99	1535	

Table 1
Ground Water Sampling
Monroe Township Groundwater Contamination Site
July 26-30, 1999

Sample Number MGC-9907-	Organic CLP No.	Inorganic CLP No.	pH & Chlorides (Y/N)	Date	Time	Comments
TW 49	BYQ 68	MBTC 97	Y	27-Jul-99	1545	
TW 50	BYQ 69	n/a	N	27-Jul-99	1740	Refer to TW08
TW 51	BYQ 70	MBTC 99	Y	28-Jul-99	1117	
TW 52	BYQ 71	MBTD 00	N	27-Jul-99	1620	Duplicate of TW47
TW 53	BYQ 72	MBTD 01	Y	27-Jul-99	1615	
TW 54	BYQ 73	MBTD 02	Y	27-Jul-99	1635	
TW 55	BYQ 74	MBTD 03	Y	27-Jul-99	1655	
TW 56	BYQ 75	MBTD 04	Y	27-Jul-99	1730	
TW 57	BYQ 76	MBTD 05	Y	27-Jul-99	1640	
TW 58	BYQ 77	MBTD 06	Y	27-Jul-99	1650	
TW 59	BYQ 78	MBTD 07	Y	28-Jul-99	1120	
TW 60	BYQ 79	MBTD 08	Y	28-Jul-99	1150	
TW 61	BYQ 80	MBTD 09	Y	28-Jul-99	1215	MS/MSD
TW 62	BYQ 81	MBTD 10	Y	28-Jul-99	1159	
TW 63	BYQ 82	MBTD 11	Y	28-Jul-99	1300	
TW 64	BYQ 83	MBTD 12	Y	28-Jul-99	1244	
TW 65	BYQ 84	MBTD 13	Y	28-Jul-99	1439	
TW 66	BYQ 85	MBTD 14	Y	28-Jul-99	1140	Sample collected prior to carbon treatment system; Refer to TW67
TW 67	BYQ 86	MBTD 15	Y	28-Jul-99	1145	Sample collected after carbon treatment system; Refer to TW66
TW 68	BYQ 87	MBTD 16	Y	28-Jul-99	1215	
TW 69	BYQ 88	MBTD 17	Y	28-Jul-99	1245	pH adjustment system
TW 70	BYQ 89	MBTD 18	Y	28-Jul-99	1519	
TW 71	BYQ 90	MBTD 19	Y	28-Jul-99	1640	Treatment (filtration) was not by-passed
TW 72	BYQ 91	MBTD 20	N	28-Jul-99	1159	Duplicate of TW62

Table 1
Ground Water Sampling
Monroe Township Groundwater Contamination Site
July 26-30, 1999

Sample Number MGC-9907-	Organic CLP No.	Inorganic CLP No.	pH & Chlorides (Y/N)	Date	Time	Comments
TW 73	BYQ 92	MBTD 21	Y	28-Jul-99	1510	
TW 74	BYQ 93	MBTD 22	Y	28-Jul-99	1540	
TW 75	BYQ 94	MBTD 23	Y	28-Jul-99	1535	
TW 76	BYQ 95	MBTD 24	Y	28-Jul-99	1550	
TW 77	BYQ 96	MBTD 25	Y	28-Jul-99	1740	
TW 78	BYQ 97	MBTD 26	Y	28-Jul-99	1815	
TW 79	BYQ 98	MBTD 27	Y	28-Jul-99	1615	
TW 80	BYQ 99	MBTD 28	Y	28-Jul-99	1745	
TW 81	BYR 00	MBTD 29	Y	28-Jul-99	1615	MS/MSD
TW 82	BYR 01	MBTD 30	Y	28-Jul-99	1708	
TW 83	BYR 02	MBTD 31	Y	28-Jul-99	1800	
TW 84	BYR 03	MBTD 32	Y	28-Jul-99	1845	
TW 85	BYR 04	MBTD 33	Y	29-Jul-99	1045	
TW 86	BYR 05	MBTD 34	Y	29-Jul-99	1115	
TW 87	BYR 06	MBTD 35	Y	28-Jul-99	2015	Refer to TW88
TW 88	BYR 07	MBTD 36	N	28-Jul-99	2020	Sample collected after treatment
TW 89	BYR 08	MBTD 37	Y	29-Jul-99	1315	
TW 90	BYR 09	MBTD 38	Y	29-Jul-99	1425	
TW 91	BYR 10	MBTD 39	Y	28-Jul-99	1944	
TW 92	BYR 11	MBTD 40	N	28-Jul-99	1715	Duplicate of TW82
TW 93	BYR 12	MBTD 41	Y	29-Jul-99	1057	
TW 94	BYR 13	MBTD 42	Y	29-Jul-99	1133	
TW 95	BYR 14	MBTD 43	Y	29-Jul-99	1405	
TW 96	BYR 15	MBTD 44	Y	29-Jul-99	1105	

Table 1
Ground Water Sampling
Monroe Township Groundwater Contamination Site
July 26-30, 1999

Sample Number MGC-9907-	Organic CLP No.	Inorganic CLP No.	pH & Chlorides (Y/N)	Date	Time	Comments
TW 97	BYR 16	MBTD 45	Y	29-Jul-99	1125	
TW 98	BYR 17	MBTD 46	Y	29-Jul-99	1205	Possible background
TW 99	BYR 18	MBTD 47	Y	29-Jul-99	1400	
TW 100	BYR 19	MBTD 48	Y	29-Jul-99	1728	
TW 101	BYR 20	MBTD 49	N	29-Jul-99	1745	MS/MSD
TW 102	BYR 21	MBTD 50	N	30-Jul-99	0930	
TW 103	BYR 22	MBTD 51	N	30-Jul-99	1005	
TW 104	BYR 23	MBTD 52	N	30-Jul-99	1110	
TW 105	BYR 24	MBTD 53	N	30-Jul-99	1143	
TW 106	BYR 25	MBTD 54	N	30-Jul-99	1110	
TW 107	BYR 26	MBTD 55	N	30-Jul-99	1145	
TW 108	BYR 27	MBTD 56	N	30-Jul-99	1150	
TW 112	BYR 31	MBTD 60	N	30-Jul-99	0940	Duplicate of TW102
TB 01	BWX 47	n/a	N	26-Jul-99	1134	Trip blank for QA/QC purposes
TB 02	BWX 48	n/a	N	27-Jul-99	0910	Trip blank
TB 03	BWX 49	n/a	N	28-Jul-99	0915	Trip blank
TB 04	BWX 50	n/a	N	29-Jul-99	0900	Trip blank
TB 05	BWX 51	n/a	N	30-Jul-99	0845	Trip blank

ATTACHMENT 1

TRAFFIC REPORTS/CHAIN OF CUSTODY RECORDS

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. ~~273~~ 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/26/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	Gerald V. Gilliland	481127620

Non-Superfund Program	Sampler Signature	5. Ship To
	Gerald V. Gilliland	Mitkem Corporation 175 Metro Center Blvd Warwick, RI 02886 ATTN: Kin Chiu

Site Name	3. Purpose*	Early Action	Long-Term Action
Monroe Twp. GW Contamination	Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED	[ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [ ] ESI	[ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD

City, State	Site Spill ID
Monroe Twp, NJ	MQ

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. Other (Specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
BYQ20	2	L	G	1	X				Tag requirement waived	MGC-9907-TW01	7-26-99/1325	MBTC 49	GVG	—
BYQ21					X					-TW02	1217	50	GVG	—
BYQ22					X					-TW03	1305	51	GVG	—
BYQ23					X					-TW04	1345	52	GVG	—
BYQ24					X					-TW05	1355	53	GVG	—
BYQ25					X					-TW06	1320	54	GVG	—
BYQ26					X					-TW07	1415	55	GVG	—
BYQ27					X					-TW08	1408	56	GVG	—
BYQ28					X					-TW09	1355	57	GVG	—
BYQ29					X					-TW10	1440	58	GVG	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(Y)	1 of 3	BYQ20		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/26/99 1830				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

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A21-012-15 REV.

MTG-3.400014

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/26/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	Gerald V. Gilliland	4811 727620

Non-Superfund Program	Sampler Signature	5. Ship To
	Gerald V. Gilliland	Milkem Corporation 175 Metro Center Blvd. Warwick, RI 02886 ATTN: Kin Chiu

Site Name	3. Purpose*	Early Action	Long-Term Action
Monroe Twp. GW Contamin.	Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED	[ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [ ] ESI	[ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD

City, State	Site Spill ID
Monroe Twp, NJ	MQ

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. Other (Specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other	B Conc.: Low / Med / High	C Sample Type: Comp. / Grab	D Preservative (from Box 7) / Other	E RAS Analysis: VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, FI = Field Info, PE = Perform Eval., — = Not a QC Sample)
BYQ 30	2	L	G	1	X				Tag requirement waived	MGC-9907-TW11	7-26-99/1440	MBTC 59	GVG	—
BYQ 31					X					-TW12	1317	60	GVG	D
BYQ 32					X					-TW13	1520	61	GVG	—
BYQ 33					X					-TW14	1505	62	GVG	—
BYQ 34					X					-TW15	1510	63	GVG	—
BYQ 35					X					-TW16	1535	64	GVG	—
BYQ 36					X					-TW17	1620	65	GVG	—
BYQ 37					X					-TW18	1640	66	GVG	—
BYQ 39					X					-TW20	1636	68	GVG	—
BYQ 41					X					-TW22	1700	70	GVG	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(N)	2 of 3	BYQ 20		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/26/99 1830				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

A21-012-15 REV

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*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

MTG-3.400015

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/26/99	FedEx

Regional Information: NJD980769699

Sampler (Name): Gerald V. Gilliland

Airbill Number: 4811727620

Non-Superfund Program

Sampler Signature: Gerald V. Gilliland

Site Name: MonroeTwp GW Contamin.

City, State: MonroeTwp, NJ

Site Spill ID: MQ

3. Purpose*: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

5. Ship To: Mitkem Corporation, 175 Metro Center Blvd., Warwick, RI 02886
ATTN: Kin Chiu

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. Other (Specify in Column D) N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
BYQ42	2	L	G	1	X				Tag requirement waived	MGC-9907-TW23	7-26-99/1635	MBTC 71	GVG	—
BYQ51	2	L	G	1	X				↓ ↓ ↓	↓ ↓ -TW32	↓ 1700	MBTC 80	GVG	D
BWX47	4	L	G	1	X				↓ ↓ ↓	↓ ↓ -TB01	↓ ~~1200~~ 1134	N/A	GVG	B

GVG

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
N	3 of 3	BYQ20		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/26/99 1830				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

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MTG-3.400016

Cooler #1

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/26/99	Fed Ex

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	Gerald V. Gilliland	481172763 1

Non-Superfund Program	Sampler Signature	5. Ship To
	Gerald V Gilliland	Sentinel, Inc. 2800 Bob Wallace Ave Suite L3 Huntsville, AL 35805 ATTN: Beverly Kilgore

Site Name	3. Purpose*	Early Action	Long-Term Action
Monroe Twp. GW Contamin.	Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED	[ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [ ] ESI	[ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD

City, State	Site Spill ID
Monroe Twp., NJ	MG

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
MBTC 49	2	L	G	2		X						Tag requirement waived	MGC-9907-TW01	7-26-99/1325	BYQ 20	GVG	—
MBTC 50						X							-TW02	1317	21	GVG	—
MBTC 51						X							-TW03	1305	22	GVG	—
MBTC 52						X							-TW04	1345	23	GVG	—
MBTC 53						X							-TW05	1355	24	GVG	—
MBTC 54						X							-TW06	1320	25	GVG	—
MBTC 55						X							-TW07	1415	26	GVG	—
MBTC 56						X							-TW08	1408	27	GVG	—
MBTC 57						X							-TW09	1355	28	GVG	—
MBTC 58						X							-TW10	1440	29	GVG	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(Y)	1 of 1	MBTC 49		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/26/99 1830				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (2/98)

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231-012-13 REV

MTG-3.400017

Cooler #2

EPA Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/26/99	Fed Ex

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	Gerald V. Gilliland	481172763 1

Non-Superfund Program	Sampler Signature	5. Ship To
	Gerald V. Gilliland	Sentinel, Inc. 2800 Bob Wallace Ave. Suite L3 Huntsville, AL 35805 ATTN: Beverly Kilgore

Site Name: Monroe Twp GW Contamin.

City, State: Monroe Twp, NJ

Site Spill ID: MQ

3. Purpose*

Lead	Early Action	Long-Term Action
[X] SF	[ ] CLEM	[ ] FS
[ ] PRP	[ ] PA	[ ] RD
[ ] ST	[ ] REM	[ ] RA
[ ] FED	[ ] RI	[ ] O&M
	[ ] SI	[ ] NPLD
	[ ] ESI	

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) / Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. – = Not a QC Sample)
MBTC 59	2	L	G	2		X						Tag requirement waived	MGC-9907-TW11	7-26-99/1440	BYQ 30	GVG	–
MBTC 60						X							-TW12	1317	31	GVG	D
MBTC 61						X							-TW13	1520	32	GVG	–
MBTC 62						X							-TW14	1505	33	GVG	–
MBTC 63						X							-TW15	1510	34	GVG	–
MBTC 64						X							-TW16	1535	35	GVG	–
MBTC 65						X							-TW17	1620	36	GVG	–
MBTC 66						X							-TW18	1640	37	GVG	–
MBTC 68						X							-TW20	1636	39	GVG	–
MBTC 8070 (Grip)						X							-TW22	1700	41	GVG	–

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	2 of 2 (Cooler 2)	MBTC 49		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/26/99 1830				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

DISTRIBUTI: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to C

EPA Form 9110-1 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITION

MTG-3.400018

Cooler # 2

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/26/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	Gerald V. Gilliland	4811727631

Non-Superfund Program	Sampler Signature	5. Ship To
	Gerald V. Gilliland	Sentinel, Inc. 2800 Bob Wallace Ave Suite L3 Huntsville, AL 35805 ATTN: Beverly Kilgore

Site Name	City, State	Site Spill ID
Monroe Twp. GW Contamin.	Monroe Twp., NJ	MQ

3. Purpose

Lead	Early Action	Long-Term Action
[X] SF	[ ] CLEM	[ ] FS
[ ] PRP	[ ] PA	[ ] RD
[ ] ST	[ ] REM	[ ] RA
[ ] FED	[ ] RI	[ ] O&M
	[ ] SI	[ ] NPLD
	[ ] ESI	

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO_3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other:	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) / Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. – = Not a QC Sample)
MBTC 71	2	L	G	2		X						Tag requirement waived	MGC-9907-TW23	7-26-99/1635	BYQ42	GVG	–
MBTC 80	2	L	G	2		X						" " "	9907-TW22	" 1700	BYQ51	GVG	D

GVG

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(Y)	2 of 2 (cooler 2)	MBTC 49		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/26/99 1730				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

MTG-3.400019

RFP No.: 4934

PO No.: 0003814

CHAIN OF CUSTODY RECORD

WESTON. MANAGERS DESIGNERS CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:	Preservative Box No.:
1. Surface Water	1. HCl
2. Ground Water	2. HN03
3. Leachate	3. Na2SO4
4. Rinsate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number MGC-	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #s)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS ION	COR	REAC	Full TCLP	OTHER
9907-TW01	7-26-99/1325	2	L	G												pH, chlorides
9907-TW02	1317															
9907-TW03	1305															
9907-TW04	1345															
9907-TW05	1355															
9907-TW06	1320															
9907-TW07	1415															
9907-TW08	1408															
9907-TW09	1355															
9907-TW10	1440															
9907-TW11	1440															
9907-TW13 (12)	1520															
9907-TW14 (13)	1505	↓	↓	↓											↓	↓

Person Assuming Responsibility for Sample: Gerald Gilliland — Time: 1700 — Date (MM/DD/YY): 7/26/99

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
all	Gerald V. Gilliland	1715	7/26/99		Transfer to Lab Rep.

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION
In Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental Management

RFP No.: 4934

PO No.: 0003814

CHAIN OF CUSTODY RECORD

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:	Preservative Box No.:
1. Surface Water	1. HCl
2. Ground Water	2. HN03
3. Leachate	3. Na2SO4
4. Rinsate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

MTG-3.400021

Sample Number MGC-	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #s)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS IGN	COR	REAC	Full TCLP	OTHER
9907-TW15	7-26-99/1510	2	L	G												pH, chlorides
9907-TW16	1535	↓	↓	↓												↓
9907-TW17	1620															
9907-TW18	1640															
~~9907-TW19~~																
9907-TW20	1636															
9907-TW22	1700															
9907-TW23	1635	↓	↓	↓												↓
~~9907-TW32~~	1700	↓	↓	↓												↓

Person Assuming Responsibility for Sample: Gerald Gilliland — Time: 1700 — Date (MM/DD/YY): 7/26/99

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
all	Gerald V. Gilliland	1715	7/26/99		Transfer to Lab Rep.

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION
In Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental Management,

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/27/99	Fed Ex

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	Gerald V. Gilliland	481172765 3

Non-Superfund Program	Sampler Signature	5. Ship To
	Gerald V Gilliland	Nitkem Corporation 175 Metro Center Blvd Warwick, RI 02886 ATTN: Kin Chiu

Site Name: Monroe Twp. GW Contamin.

City, State: Monroe Twp., NJ

Site Spill ID: MQ

3. Purpose: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

6. Matrix (Enter in Column A): 1. Surface Water; 2. Ground Water; 3. Leachate; 4. Field QC; 5. Soil/Sediment; 6. Oil (High only); 7. Waste (High only); 8. Other (Specify in Column A)

7. Preservative (Enter in Column D): 1. HCl; 2. HNO3; 3. NaHSO4; 4. H2SO4; 5. Ice only; 6. Other (Specify in Column D); N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other:	B Conc.: Low Med High	C Sample Type: Comp. / Grab	D Preservative (from Box 7) / Other:	E RAS Analysis: VOA	BNA	Pest/PCB	High only: ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier (MGC-)	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform. Eval., — = Not a QC Sample)
BWX48	4	L	G	1	X				Tag requirement waived	9907-TB07	7-27-99/0910	—	GVG	B
BYQ38	2				X					9907-TW19	1008	MBTC 67	GVG	—
BYQ40	1				X					9907-TW21	1011	69	GVG	—
BYQ43					X					9907-TW24	1015	72	GVG	—
BYQ44					X					9907-TW25	1030	73	GVG	—
BYQ45					X					9907-TW26	1045	74	GVG	—
BYQ46					X					9907-TW27	1057	75	GVG	—
BYQ47					X					9907-TW28	1209	76	GVG	—
BYQ48					X					9907-TW29	1230	77	GVG	—
BYQ49					X					9907-TW30	1035	78	GVG	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(N)	1 of 4	BYQ40, BYQ60		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V Gilliland	7/27/99 1900				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

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A21-012-15 REV.

MTG-3.400022

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/27/99	FedEx

Regional Information: NJD980769699

Non-Superfund Program

Site Name: Monroe Twp. GW Contamin.

City, State: Monroe Twp, NJ

Site Spill ID: MQ

Sampler (Name): Gerald V. Gilliland

Sampler Signature: Gerald V. Gilliland

Airbill Number: 481172765 3

5. Ship To: Mitkem Corporation
175 Metro Center Blvd
Warwick, RI 02886
ATTN: Kin Chiu

3. Purpose*

Lead	Early Action	Long-Term Action
[X] SF	[ ] CLEM	[ ] FS
[ ] PRP	[ ] PA	[ ] RD
[ ] ST	[ ] REM	[ ] RA
[ ] FED	[ ] RI	[ ] O&M
	[ ] SI	[ ] NPLD
	[ ] ESI	

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. Other (Specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp. Grab	D Preservative (from Box 7) Other:	E RAS Analysis VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval., — = Not a QC Sample)
BYQ 50	2	L	G	1	X				Tag requirement waived	MGC-9907-TW31	7-27-99/1107	MBTC 79	GVG	—
BYQ 52					X					9907-TW33	1110	81	GVG	—
BYQ 53					X					9907-TW34	1100	82	GVG	—
BYQ 54					X					9907-TW35	1115	83	GVG	—
BYQ 55					X					9907-TW36	1236	84	GVG	—
BYQ 56					X					9907-TW37	1203	85	GVG	—
BYQ 57					X					9907-TW38	1415	86	GVG	—
BYQ 58					X					9907-TW39	1440	87	GVG	—
BYQ 59					X					9907-TW40	1520	88	GVG	—
BYQ 60					X					9907-TW41	1245	89	GVG	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(Y)	2 of 4	BYQ 40, BYQ60.		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/27/99 1900				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Blue - Region Copy Pink - CLASS Copy EPA Form 9110-2 (2-80)

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*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-15 REV

MTG-3.400023

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/27/99	Fed Ex

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	Gerald Gilliland	481172765 3

Non-Superfund Program	Sampler Signature	5. Ship To
	Gerald V. Gilliland	Mitkem Corporation 175 Metro Center Blvd Warwick, RI 02886 ATTN: Kin Chiu

Site Name	City, State	Site Spill ID
Monroe Twp. GW Contamin.	Monroe Twp, NJ	MQ

3. Purpose*

Lead	Early Action	Long-Term Action
[X] SF	[ ] CLEM	[ ] FS
[ ] PRP	[ ] PA	[ ] RD
[ ] ST	[ ] REM	[ ] RA
[ ] FED	[ ] RI	[ ] O&M
	[ ] SI	[ ] NPLD
	[ ] ESI	

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. Other (Specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
BYQ61	2	L	G	1	X				Tag requirement waived	MGC-9907-TW42	7-27-99/1300	MBTC 90	GVG	—
BYQ62	↓	↓	↓	↓	X				↓	9907-TW43	1320	91	GVG	—
BYQ63					X					9907-TW44	1330	92	GVG	—
BYQ64					X					9907-TW45	1405	93	GVG	—
BYQ65					X					9907-TW46	1332	94	GVG	—
BYQ66					X					9907-TW47	1620	95	GVG	—
BYQ67					X					9907-TW48	1535	96	GVG	—
BYQ68					X					9907-TW49	1545	↓ 97	GVG	—
BYQ69	↓	↓	↓	↓	X				↓	9907-TW50	↓ 1740	— 98	GVG	—
BYQ70 (GVG)	↓	↓	↓	↓	X				GVG	9907-TW51		↓ 99	GVG	

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(N)	3 of 4	BYQ40, BYQ60		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/27/99 1900				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Blue - Region Copy; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

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*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-15 REV.

MTG-3.400024

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON		Fed Ex

Regional Information	Sampler (Name)	Airbill Number
NJD980709699	Gerald Gilliland	481127653

Non-Superfund Program	Sampler Signature	5. Ship To
	Gerald V. Gilliland	Mitkem Corporation 175 Metro Center Blvd. Warwick, RI 02886 ATTN: Kin Chiu

Site Name: Monroe Twp. GW Contamin

City, State: Monroe Twp. NJ

Site Spill ID: MQ

3. Purpose* — Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED; Early Action: [ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [ ] ESI; Long-Term Action: [ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD

6. Matrix (Enter in Column A): 1. Surface Water; 2. Ground Water; 3. Leachate; 4. Field QC; 5. Soil/Sediment; 6. Oil (High only); 7. Waste (High only); 8. Other (Specify in Column A)

7. Preservative (Enter in Column D): 1. HCl; 2. HNO3; 3. NaHSO4; 4. H2SO4; 5. Ice only; 6. Other (Specify in Column D); N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other	B Conc.: Low Med High	C Sample Type: Comp Grab	D Preservative (from Box 7) / Other	E RAS Analysis: VOA	BNA	Pest/PCB	High only: ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval., — = Not a QC Sample)
BYQ71	2	L	G	1	X				Tag requirement waived	MGC-9907-TW52	7-27-99/1620	MBTD00	GVG	D
BYQ72	↓	↓	↓	↓	X				↓	9907-TW53	1615	01	GVG	—
BYQ73					X					9907-TW54	1635	02	GVG	—
BYQ74					X					9907-TW55	1655	03	GVG	—
BYQ75					X					9907-TW56	1730	04	GVG	—
BYQ76					X					9907-TW57	1640	05	GVG	—
BYQ77					X					9907-TW58	1650	06	GVG	—
~~BYQ78~~										~~9907-TW59~~ GVG				

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(Y)	4 of 4	BYQ40, BYQ60		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/27/99 1900				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

A21-012-15 REV.

DISTRIBUTION: Blue - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

MTG-3.400025

Cooler #1

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/27/99	FedEx

Regional Information: NJN980769699

Sampler (Name): Gerald Gilliland

Airbill Number: 481727664

Non-Superfund Program

Sampler Signature: Gerald V. Gilliland

Site Name: Monroe Twp. GW Contamin.

3. Purpose*: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

5. Ship To: Sentinel, Inc. 2800 Bob Wallace Ave. Suite L3 Huntsville, AL 35805

ATTN: Beverly Kilgore

City, State: Monroe Twp., NJ

Site Spill ID: MQ

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO_3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) / Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier (MGC-)	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
MBTC67	2	L	G	2		X						Tag requirement waived	9907-TW19	7-27-99/1008	BYQ38	GVG	—
MBTC69						X							9907-TW21	1011	40	GVG	—
MBTC72						X							9907-TW24	1015	43	GVG	—
MBTC73						X							9907-TW25	1030	44	GVG	—
MBTC74						X							9907-TW26	1045	45	GVG	—
MBTC75						X							9907-TW27	1057	46	GVG	—
MBTC76						X							9907-TW28	1209	47	GVG	—
MBTC77						X							9907-TW29	1230	48	GVG	—
MBTC78						X							9907-TW30	1035	49	GVG	—
MBTC79						X							9907-TW31	1107	50	GVG	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(N)	1 of 2	MBTC69		

(Cooler #1)

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/27/99 1900				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUT: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (2/00)

SEE REVERSE FOR ADDITIONAL STANDARD INS CTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

21-012-13 REV

MTG-3.400026

Cooler #1

EPA Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/27/99	FedEx

Regional Information: NJD980769699

Sampler (Name): Gerald Gilliland

Airbill Number: 481172766 4

Non-Superfund Program

Sampler Signature: Gerald V. Gilliland

5. Ship To: Sentinel, Inc.
2800 Bob Wallace Ave.
Suite L3
Huntsville, AL 35805
ATTN: Beverly Kilgore

Site Name: Monroe Twp. GW Contamin.

City, State: Monroe Twp., NJ

Site Spill ID: MQ

3. Purpose*

Lead	Early Action	Long-Term Action
[X] SF	[ ] CLEM	[ ] FS
[ ] PRP	[ ] PA	[ ] RD
[ ] ST	[ ] REM	[ ] RA
[ ] FED	[ ] RI	[ ] O&M
	[ ] SI	[ ] NPLD
	[ ] ESI	

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO_3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
MBTC 81	2	L	G	2		X						Tag requirement waived	MGC-9907-TW33	7-27-99 1110	BYQ 52	GVG	—
MBTC 82						X							9907-TW34	1100	53	GVG	—
MBTC 83						X							9907-TW35	1115	54	GVG	—
MBTC 84						X							9907-TW36	1236	55	GVG	—
MBTC 85						X							9907-TW37	1203	56	GVG	—
MBTC 86						X							9907-TW38	1415	57	GVG	—
MBTC 87						X							9907-TW39	1440	58	GVG	—
MBTC 88						X							9907-TW40	1520	59	GVG	—
~~MBTC 89~~ (G6)																	
~~MQ~~ (G6)																	

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(N)	2 of 2	MBTC 69		

(cooler #2)

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/27/99 1900				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

MTG-3.400027

Cooler #2

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SNESTON	7/27/99	FedEx

Regional Information: NJD980769699

Sampler (Name): Gerald Gilliland

Airbill Number: 481172766 4

Non-Superfund Program

Sampler Signature: Gerald V. Gilliland

5. Ship To: Sentinel, Inc.
2800 Bob Wallace Ave.
Suite L3
Huntsville, AL 35805
ATTN: Beverly Kilgore

Site Name: Monroe Twp. GW Contamin.

City, State: Monroe Twp., NJ

Site Spill ID: MQ

3. Purpose: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO_3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not preserved

CLP Sample Numbers (from labels) i	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier MGC-	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample
MBTC89	2	L	G	2		X						Tag requirement waived	9907-TW41	7-27-99 1245	BYQ60	GVG	—
MBTC90						X							9907-TW42	1300	61	GVG	—
MBTC91						X							9907-TW43	1320	62	GVG	—
MBTC92						X							9907-TW44	1330	63	GVG	—
MBTC93						X							9907-TW45	1405	64	GVG	—
MBTC94						X							9907-TW46	1332	65	GVG	—
MBTC95						X							9907-TW47	1620	66	GVG	—
MBTC96						X							9907-TW48	1535	67	GVG	—
MBTC97						X							9907-TW49	1545	68	GVG	—
MBTC98						X							9907-TW50		69	GVG	—

GVG GVG GVG

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
N	1 of 2	MBTC 89		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald Gilliland (cooler #2)	1900 7/27/99				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

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EPA Form 9110-1

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

21-0:2:13 REV

MTG-3.400028

MTG-3.400029

Cooler #2

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/27/99	FedEx

Regional Information: NJD980769699

Sampler (Name): Gerald Gilliland

Airbill Number: 4811727664

Non-Superfund Program

Sampler Signature: Gerald V Gilliland

5. Ship To: Sentinel, Inc
2800 Bob Wallace Ave.
Suite L3
Huntsville, AL 35805
ATTN: Beverly Kilgore

Site Name: Monroe Twp GW Contamin.

City, State: Monroe Twp., NJ

Site Spill ID: MQ

3. Purpose*
Lead: [X] SF [ ] PRP [ ] ST [ ] FED
Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI
Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Fluoride	High only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
GVG ~~MBTC 99~~	~~2~~	~~L~~	~~G~~	~~2~~		~~X~~						~~Tag requirement waived~~	~~9907-TW51~~ MGC-	~~7-27-99~~	~~BYQ 70~~	~~GVG~~	~~—~~ GVG
MBTD00	2	L	G	2		X						Tag requirement waived	9907-TW52	7-27-99 1620	BYQ 71	GVG	D
MBTD01	↓	↓	↓	↓		X						↓	9907-TW53	↓ 1615	↓ 72	GVG	—
MBTD02	↓	↓	↓	↓		X						↓	9907-TW54	↓ 1635	↓ 73	GVG	—
MBTD03	↓	↓	↓	↓		X						↓	9907-TW55	↓ 1655	↓ 74	GVG	—
MBTD04	↓	↓	↓	↓		X						↓	9907-TW56	↓ 1730	↓ 75	GVG	—
MBTD05	↓	↓	↓	↓		X						↓	9907-TW57	↓ 1640	↓ 76	GVG	—
MBTD06	↓	↓	↓	↓		X						↓	9907-TW58	↓ 1650	↓ 77	GVG	—
~~MBTC99~~												↓	~~9907-TW50~~	↓ ~~1740~~	↓ ~~69~~	~~GVG~~	~~—~~ DK

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(Y)	2 of 2 (Cooler #2)	MBTC 89		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V Gilliland	7/27/99 1900				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1

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*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-13 REV

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DOVER, NJ (973) 366-1507
EDISON, NJ (732) 985-2300
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ORDER TAKEN	DATE	TIME 5:30	62790135

ORDERED BY	PHONE	DELIVER TO ☐ PICK UP ☐
DEPT	EXT	NAME
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ADDRESS 700 TUCKAHOO / RT 555		ADDRESS 2235 ROUTE 130
MONROE TWP, NJ		DAYTON, NJ
CHARGE		

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NO. OF BOXES _____

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TOTAL PCS. 2

REMARKS

Thomas M. Kystra 536 | | |

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ACCEPTED IN GOOD ORDER AND SUBJECT TO THE CONDITIONS AS SET FORTH ON REVERSE.

[signature] 7/27/99 1810 | | |

P/U SIGNATURE DATE TIME DEL. SIGNATURE DATE TIME

RFP No.:	PO No.:
4934	0003814

CHAIN OF CUSTODY RECORD

WESTON MANAGERS DESIGNERS/CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:	Preservative Box No.
1. Surface Water	1. HCl
2. Ground Water	2. HNO3
3. Leachate	3. Na2SO4
4. Rinsate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

MTG-3.400031

Sample Number MGC-	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS ION	COR	REAC	Full TCLP	OTHER
9907-TW19	7-27-99/1008	2	L	G	6											pH, chloride
9907-TW21	1011															
9907-TW24	1015															
9907-TW25	1030															
9907-TW26	1045															
9907-TW27	1057															
9907-TW28	1209															
9907-TW29	1230															
9907-TW30	1035															
9907-TW31	1107															
9907-TW33	1110															
9907-TW34	1100															
9907-TW35	1115															

Person Assuming Responsibility for Sample: Gerald Gilliland — Time: 1800 — Date (MM/DD/YY): 7/27/99

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
all	Gerald V. Gilliland	1810	7/27/99	DE EXPRESS	COURIER TO LSD

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION
In Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental Management, C.C. Johnson & Malhotra, P.C., and GRB Environmental Services, Inc.

RFP No.:	CHAIN OF CUSTODY RECORD	Matrix Box No.:	Preservative Box No.:
4934	WESTON MANAGERS DESIGNERS/CONSULTANTS	1. Surface Water	1. HCl
PO No.:		2. Ground Water	2. HNO3
0003814	SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM	3. Leachate	3. Na2SO4
	EPA CONTRACT 68-W5-0019	4. Rinsate	4. H2SO4
	Phone: 908-225-6116 Fax: 908-225-7037	5. Soil/Sediment	5. Other (Specify)
		6. Oil	6. Ice Only
		7. Waste	N. Not Preserved
		8. Other (Specify)	

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number MGC-	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #s)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS IGN	COR	REAC	Full TCLP	OTHER
9907-TW36	7-27-99/1236	2	L	G	6											pH, chloride
9907-TW37	1203															
9907-TW38	1415															
9907-TW39	1440															
9907-TW40	1520															
9907-TW41	1245															
9907-TW42	1300															
9907-TW43	1320															
9907-TW44	1330															
9907-TW45	1405															
9907-TW46	1332															
9907-TW47	1620															
9907-TW48	1535															

Person Assuming Responsibility for Sample:	Time	Date (MM/DD/YY)
Gerald Gilliland	1800	7/27/99

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
all	Gerald V. Gilliland	1810	7/27/99	Thomas M. Kyster DC EXPRESS	COURIER TO LAB
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Cust

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION
In Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental Management,

RFP No.:	PO No.:
4934	0003814

CHAIN OF CUSTODY RECORD

WESTON MANAGERS DESIGNERS/CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:	Preservative Box No.
1. Surface Water	1. HCl
2. Ground Water	2. HN03
3. Leachate	3. Na2SO4
4. Rinsate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

MTG-3.400033

Sample Number MGC-	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #s)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS IGN	COR	REAC	Full TCLP	OTHER
9907-TW49	7-27-99/1545	2	L	G	6											pH, chlorid
~~9907-TW50~~																
~~9907-TW51~~																
~~9907-TW52~~																
9907-TW53	1615															
9907-TW54	1635															
9907-TW55	1655															
9907-TW56	1730															
9907-TW57	1640															
9907-TW58	1650															

Person Assuming Responsibility for Sample:	Time	Date (MM/DD/YY)
Gerald Gilliland	1800	7/27/99

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
all	Gerald V. Gilliland	1810	7/27/99	DC EXPRESS	COURIER TO LAB

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/28/99	FedEx

Regional Information: NJD980769699

Sampler (Name): Gerald Gilliland

Airbill Number: 481172767 5

Non-Superfund Program

Sampler Signature: Gerald Gilliland

Site Name: Monroe Twp. GW Contamin.

City, State: Monroe Twp., NJ

Site Spill ID: MQ

3. Purpose*

Lead: [X] SF [ ] PRP [ ] ST [ ] FED

Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI

Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

5. Ship To

Mitkem Corporation
175 Metro Center Blvd
Warwick, RI 02886

ATTN: Kin Chiu

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. Other (Specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp. Grab	D Preservative (from Box 7) Other:	E RAS Analysis VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
BWX49	4	L	G	1	X				Tag requirement waived	MGC-9907-TB03	7-28-99/0915	—	GVG	B
BYQ70	2				X					9907-TW51	1117	MBTC 99	GVG	—
BYQ78					X					9907-TW59	1120	MBTD 07	GVG	—
BYQ79					X					9907-TW60	1150	08	GVG	—
BYQ80					X					9907-TW61	1215	09	GVG	—
BYQ81					X					9907-TW62	1159	10	GVG	—
BYQ82					X					9907-TW63	1300	11	GVG	—
BYQ83					X					9907-TW64	1244	12	GVG	—
BYQ84					X					9907-TW65	1439	13	GVG	—
BYQ85					X					9907-TW66	1140	14	GVG	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
	1 of 3	BYQ80, BYR00		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald Gilliland	7/28/99 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Blue - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-15 REV.

MTG-3.400034

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/28/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	Gerald Gilliland	481172675

Non-Superfund Program	Sampler Signature	5. Ship To
	Gerald Gilliland	Nitkem Corporation 175 Metro Center Blvd. Warwick, RI 02886 ATTN: Kin Chiu

Site Name	City, State	Site Spill ID
Monroe Twp. GW Contamin.	Monroe Twp., NJ	MQ

3. Purpose* — Lead: [X] SF [ ] PRP [ ] ST [ ] FED
Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI
Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. Other (Specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis: VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Performance Eval. — = Not a QC Sample)
BYQ86	2	L	G	1	X				Tag requirement waived	MGC-9907-TW67	7-28-99/1145	MBTD 15	GVG	—
BYQ87					X					9907-TW68	1215	16	GVG	—
BYQ88					X					9907-TW69	1245	17	GVG	—
BYQ89					X					9907-TW70	1519	18	GVG	—
BYQ90					X					9907-TW71	1640	19	GVG	—
BYQ91					X					9907-TW72	1159	20	GVG	D
BYQ92					X					9907-TW73	1510	21	GVG	—
BYQ93					X					9907-TW74	1540	22	GVG	—
BYQ94					X					9907-TW75	1535	23	GVG	—
BYQ95					X					9907-TW76	1550	24	GVG	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(N)	2 of 3	BYQ80, BYR00		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald Gilliland	7/28/99 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Blue - Region Copy; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2 (2/98)

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*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-15 REV.

MTG-3.400035

EPA United States Environmental Protection Agency
Contract Laboratory Program

Organic Traffic Report & Chain of Custody Record
(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/28/99	Fed Ex

Regional Information: NJD980769699

Sampler (Name): Gerald Gilliland

Airbill Number: 4811727675

Non-Superfund Program

Sampler Signature: Gerald V. Gilliland

5. Ship To: Mitkem Corporation, 175 Metro Center Blvd, Warwick, RI 02886

ATTN: Kin Chiu

Site Name: Monroe Twp. GW Contamin

City, State: Monroe Twp. NJ

Site Spill ID: MQ

3. Purpose*: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. Other (Specify in Column D) N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E RAS Analysis VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
BYQ96	2	L	G	1	X				Tag requirement waived	MBC-9907-TW77	7-28-99/1740	MBTD 25	GVG	—
GVG ~~BYQ97~~										~~9907-TW78~~			GVG	
BYQ98					X					9907-TW79	1615	MBTD 27	GVG	—
GVG ~~BYQ99~~										~~9907-TW80~~			GVG	
BYR00					X					9907-TW81	1615	MBTD 29	GVG	—
BYR01					X					9907-TW82	1708	30	GVG	—
BYR11					X					9907-TW92	1715	40	GVG	D

GVG

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
	3 of 3	BYQ80, BYR00		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/28/99 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Blue - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-15 REV

MTG-3.400036

Cooler 1

EPA United States Environmental Protection Agency
Contract Laboratory Program

Inorganic Traffic Report & Chain of Custody Record
(For Inorganic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/28/99	Fed Ex

Regional Information: NJD980769699

Sampler (Name): Gerald Gilliland

Airbill Number: 4811727686

Non-Superfund Program

Sampler Signature: Gerald V. Gilliland

Site Name: Monroe Twp. GW Contamin.

City, State: Monroe Twp., NJ

Site Spill ID: MQ

3. Purpose*: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

5. Ship To: Sentinel, Inc. 2800 Bob Wallace Ave. Suite L3 Huntsville, AL 35805
ATTN: Beverly Kilgore

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./Grab	D Preservative (from Box 7) Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Fluoride	High only: pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. – = Not a QC Sample)
MBTC 99	2	L	G	2		X						Tag requirement waived	MGC-9907-TW51	7-28-99/1117	BYQ 70	GVG	—
MBTD 07						X							9907-TW59	1120	78	GVG	—
MBTD 08						X							9907-TW60	1150	79	GVG	—
MBTD 09						X							9907-TW61	1215	80	GVG	—
MBTD 10						X							9907-TW62	1159	81	GVG	—
MBTD 11						X							9907-TW63	1300	82	GVG	—
MBTD 12						X							9907-TW64	1244	83	GVG	—
MBTD 13						X							9907-TW65	1439	84	GVG	—
MBTD 14						X							9907-TW66	1140	85	GVG	—
MBTD 15						X							9907-TW67	1145	86	GVG	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
	1 of 2 (cooler #1)	MBTD 09		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/28/99 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

MTG-3.400037

Cooler #1

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/28/99	FedEx

Regional Information: NJD980769699

Sampler (Name): Gerald Gilliland

Airbill Number: 481172768 6

Non-Superfund Program

Sampler Signature: Gerald V. Gilliland

Site Name: Monroe Twp. GW Contamin.

3. Purpose* — Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED; Early Action: [ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [ ] ESI; Long-Term Action: [ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD

City, State: Monroe Twp., NJ

Site Spill ID: MQ

5. Ship To: Sentinel, Inc.
2800 Bob Wallace Ave.
Suite L3
Huntsville, AL 35805
ATTN: Beverly Kilgore

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
MBTD16	2	L	G	2		X						Tag requirement waived	MGC-9907-TW68	7-28-99 1215	BYQ87	GVG	—
MBTD17						X							9907-TW69	1245	88	GVG	—
MBTD18						X							9907-TW70	1519	89	GVG	—
MBTD19						X							9907-TW71	1640	90	GVG	—
MBTD20						X							9907-TW72	1159	91	GVG	D

GVG

Shipment for Case Complete? (Y/N): N

Page: 2 of 2

Sample(s) to be Used for Laboratory QC: MBTD09

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

(Cooler #1)

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V. Gilliland	7/28/99 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

DISTRIBU... Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to C...SS

EPA Form 9110-1 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INS...CTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITION

MTG-3.400038

Cooler #2

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/28/99	Fed Ex

Regional Information: NJD980769699

Sampler (Name): Gerald Gilliland

Airbill Number: 481172768 6

Non-Superfund Program

Sampler Signature: Gerald V Gilliland

Site Name: Monroe Twp. GW Contamin.

City, State: Monroe Twp., NJ

Site Spill ID: MQ

3. Purpose*
- Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED
- Early Action: [ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [ ] ESI
- Long-Term Action: [ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD

5. Ship To
Sentinel, Inc.
2800 Bob Wallace Ave
Suite L3
Huntsville, AL 35805
ATTN: Beverly Kilgore

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform. Eval., – = Not a QC Sample)
MBTD 21	2	L	G	2		X						Tag requirement waived	MGC-9907-TW73	7-28-99/1510	BYQ 92	GVG	–
MBTD 22						X							9907-TW74	1540	93	GVG	–
MBTD 23						X							9907-TW75	1535	94	GVG	–
MBTD 24						X							9907-TW76	1550	95	GVG	–
MBTD 27						X							9907-TW79	1615	98	GVG	–
MBTD 29						X							9907-TW81	1615	BYR 00	GVG	–
MBTD 30						X							9907-TW82	1708	01	GVG	–
MBTD 40						X							9907-TW92	1715	11	GVG	D
MBTD 25	2	L	G	2		X							9907-TW77	1740	BYQ 96	GVG	–

Shipment for Case Complete? (Y/N): N

Page: 1 of 1

Sample(s) to be Used for Laboratory QC: MBTD 29

Additional Sampler Signatures:

Chain of Custody Seal Number(s):

(Cooler #2)

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Gerald V Gilliland	7/28/99 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (2/90)

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*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

REV. 2.0 (2/90)

MTG-3.400039

CHAIN OF CUSTODY RECORD

RFP No.: 4934

PO No.: 0003814

WESTON MANAGERS DESIGNERS/CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:	Preservative Box No.:
1. Surface Water	1. HCl
2. Ground Water	2. HN03
3. Leachate	3. Na2SO4
4. Rinsate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number MGC-	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #s)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS ION	COR	REAC	Full TCLP	OTHER
9907-TW51	7-28-99/ 1117	2	L	G	6											pH, chlorides
9907-TW59	1120															
9907-TW60	1150															
9907-TW61	1215															
9907-TW62	1159															
9907-TW63	1300															
9907-TW64	1244															
9907-TW65	1439															
9907-TW66	1140															
9907-TW67	1145															
9907-TW68	1215															
9907-TW69	1245															
9907-TW70	1519															

Person Assuming Responsibility for Sample: Gerald Gilliland — Time: 2000 — Date (MM/DD/YY): 7/28/99

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
all	Gerald V Gilliland	2000	7/28/99		transfer to lab

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION

RFP No.:	CHAIN OF CUSTODY RECORD	Matrix Box No.:	Preservative Box No
4934		1. Surface Water	1. HCl
PO No.:		2. Ground Water	2. HNO3
0003814		3. Leachate	3. Na2SO4
		4. Rinsate	4. H2SO4
		5. Soil/Sediment	5. Other (Specify)
		6. Oil	6. Ice Only
		7. Waste	N. Not Preserved
		8. Other (Specify)	

WESTON. MANAGERS DESIGNERS/CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

MTG-3.400041 -

Sample Number MGC-	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS IGN	COR	REAC	Full TCLP	OTHER
9907-TW71	7-28-99/ 1640	2	L	G	6											pH, chlorides
9907-TW73	1510															
9907-TW74	1540															
9907-TW75	1535															
9907-TW76	1550															
9907-TW77	1740															
9907-TW78	1815															
9907-TW79	1615															
9907-TW80	1745															
9907-TW81	1615															
9907-TW82	1708															
9907-TW83	1800															
9907-TW84	1845															

Person Assuming Responsibility for Sample: Gerald Gilliland — Time: 2000 — Date (MM/DD/YY): 7/28/99

Sample Number	Relinquished By:	Time	Date	Received By	Reason for Change of Custody
all	Gerald V. Gilliland	2000	7/28/99		transfer to lab

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION
In Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental Management,

RFP No.: 4934

PO No.: 0003814

CHAIN OF CUSTODY RECORD

WESTON MANAGERS DESIGNERS/CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:	Preservative Box No.
1. Surface Water	1. HCl
2. Ground Water	2. HN03
3. Leachate	3. Na2SO4
4. Rinsate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number MGC -	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #s)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS ION	COR	REAC	Full TCLP	OTHER
9907-TW91	7/28/99/1944	2	L	G	6											pH, Chlorides

Person Assuming Responsibility for Sample: Gerald Gilliland — Time: 2000 — Date (MM/DD/YY): 7/28/99

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
all	[signature]	2000	7/28/99	[signature]	transfer to lab

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION

EPA Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/29/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	D. Minsavage	481172 7690

Non-Superfund Program	Sampler Signature	5. Ship To
	D. Minsavage	Mitkem Corporation. 175 Metro Center Blvd. Warwick, RI. 02886. ATTN: Kin Chiu.

Site Name	City, State	Site Spill ID
Monroe Twp. GW Contaminatio	Monroe Twp., NJ.	MQ

3. Purpose*: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (Specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaHSO4 4. H2SO4 5. Ice only 6. Other (Specify in Column D) N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp. Grab	D Preservative (from Box 7) Other:	E RAS Analysis: VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval. — = Not a QC Sample)
BYQ97	2	L	G	1	X				Tag requirement waived.	MGC-9907-TW8	7/29/99 / 1815	MBTD26	DM	—
BYQ99					X					-TW10	/ 1745	MBTD28	DM	—
BYR02					X					-TW13	/ 1800	MBTD31	DM	—
BYR03					X					-TW14	/ 1845	MBTD32	DM	—
BYR06					X					-TW17	/ 2015	MBTD35	DM	—
BYR07					X					-TW18	/ 2020	MBTD36	DM	—
BYR10					X					-TW21	/ ~~1915~~ 1944	MBTD40	DM	—
BYR04A (DM)					X					-TW15	7/29/99 / 1045	MBTD33	DM	—
BYR05					X					-TW16	/ 1115	MBTD34	DM	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	1 of	BYQ80*, BYR00*		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
D. Minsavage	7/29/99 / 12:00	FedEx			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Blue - Region Copy; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2 (2-98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

MTG-3.400043

A21-012-15 R

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/29/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	D. Minsavage	481172770 1

Non-Superfund Program	Sampler Signature	5. Ship To
	D. Minsavage	Sentinel, Inc 2800 Bob Wallace Ave. Suite L3 Huntsville, AL 35805 ATTN: Beverly Kilgore

Site Name	3. Purpose	Early Action	Long-Term Action
Monroe Twp GW Contamin.	Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED	[ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [ ] ESI	[ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD

City, State	Site Spill ID
Monroe Twp., NJ	MQ

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO_3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) / Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform. Eval., -- = Not a QC Sample)
MBTD26	2	L	G	2		X						Tag requirement waived	MGC-9907-TW26	7/28/99 / 1615	BYQ97	DM	—
MBTD28						X							-TW20	/ 1345	BYQ99	DM	—
MBTD31						X							-TW23	/ 1800	BYR02	DM	—
MBTD32						X							-TW24	/ 1645	BYR03	DM	—
MBTD35						X							-TW29	/ 2015	BYR06	DM	—
MBTD36						X							-TW28	/ 2020	BYR07	DM	—
MBTD40						X							-TW21	/ 1715	BYR11	DM	—
MBTD33						X							-TW25	7/29/99 / 1045	BYR04	DM	—
MBTD34						X							-TW26	/ 1115	BYR05	DM	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	1 of 1	MBTD09; MBTD29*		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
D. Minsavage	7/29/99 / 1200	FedEx.			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

DISTRIBU... Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to ...SS

EPA Form 9110-1 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INS...UCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIO

MTG-3.400044

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/29/99	FedEx

Regional Information: NJD980769699

Non-Superfund Program

Site Name: Marne Twp. GW. Contamination

City, State: Marne Twp., NJ.

Site Spill ID: MQ

Sampler (Name): D. Minsavage.

Sampler Signature: D. Minsavage.

Airbill Number: 4811727723

5. Ship To: Mitkem Corporation
175 Metro Center Blvd.
Warwick, RI 02886
ATTN: Kin Chiu.

3. Purpose*

Lead	Early Action	Long-Term Action
[X] SF	[ ] CLEM	[ ] FS
[ ] PRP	[ ] PA	[ ] RD
[ ] ST	[ ] REM	[ ] RA
[ ] FED	[ ] RI	[ ] O&M
	[ ] SI	[ ] NPLD
	[ ] ESI	

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. Other (Specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis VOA	BNA	Pest/ PCB	High only ARO/ TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
BYR08	2	L	G	1	X				Tag requirement waived	MGC-9901-TW08	7/29/99/1315	MBTD37	DM	—
BYR09					X					-TW90	/1425	MBTD38	DM	—
					X					-TW91	/		DM	collected previously
BYR12					X					-TW93	/1057	MBTD41	DM	—
BYR13					X					-TW94	/1133	MBTD42	DM	—
BYR14					X					-TW95	/1405	MBTD43	DM	—
BYR15					X					-TW96	/1105	MBTD44	DM	—
BYR16					X					-TW97	/1125	MBTD45	DM	—
BYR17					X					-TW98	/1205	MBTD46	DM	—
BYR18					X					-TW99	/1400	MBTD47	DM	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
N	1 of 2	BYR00*		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
D. Minsavage	7/29/99 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Blue - Region Copy; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-15 REV.

MTG-3.400045

EPA Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/29/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	D. Minsavage	481172772 3..

Non-Superfund Program	Sampler Signature	5. Ship To
	G. Minsavage.	Milkem Corporation 175 Metro Center Blvd. Warwick, RI 02886 ATTN: Kin Chiu

Site Name	3. Purpose	Early Action	Long-Term Action
Monroe Twp. GW. Contaminat.	Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED	[ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [ ] ESI	[ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD

City, State	Site Spill ID
Monroe Twp., NJ	MQ.

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (Specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO3
3. NaHSO4
4. H2SO4
5. Ice only
6. Other (Specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E RAS Analysis: VOA	BNA	Pest/PCB	High only ARO/ TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform Eval — = Not a QC Sample)
BYR20	2	L	G	1	X				Tag requirement waived	MGC-901-TW01	7/29/99 1745	MBTD49	DM	MS/MSD
BYX50	8	L	G	1	X				" " "	" " -TBM	" 0900	—	dM	B
BYR19	2	L	G	1	X				" " "	" " -TW100	" 1728	MBTDA8	DM	—

DM 7/29/99

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	2 of 2	BYR20		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
G. Minsavage.	7/29/99 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUT Blue - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INS CTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-15 REV.

MTG-3.400046

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.: 2	Sampling Co.: SWESTON	4. Date Shipped: 7/29/99	Carrier: FedEx
Regional Information: NJD980769699		Sampler (Name): D. Minsavage		Airbill Number: 481172734.	
Non-Superfund Program		Sampler Signature: D. Minsavage		5. Ship To: Sentinel, Inc. 2800 Bob Wallace Ave; Suite L3 Huntsville, AL 35805 ATTN: Beverly Kilgore	
Site Name: Monroe Twp. GW Contaminatio		3. Purpose*: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD			
City, State: Monroe Twp. NJ	Site Spill ID: MQ.				

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO_3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. — = Not a QC Sample)
MBTD37	2	L	G	2		X						Tag requirement waived	MGC-9907-TWBN	7/29/99/1315	BYR08	DM	—
MBTD38						X							-TW90	/1425	BYR09	DM	—
						X							-TW91	/		DM	collected previous
MBTD41						X							-TW93	/1057	BYR12	DM	—
MBTD42						X							-TW94	/1133	BYR13	DM	—
MBTD43						X							-TW95	/1405	BYR14	DM	—
MBTD44						X							-TW96	/1105	BYR15	DM	—
MBTD45						X							-TW97	/1125	BYR16	DM	—
MBTD46						X							-TW98	/1205	BYR17	DM	—
MBTD47						X							-TW99	/1400	BYR18	DM	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
Y	1 of 2	~~MBZ~~ MBTD29*		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
B. Minsavage	~~7/29/99 1915~~ /1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

MTG-3.400047

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/29/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	D. Minsavage	481172734

Non-Superfund Program	Sampler Signature	5. Ship To
	D. Minsavage	Sentinel, Inc. 2800 Bob Wallace Ave; Ste. L3 Huntsville, AL 35805 ATTN: Beverly Kilgore

Site Name	3. Purpose	Early Action	Long-Term Action
Monroe Twp. GW Contaminat.	Lead: [X] SF, [ ] PRP, [ ] ST, [ ] FED	[ ] CLEM, [ ] PA, [ ] REM, [ ] RI, [ ] SI, [ ] ESI	[ ] FS, [ ] RD, [ ] RA, [ ] O&M, [ ] NPLD

City, State	Site Spill ID
Monroe Twp., NJ	MQ

6. Matrix (Enter in Column A)
1. Surface Water
2. Ground Water
3. Leachate
4. Field QC
5. Soil/Sediment
6. Oil (High only)
7. Waste (High only)
8. Other (specify in Column A)

7. Preservative (Enter in Column D)
1. HCl
2. HNO_3
3. NaOH
4. H_2SO_4
5. $K_2CR_2O_7$
6. Ice only
7. Other (specify in Column D)
N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other:	B Conc.: Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) / Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only: NO_2/NO_3	Low only: Fluoride	High only: pH	High only: Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform. Eval., – = Not a QC Sample)
MBTD49	2	L	G	2		X						Tag requirement waived	MGC-9907-TW10	7/29/99 1745	BYR20	DM	MS/MSD
MBTD4B	2	L	G	2		X						"	-TW10D	/ 1728	BYR19	DM	—

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(N)	2 of 2	MBTD49		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
D. Minsavage	7/29/99 1915				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUT. Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-1 (2-88)

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*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

MTG-3.400048

RFP No.:	CHAIN OF CUSTODY RECORD	Matrix Box No.:	Preservative Box No.:
4934		1. Surface Water	1. HCl
PO No.:		2. Ground Water	2. HNO3
0003814		3. Leachate	3. Na2SO4
		4. Rinsate	4. H2SO4
		5. Soil/Sediment	5. Other (Specify)
		6. Oil	6. Ice Only
		7. Waste	N. Not Preserved
		8. Other (Specify)	

WESTON. MANAGERS DESIGNERS/CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

MTG-3.400049

Sample Number MGC-	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	ECRA ANALYSIS ION	COR	REAC	Full TCLP	OTHER
9907-TW87	07/28/99/2015	2	L	G	6											pH, Chlorides
-TW85	7/29/99/1045															
-TW86	/1115															
-TW89	/1315															
-TW90	/1425															
~~TW91~~	/															
-TW93	/1057															
-TW94	/1133															
-TW95	/1405															
-TW96	/1105															
-TW97	/1125															
-TW98	/1205															
-TW99	/1400															

Person Assuming Responsibility for Sample:	Time	Date (MM/DD/YY)
D. Minsavage		

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
all	D. Minsavage	1800	7/29/99		

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody

MTG-3.400050

CHAIN OF CUSTODY RECORD

RFP No.: 4934

PO No.: 0003814

WESTON. MANAGERS DESIGNERS/CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM
EPA CONTRACT 68-W5-0019
Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:	Preservative Box No
1. Surface Water	1. HCl
2. Ground Water	2. HN03
3. Leachate	3. Na2SO4
4. Rinsate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703
Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number MGC-	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	RAS ANALYSIS VOA	BNA	PEST	PCBs	TAL	CN	RCRA ANALYSIS IGN	COR	REAC	Full TCLP	OTHER
9907-TW100	7/29/99/1728	2	L	G	6											pH, chlorides.

Person Assuming Responsibility for Sample: D. Minsavage — Time — Date (MM/DD/YY)

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
all	D. Minsavage	1800	7/29/99		

Roy F. Weston, Inc.
FEDERAL PROGRAMS DIVISION
In association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental Management

EPA — Organic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Organic CLP Analysis)

Case No. 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/30/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	D. Minsavage	481172712

Non-Superfund Program	Sampler Signature	5. Ship To
	D. Minsavage	Milkem Corporation 175 Metro Center Blvd. Warwick, RI 02886 ATTN: Kin Chiu

Site Name: Monroe Twp. GW Contamination

City, State: Monroe Twp., NJ

Site Spill ID: MQ

3. Purpose: Lead: [X] SF [ ] PRP [ ] ST [ ] FED — Early Action: [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI — Long-Term Action: [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

6. Matrix (Enter in Column A): 1. Surface Water; 2. Ground Water; 3. Leachate; 4. Field QC; 5. Soil/Sediment; 6. Oil (High only); 7. Waste (High only); 8. Other (Specify in Column A)

7. Preservative (Enter in Column D): 1. HCl; 2. HNO3; 3. NaHSO4; 4. H2SO4; 5. Ice only; 6. Other (Specify in Column D); N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) / Other	B Conc.: Low Med High	C Sample Type: Comp. / Grab	D Preservative (from Box 7) / Other	E RAS Analysis: VOA	BNA	Pest/PCB	High only ARO/TOX	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/Year/Time Sample Collection	I Corresponding CLP Inorganic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank, S = Spike, D = Duplicate, R = Rinsate, PE = Perform Eval., — = Not a QC Sample)
BYR21	2	L	G	1	X				Tag requirement waived.	MGC-99057-TW102	7/30/99 / 0930	MBTD50	DM	—
BYR22					X					TW103	/ 1005	MBTD51	DM	—
BYR23					X					-TW104	/ 1110	MBTD52	DM	—
BYR24					X					-TW105	/ 1143	MBTD53	DM	—
BYR25					X					-TW106	/ 1110	MBTD54	DM	—
BYR26					X					-TW107	/ 1145	MBTD55	DM	—
BYR27					X					-TW108	/ 1150	MBTD56	DM	—
BYR31					X					-TW112	/ 0940	MBTD60	DM	D
BNX51	4				X					-TB05	/ 0845	—	DM	B

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(Y)	1 of 1	BYR20*		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
D. Minsavage	7/30/99 1250				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks Is custody seal intact? Y/N/none	

DISTRIBUTION: Blue - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CLASS

EPA Form 9110-2 (2/98)

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

A21-012-15 REV.

MTG-3.400051

EPA — Inorganic Traffic Report & Chain of Custody Record

United States Environmental Protection Agency
Contract Laboratory Program

(For Inorganic CLP Analysis)

Case No.: 27237

1. Project Code	Account Code	2. Region No.	Sampling Co.	4. Date Shipped	Carrier
		2	SWESTON	7/30/99	FedEx

Regional Information	Sampler (Name)	Airbill Number
NJD980769699	D. Minsavage	813458392924

Non-Superfund Program	Sampler Signature	5. Ship To
	D. Minsavage	Sentinel, Inc. 2800 Bob Wallace Ave; Ste L3. Huntsville, AL. 35805 ATTN: Beverly Kilgore

Site Name	City, State	Site Spill ID
Monroe Twp. GW Contamination	Monroe Twp., NJ	MQ

3. Purpose: Lead [X] SF [ ] PRP [ ] ST [ ] FED; Early Action [ ] CLEM [ ] PA [ ] REM [ ] RI [ ] SI [ ] ESI; Long-Term Action [ ] FS [ ] RD [ ] RA [ ] O&M [ ] NPLD

6. Matrix (Enter in Column A): 1. Surface Water 2. Ground Water 3. Leachate 4. Field QC 5. Soil/Sediment 6. Oil (High only) 7. Waste (High only) 8. Other (specify in Column A)

7. Preservative (Enter in Column D): 1. HCl 2. HNO3 3. NaOH 4. H_2SO_4 5. $K_2CR_2O_7$ 6. Ice only 7. Other (specify in Column D) N. Not preserved

CLP Sample Numbers (from labels)	A Matrix (from Box 6) Other:	B Conc. Low Med High	C Sample Type: Comp./ Grab	D Preservative (from Box 7) Other:	E – RAS Analysis: Diss. Metals	Total Metals	Cyanide	Low only NO_2/NO_3	Fluoride	High only pH	Conduct.	F Regional Specific Tracking Number or Tag Numbers	G Station Location Identifier	H Mo/Day/ Year/Time Sample Collection	I Corresponding CLP Organic Sample No.	J Sampler Initials	K Field QC Qualifier (B = Blank S = Spike D = Duplicate R = Rinsate PE = Perform. Eval. – = Not a QC Sample)
MBTD50	2	L	G	2		X						Tag requirement waived.	MCC-99107-TW102	7/30/99 0930	BYR21	DM	—
MBTD51						X							-TW103	1005	BYR22	DM	—
MBTD52						X							-TW104	1110	BYR23	DM	—
MBTD53						X							-TW105	1143	BYR24	DM	—
MBTD54						X							-TW106	1110	BYR25	DM	—
MBTD55						X							-TW107	1145	BYR26	DM	—
MBTD56						X							-TW108	1150	BYR27	DM	—
MBTD60						X							-TW112	0940	BYR31	DM	D

Shipment for Case Complete? (Y/N)	Page	Sample(s) to be Used for Laboratory QC	Additional Sampler Signatures	Chain of Custody Seal Number(s)
(Y) N	1 of 1	MBTD49*		

CHAIN OF CUSTODY RECORD

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
D. Minsavage	7/30/99 1250	FedEx			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks: Is custody seal intact? Y/N/none	

DISTRIBUTION: Green - Region Copy; White - Lab Copy for Return to Region; Pink - CLASS Copy; Yellow - Lab Copy for Return to CL.

EPA Form 9110-1

SEE REVERSE FOR ADDITIONAL STANDARD INSTRUCTIONS
*SEE REVERSE FOR PURPOSE CODE DEFINITIONS

421-012-13 REV

MTG-3.400052

ATTACHMENT 2

FEDEX AIR BILLS

FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 4811727620

2266N 4811727620

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-8646-7 | Date: 7/26/99

From (Your Name) Please Print: Geo H V. Gilliland | Your Phone Number (Very Important): (~~908~~) 225-6116

Company: ROY F WESTON INC | Department/Floor No.:

Street Address: 1090 KING GEORGES POST RD #201

City: EDISON | State: NJ | ZIP Required: 08837

2 To (Recipient's Name) Please Print: Kin Chia | Recipient's Phone Number (Very Important): (401) 732-3400

Company: Mitkem Corporation | Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 175 Metro Center Blvd

City: Warwick | State: RI | ZIP Required: 02886

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 20086131002

H IF HOLD FOR PICK-UP, Print FEDEX Address Here: Street Address | City | State | ZIP Required

3 PAYMENT: 1 [ ] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [x] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check Acct./Credit Card No. 154581227 Exp. Date

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
- 11 [x] YOUR PACKAGING
- 16 [ ] FEDEX LETTER*
- 12 [ ] FEDEX PAK*
- 13 [ ] FEDEX BOX
- 14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon. No Saturday delivery†)
- 51 [ ] YOUR PACKAGING
- 56 [ ] FEDEX LETTER*
- 52 [ ] FEDEX PAK*
- 53 [ ] FEDEX BOX
- 54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
- 30 [ ] ECONOMY

Government Overnight (Restricted for authorized users only)
- 46 [ ] GOV'T LETTER
- 41 [ ] GOV'T PACKAGE

Freight Service (for packages over 150 lbs.)
- 70 [ ] OVERNIGHT FREIGHT** (Confirmed reservation required)
- 80 [ ] TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas. *Declared Value Limit $500. **Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 [ ] HOLD FOR PICK-UP (Fill in Box H)
- 2 [x] DELIVER WEEKDAY
- 3 DELIVER SATURDAY (Extra charge) [ ] (Not available to all locations)
- 4 [ ] DANGEROUS GOODS (Extra charge)
- 5 [ ]
- 6 [ ] DRY ICE _____ lbs
- 7 [ ] OTHER SPECIAL SERVICE
- 8 [ ]
- 9 [ ] SATURDAY PICK-UP (Extra charge)
- 10 [ ]
- 12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
1	46	
Total 1	Total 46	Total

DIM SHIPMENT (Chargeable Weight) [ ] _____ lbs.

L x W x H

Received At: 1 [ ] Regular Stop 2 [ ] On Call Stop 3 [ ] Drop Box 4 [ ] B.S.C. 5 [x] Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information. Service conditions may vary for Government Overnight Service. See U.S. Government Service Guide for details.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $500.00.

In the event of untimely delivery, Federal Express will at your request and with some limitations refund all transportation charges paid. See Service Guide for further information.

7 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature: _____

Federal Express Use
- Base Charges
- Declared Value Charge
- Other 1
- Other 2
- Total Charges

REVISION DATE 2/92
PART #137204 NCREC 5/92
FORMAT #126
126
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MTG-3.400055

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QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

4811727631

2266N 4811727631

SENDER'S COPY

SENDER'S COPY

AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-8646-7

Date: 7/26/99

From (Your Name) Please Print: Gerald V. Gilliland

Your Phone Number (Very Important): (908)-225-6116

Company: ROY F WESTON INC

Department/Floor No.:

Street Address: 1090 KING GEORGES POST RD #201

City: EDISON

State:

ZIP Required:

2 To (Recipient's Name) Please Print: Beverly Kilgore

Recipient's Phone Number (Very Important): (256) 5[illegible]-1805

Company: Sentinel Inc.

Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2805 Bob Wallace Ave Suite 63

City:

State:

ZIP Required: 805

Description: 8057 7912 4257 Form I.D. No. 0260 of

Description: 8057 7912 4246 Form I.D. No. 0260 of

Description: 8057 7912 4235 Form I.D. No. 0260 of

Description: 8057 7912 4224 Form I.D. No. 0260 of

Shipment Date: 2 of 2

Master Airbill Number: 8057 7912 4213 Form I.D. No. 0260

Description:

Domestic Multiple Package Shipment Labels

• After completion, the MPS Sender copy (pink) is given to the sender.

• The self-adhesive MPS copy is attached to the back of the Recipient Copy of the master airbill for Domestic shipments.

FedEx

Federal Express Use

Charges

Declared Value Charge

Charges

VISION DATE 2/92
IT #137204 NCREC 6/92
MAT #126

26

FREIGHT** (Confirmed reservation required)

Delivery commitment may be later in some areas

FREIGHT**

*Declared Value Limit $500
**Call for delivery schedule

12 HOLIDAY DELIVERY (If offered) (Extra charge)

1 Regular Stop
2 On-Call Stop
3 Drop Box
4 B.S.C.
5 Station

7 Release Signature:

Harmless Federal Express from any claims resulting therefrom.

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MTG-3.400056

FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 4811727653

2266N 4811727653

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-8646-7
Date: 7/27/99

From (Your Name) Please Print: Gerald Gilliland
Your Phone Number (Very Important): (908) 225-6116
Company: ROY F WESTON INC
Department/Floor No.:
Street Address: 1090 KING GEORGES POST RD #201
City: EDISON State: NJ ZIP Required: 08837

2 To (Recipient's Name) Please Print: Kin Chiu
Recipient's Phone Number (Very Important): (401) 732-3100
Company: Mitchell Corporation
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 175 Metro Center Blvd
City: Warwick State: RI ZIP Required: 02886

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 20086131002485802

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City: State: ZIP Required:

3 PAYMENT: 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☑ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check
Acct./Credit Card No.: 154581227 Exp. Date: /

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
11 ☑ YOUR PACKAGING
16 ☐ FEDEX LETTER*
12 ☐ FEDEX PAK*
13 ☐ FEDEX BOX
14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon. No Saturday delivery†)
51 ☐ YOUR PACKAGING
56 ☐ FEDEX LETTER*
52 ☐ FEDEX PAK*
53 ☐ FEDEX BOX
54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
30 ☐ ECONOMY

Government Overnight (Restricted for authorized users only)
46 ☐ GOV'T LETTER
41 ☐ GOV'T PACKAGE

Freight Service (for packages over 150 lbs.)
70 ☐ OVERNIGHT FREIGHT** (Confirmed reservation required)
80 ☐ TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas
*Declared Value Limit $500.
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☑ DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) (Not available to all locations) ☐
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐
6 ☐ DRY ICE _____ Lbs
7 ☐ OTHER SPECIAL SERVICE
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
☐
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total	Total	Total

DIM SHIPMENT (Chargeable Weight)
☐ _____ lbs.
L x W x H

Received At
1 ☐ Regular Stop 3 ☐ Drop Box
2 ☐ On-Call Stop 4 ☐ B.S.C. 5 ☐ Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information. Service conditions may vary for Government Overnight Service. See U.S. Government Service Guide for details.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $500.00.

In the event of untimely delivery, Federal Express will at your request and with some limitations refund all transportation charges paid. See Service Guide for further information.

7 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 2/92
PART #137204 NCREC 5/92
FORMAT #126
126
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FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 4811727664

2266N 4811727664

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-9646-7
Date: 7/27/99

From (Your Name) Please Print: Gerald Gilliland
Your Phone Number (Very Important): (908) 225-6116
Company: ROY F WESTON INC
Department/Floor No.:
Street Address: 1090 KING GEORGE POST RD #201
City: EDISON State: NJ ZIP Required: 08837

2 To (Recipient's Name) Please Print: Beverly Kilgore
Recipient's Phone Number (Very Important): (256) 571-9800
Company: Sentinel, Inc.
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2800 Bob Wallace Ave, Suite L3
City: Huntsville State: AL ZIP Required: 35805

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 20086131002485800

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City: State: ZIP Required:

3 PAYMENT: 1 [ ] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [x] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check
Acct./Credit Card No.: 154581227 Exp. Date: 1

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
11 [x] YOUR PACKAGING
16 [ ] FEDEX LETTER*
12 [ ] FEDEX PAK*
13 [ ] FEDEX BOX
14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon No Saturday delivery†)
51 [ ] YOUR PACKAGING
56 [ ] FEDEX LETTER*
52 [ ] FEDEX PAK*
53 [ ] FEDEX BOX
54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
30 [ ] ECONOMY

Government Overnight (Restricted for authorized users only)
46 [ ] GOV'T LETTER
41 [ ] GOV'T PACKAGE

Freight Service (for packages over 150 lbs.)
70 [ ] OVERNIGHT FREIGHT** (Confirmed reservation required)
80 [ ] TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas
*Declared Value Limit $500
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [x] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) (Not available to all locations) [ ]
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE _____ Lbs.
7 [ ] OTHER SPECIAL SERVICE
8 [ ]

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total 2	Total 190	Total 190

DIM SHIPMENT (Chargeable Weight) [ ] _____ lbs.

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information. Service conditions may vary for Government Overnight Service. See U.S. Government Service Guide for details.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $500.00.

In the event of untimely delivery, Federal Express will at your ... with some limitations refund all transportation charges ... vice Guide for further information.

...rizes Federal Express to deliver this shipment without delivery signature and shall indemnify and hold ...deral Express from any claims resulting therefrom.

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 2/92
PART #137204 NCREC 5/92
FORMAT #126
126
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After completion, the MPS Sender copy (pink) is given to the sender.

FedEx.

Domestic Multiple Package Shipment Labels

Shipment Date 7/27/99 2 of 2
Master Airbill Number 4811727664
8110 7754 9623
Form ID No. 0260

MTG-3.400058

FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

4811727675

2266N 4811727675

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-8646-7

Date: 7/28/99

From (Your Name) Please Print: Gerald Gilliland

Your Phone Number (Very Important): (201) 225-6116

Company: ROY F WESTON INC

Department/Floor No.:

Street Address: 1090 KING GEORGES POST RD #201

City: EDISON State: NJ ZIP Required: 0 8 8 3 7

2 To (Recipient's Name) Please Print: Kin Chiu

Recipient's Phone Number (Very Important): (401) 732-3100

Company: Mitkem Corporation

Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 175 Metro Center Blvd.

City: Warwick State: RI ZIP Required: 02886

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)

20086131002485800

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address:

City: State: ZIP Required:

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☐ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check

Acct./Credit Card No.: Exp. Date: /

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
- 11 ☒ YOUR PACKAGING
- 16 ☐ FEDEX LETTER*
- 12 ☐ FEDEX PAK*
- 13 ☐ FEDEX BOX
- 14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon; for Saturday delivery†)
- 51 ☐ YOUR PACKAGING
- 56 ☐ FEDEX LETTER*
- 52 ☐ FEDEX PAK*
- 53 ☐ FEDEX BOX
- 54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day†)
- 30 ☐ ECONOMY

Government Overnight (Restricted for authorized users only)
- 46 ☐ GOVT LETTER
- 41 ☐ GOVT PACKAGE

Freight Service (for pkgs. over 150 lbs.)
- 70 ☐ OVERNIGHT FREIGHT** (Confirmed reservation required)
- 80 ☐ TWO-DAY FREIGHT**

†Delivery commitment may be later in some areas. *Declared Value Limit $500. **Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 ☐ HOLD FOR PICK-UP (Fill in Box H)
- 2 ☒ DELIVER WEEKDAY
- 3 DELIVER SATURDAY (Extra charge) ☐ (Not available to all locations)
- 4 ☐ DANGEROUS GOODS (Extra charge)
- 5 ☐
- 6 ☐ DRY ICE ____ Lbs.
- 7 ☐ OTHER SPECIAL SERVICE
- 8 ☐
- 9 ☐ SATURDAY PICK-UP (Extra charge)
- 10 ☐
- ☐
- 12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total	Total	Total

DIM SHIPMENT (Chargeable Weight)
☐ ____ lbs.
L x W x H

Received At:
1 ☐ Regular Stop 3 ☐ Drop Box
2 ☐ On Call Stop 4 ☐ B.B.C.
5 ☐ Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

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We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $500.00.

In the event of untimely delivery, Federal Express will at your request and with some limitations refund all transportation charges paid. See Service Guide for further information.

7 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

Federal Express Use

Base Charges	
Declared Value Charge	
Other 1	
Other 2	
Total Charges	

REVISION DATE 2/92
PART #13704 NCREC 5/92
FORMAT #126
126
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MTG-3.400059

FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL
PACKAGE
TRACKING NUMBER

4811727686

2266N 4811727686

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-8646-7 Date: 7/28/99

From (Your Name) Please Print: Gerald Gilliland
Your Phone Number (Very Important): (~~615~~) 225-6116
Company: ROY F WESTON INC
Department/Floor No.:
Street Address: 1090 KING GEORGES POST RD #201
City: EDISON State: NJ ZIP Required: 08837

2 To (Recipient's Name) Please Print: Beverly Kilgore
Recipient's Phone Number (Very Important): (256) 544-1800
Company: Sentinel, Inc.
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2800 Bob Wallace Ave, Suite L3
City: Huntsville State: AL ZIP Required: 35805

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)
20086131002485800

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City: State: ZIP Required:

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☑ Bill 3rd Party FedEx Acct. No 4 ☐ Bill Credit Card
5 ☐ Cash/Check Acct./Credit Card No 151581227 Exp. Date 1

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning)
11 ☑ YOUR PACKAGING
16 ☐ FEDEX LETTER*
12 ☐ FEDEX PAK*
13 ☐ FEDEX BOX
14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon. No Saturday delivery.)
51 ☐ YOUR PACKAGING
56 ☐ FEDEX LETTER*
52 ☐ FEDEX PAK*
53 ☐ FEDEX BOX
54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day.)
30 ☐ ECONOMY

Government Overnight (Restricted for authorized users only)
46 ☐ GOVT LETTER
41 ☐ GOVT PACKAGE

Freight Service (For packages over 150 lbs.)
70 ☐ OVERNIGHT FREIGHT** (Confirmed reservation required)
80 ☐ TWO-DAY FREIGHT**
† Delivery commitment may be later in some areas
*Declared Value Limit $500
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☑ DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) (Not available to all locations) ☐
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐
6 ☐ DRY ICE ____ Lbs.
7 ☐ OTHER SPECIAL SERVICE
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
☐
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total	Total	Total

DIM SHIPMENT (Chargeable Weight)
☐ ____ lbs.
L x W x H

Received At
1 ☐ Regular Stop 3 ☐ Drop Box
4 ☐ B.S.C.

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

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Release

Federal Express Use
Base Charge
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 2/92
PART #137204 FACTEC 5/92
FORMAT #126
126
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After completion, the MPS Sender copy (pink) is given to the sender.

FedEx.

Domestic Multiple Package Shipment Labels

Shipment Date 7/28
Master
Airbill Number 8110 7754 9678

2 of 2

Form I.D. No. 0260

MTG-3.400060

FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 4811727701

2266N 4811727701

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-0646-7
Date: 9/29/92

From (Your Name) Please Print: D. [illegible]
Your Phone Number (Very Important): 800-225-6116
Company: ROY F WESTON INC
Department/Floor No.:
Street Address: 1090 KING GEORGES POST RD #201
City: EDISON State: NJ ZIP Required: 08837

2 To (Recipient's Name) Please Print: Beverly Kilgore
Recipient's Phone Number (Very Important): (256) 534-5800
Company: Sentinel, Inc.
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2800 Bob Wallace Avenue, Suite L3.
City: Huntsville State: AL ZIP Required: 35805.

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 20080131002485800

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City: State: ZIP Required:

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☒ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check
Acct./Credit Card No. 154581227 Exp. Date /

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
11 ☐ YOUR PACKAGING
16 ☐ FEDEX LETTER*
12 ☐ FEDEX PAK*
13 ☐ FEDEX BOX
14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon. No Saturday delivery†)
51 ☐ YOUR PACKAGING
56 ☐ FEDEX LETTER*
52 ☐ FEDEX PAK*
53 ☐ FEDEX BOX
54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
30 ☐ ECONOMY

Government Overnight (Restricted for authorized users only)
46 ☐ GOV'T LETTER
41 ☐ GOV'T PACKAGE

Freight Service (for packages over 150 lbs.)
70 ☐ OVERNIGHT FREIGHT** (Confirmed reservation required)
80 ☐ TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas
*Declared Value Limit $500
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☐ DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) ☐ (Not available to all locations)
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐
6 ☐ DRY ICE _____ Lbs
7 ☐ OTHER SPECIAL SERVICE
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
☐
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total	Total	Total

DIM SHIPMENT (Chargeable Weight) ☐ _____ lbs.
L x W x H

Received At
1 ☐ Regular Stop 3 ☐ Drop Box
2 ☐ On-Call Stop 4 ☐ B.S.C. 5 ☐ Station

SERVICE CONDITIONS, DECLARED VALUE, AND LIMIT OF LIABILITY

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In the event of untimely delivery, Federal Express will at your request and with some limitations refund all transportation charges paid. See Service Guide for further information.

7 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature:

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 2/92
PART #137204 NCREC 5/92
FORMAT #126
126
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SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 4811727690

2266N 4811727690

SENDER'S COPY

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-8646-7
Date: 7/24/99

From (Your Name) Please Print: D. Mossinger
Your Phone Number (Very Important): (902) 225-6116
Company: ROY F WESTON INC
Department/Floor No.:
Street Address: 1090 KING GEORGES POST RD #201
City: EDISON State: NJ ZIP Required: 08037

2 To (Recipient's Name) Please Print: Kim Clark
Recipient's Phone Number (Very Important): (401) 732-3400
Company: Mitchell Corporation
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 175 Metro Center Blvd
City: Warwick State: RI ZIP Required: 02886

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 20000131002485800

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City: State: ZIP Required:

3 PAYMENT 1 [ ] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [X] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check
Acct./Credit Card No. 154581227 Exp. Date /

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
11 [X] YOUR PACKAGING
16 [ ] FEDEX LETTER*
12 [ ] FEDEX PAK*
13 [ ] FEDEX BOX
14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon for Saturday delivery†)
51 [ ] YOUR PACKAGING
56 [ ] FEDEX LETTER*
52 [ ] FEDEX PAK*
53 [ ] FEDEX BOX
54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day†)
30 [ ] ECONOMY

Government Overnight (Restricted for authorized users only)
46 [ ] GOV'T LETTER
41 [ ] GOV'T PACKAGE

Freight Service (for packages over 150 lbs.)
70 [ ] OVERNIGHT FREIGHT** (Confirmed reservation required)
80 [ ] TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas
*Declared Value Limit $500
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [ ] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) [ ] (Not available to all locations)
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE ____ Lbs
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]
[ ]
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6 PACKAGES | WEIGHT In Pounds Only | YOUR DECLARED VALUE (See right)
Total | Total | Total

DIM SHIPMENT (Chargeable Weight) [ ] ____ lbs.
L x W x H

Received At
1 [ ] Regular Stop 3 [ ] Drop Box
2 [ ] On-Call Stop 4 [ ] B.S.C. 5 [ ] Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

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In the event of untimely delivery, Federal Express will at your request and with some limitations refund all transportation charges paid. See Service Guide for further information.

7 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.
Release Signature:

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 2/92
PART #137204 NCHEC 6/92
FORMAT #126
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FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 4811727723

2266N 4811727723

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-8646-7
Date: 7/-29/

From (Your Name) Please Print: [illegible]
Your Phone Number (Very Important): (800)225-6116
Company: ROY F WESTON INC
Department/Floor No.:
Street Address: 1090 KING GEORGES POST RD #201
City: EDISON State: NJ ZIP Required: 08837

2 To (Recipient's Name) Please Print: [illegible]
Recipient's Phone Number (Very Important): (401) 732-3400
Company: Mitsubishi Corporation
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 175 Metro Center Blvd.
City: Warwick State: RI ZIP Required: 02886

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 200FG131002485800

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City: State: ZIP Required:

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☒ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check
Acct./Credit Card No. 154581227 Exp. Date

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
11 ☒ YOUR PACKAGING
16 ☐ FEDEX LETTER*
12 ☐ FEDEX PAK*
13 ☐ FEDEX BOX
14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon. No Saturday delivery†)
51 ☐ YOUR PACKAGING
56 ☐ FEDEX LETTER*
52 ☐ FEDEX PAK*
53 ☐ FEDEX BOX
54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
30 ☐ ECONOMY

Government Overnight (Restricted for authorized users only)
46 ☐ GOV'T LETTER
41 ☐ GOV'T PACKAGE

Freight Service (for packages over 150 lbs.)
70 ☐ OVERNIGHT FREIGHT** (Confirmed reservation required)
80 ☐ TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas.
*Declared Value Limit $500.
**Call for delivery schedule

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 ☐ HOLD FOR PICK-UP (Fill in Box H)
2 ☐ DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) ☐ (Not available to all locations)
4 ☐ DANGEROUS GOODS (Extra charge)
5 ☐
6 ☐ DRY ICE _____ Lbs.
7 ☐ OTHER SPECIAL SERVICE
8 ☐
9 ☐ SATURDAY PICK-UP (Extra charge)
10 ☐
☐
12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6 PACKAGES | WEIGHT in Pounds Only | YOUR DECLARED VALUE (See right)
Total | Total | Total

DIM SHIPMENT (Chargeable Weight)
☐ _____ lbs.
L x W x H

Received At
1 ☐ Regular Stop 3 ☐ Drop Box
2 ☐ On-Call Stop 4 ☐ B.S.C.
5 ☐ Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

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Release Signature:

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 2/92
PART #137204 NCREC 5/92
FORMAT #126
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FEDERAL EXPRESS

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USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 4811727734

2266N 4811727734

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-8646-7
Date: 7/[illegible]

From (Your Name) Please Print: D. [illegible]
Your Phone Number (Very Important): (908)-225-6116
Company: ROY F WESTON INC
Department/Floor No.:
Street Address: 1090 KING GEORGES POST RD #201
City: EDISON State: NJ ZIP Required: 08837

2 To (Recipient's Name) Please Print: Beverly [illegible]
Recipient's Phone Number (Very Important): (256) 534-9800
Company: [illegible] Inc.
Department/Floor No.:
Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 2800 [illegible] Walker Ave, Suite 13
City: Huntsville State: AL ZIP Required: 35805

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.): 2008613100248580[illegible]

H IF HOLD FOR PICK-UP, Print FEDEX Address Here
Street Address:
City: State: ZIP Required:

3 PAYMENT 1 [ ] Bill Sender 2 [ ] Bill Recipient's FedEx Acct. No. 3 [X] Bill 3rd Party FedEx Acct. No. 4 [ ] Bill Credit Card 5 [ ] Cash/Check
Acct./Credit Card No.: 15458[illegible] Exp. Date: /

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
11 [X] YOUR PACKAGING
16 [ ] FEDEX LETTER*
12 [ ] FEDEX PAK*
13 [ ] FEDEX BOX
14 [ ] FEDEX TUBE

Standard Overnight (Delivery by next business afternoon. No Saturday delivery†)
51 [ ] YOUR PACKAGING
56 [ ] FEDEX LETTER*
52 [ ] FEDEX PAK*
53 [ ] FEDEX BOX
54 [ ] FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
30 [ ] ECONOMY

Government Overnight (Restricted for authorized users only)
46 [ ] GOV'T LETTER
41 [ ] GOV'T PACKAGE

Freight Service (for packages over 150 lbs.)
70 [ ] OVERNIGHT FREIGHT** (Confirmed reservation required)
80 [ ] TWO-DAY FREIGHT**

† Delivery commitment may be later in some areas
*Declared Value Limit $500
**Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)
1 [ ] HOLD FOR PICK-UP (Fill in Box H)
2 [ ] DELIVER WEEKDAY
3 DELIVER SATURDAY (Extra charge) (Not available to all locations) [ ]
4 [ ] DANGEROUS GOODS (Extra charge)
5 [ ]
6 [ ] DRY ICE _____ Lbs.
7 [ ] OTHER SPECIAL SERVICE
8 [ ]
9 [ ] SATURDAY PICK-UP (Extra charge)
10 [ ]
[ ]
12 [ ] HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
Total	Total	Total

DIM SHIPMENT (Chargeable Weight) [ ] _____ lbs.
L x W x H

Received At
1 [ ] Regular Stop 3 [ ] Drop Box
2 [ ] On Call Stop 4 [ ] B.B.C. 5 [ ] Station

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Release Signature:

Federal Express Use
Base Charges
Declared Value Charge
Other 1
Other 2
Total Charges

REVISION DATE 2/92
PART #137204 NCREC 5/92
FORMAT #126
126
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FedEx *USA Airbill* FedEx tracking Number 813458392924

Form I.D. No. 0200

1 From *Please print and press hard.*

Date 7/30/99 Sender's FedEx Account Number 1244-8646-7

Sender's Name D. Minsavage Phone (732) 225-6116

Company Roy F. Weston, Inc. - Region II - START.

Address 1090 King Georges Post Road; Suite 201 Dept./Floor/Suite/Room

City Edison State NJ ZIP 08837

2 Your Internal Billing Reference First 24 characters will appear on invoice. 200861310024858OO.

3 To

Recipient's Name Beverly Kilgore Phone (256) 534-9800

Company Sentinel, Inc.

Address 2800 Bob Wallace Avenue; Suite L3
We cannot deliver to P.O. boxes or P.O. ZIP codes. Dept./Floor/Suite/Room

To "HOLD" at FedEx location, print FedEx address here

City Huntsville State AL ZIP 35805

4a Express Package Service *Packages up to 150 lbs.* Delivery commitment may be later in some areas.

- [X] FedEx Priority Overnight — Next business morning
- [ ] FedEx Standard Overnight — Next business afternoon
- [ ] FedEx First Overnight — Earliest next business morning delivery to select locations
- [ ] FedEx 2Day* — Second business day
- [ ] FedEx Express Saver* — Third business day

* FedEx Letter Rate not available. Minimum charge: One-pound rate

4b Express Freight Service *Packages over 150 lbs.* Delivery commitment may be later in some areas.

- [ ] FedEx 1Day Freight* — Next business day
- [ ] FedEx 2Day Freight — Second business day
- [ ] FedEx 3Day Freight — Third business day

* Call for Confirmation: _____

5 Packaging * Declared value limit $500

- [ ] FedEx Letter*
- [ ] FedEx Pak*
- [X] Other Pkg. — Includes FedEx Box, FedEx Tube, and customer pkg.

6 Special Handling

- [X] Saturday Delivery — Available for FedEx Priority Overnight and FedEx 2Day to select ZIP codes
- [ ] Sunday Delivery — Available for FedEx Priority Overnight to select ZIP codes
- [ ] HOLD Weekday at FedEx Location — Not available with FedEx First Overnight
- [ ] HOLD Saturday at FedEx Location — Available for FedEx Priority Overnight and FedEx 2Day to select locations

Does this shipment contain dangerous goods? One box must be checked.

- [X] No
- [ ] Yes — As per attached Shipper's Declaration
- [ ] Yes — Shipper's Declaration not required
- [ ] Dry Ice — Dry Ice, 9, UN 1845 ____ x ____ kg

Dangerous Goods cannot be shipped in FedEx packaging

- [ ] Cargo Aircraft Only

7 Payment *Bill to:* Enter FedEx Acct. No. or Credit Card No. below.

- [ ] Sender — Acct. No. in Section 1 will be billed
- [ ] Recipient
- [X] Third Party
- [ ] Credit Card
- [ ] Cash/Check

FedEx Acct. No. / Credit Card No. 154581227 Exp. Date

Total Packages	Total Weight	Total Declared Value†	
1	5	$ .00	FedEx Use Only

†Our liability is limited to $100 unless you declare a higher value. See back for details.

8 Release Signature *Sign to authorize delivery without obtaining signature.*

By signing you authorize us to deliver this shipment without obtaining a signature and agree to indemnify and hold us harmless from any resulting claims.

360

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Questions? Call 1-800-Go-FedEx® (800-463-3339)
Visit our Web site at www.fedex.com

By using this Airbill you agree to the service conditions on the back of this Airbill and in our current Service Guide, including terms that limit our liability.

RETAIN THIS COPY FOR YOUR RECORDS

MTG-3.400065

FEDERAL EXPRESS

USE THIS AIRBILL FOR SHIPMENTS WITHIN THE CONTINENTAL U.S.A., ALASKA AND HAWAII.
USE THE INTERNATIONAL AIR WAYBILL FOR SHIPMENTS TO PUERTO RICO AND ALL NON U.S. LOCATIONS.
QUESTIONS? CALL 800-238-5355 TOLL FREE.

AIRBILL PACKAGE TRACKING NUMBER 4811727712

2266N 4811727712

SENDER'S COPY

SENDER'S COPY
DROP OFF YOUR PACKAGE AND SAVE

1 SENDER'S FEDERAL EXPRESS ACCOUNT NUMBER: 1244-8646-7

Date: 7/30/99

From (Your Name) Please Print: [illegible]

Your Phone Number (Very Important): 908-225-6116

Company: ROY F WESTON INC

Department/Floor No.:

Street Address: 1090 KING GEORGES POST RD #201

City: EDISON State: NJ ZIP Required: 0 8 8 3 7

2 To (Recipient's Name) Please Print: Kia Cline

Recipient's Phone Number (Very Important): (401) 732-3400

Company: Metcom Corporation

Department/Floor No.:

Exact Street Address (We Cannot Deliver to P.O. Boxes or P.O. Zip Codes.): 175 Metro Center Blvd.

City: Warwick State: RI ZIP Required: 02886

YOUR INTERNAL BILLING REFERENCE INFORMATION (optional) (First 24 characters will appear on invoice.)

[illegible]

H IF HOLD FOR PICK-UP, Print FEDEX Address Here

Street Address:

City: State: ZIP Required:

3 PAYMENT 1 ☐ Bill Sender 2 ☐ Bill Recipient's FedEx Acct. No. 3 ☒ Bill 3rd Party FedEx Acct. No. 4 ☐ Bill Credit Card 5 ☐ Cash/Check

Acct./Credit Card No.: 194831227 Exp. Date: /

4 SERVICES (Check only one box)

Priority Overnight (Delivery by next business morning†)
- 11 ☒ YOUR PACKAGING
- 16 ☐ FEDEX LETTER*
- 12 ☐ FEDEX PAK*
- 13 ☐ FEDEX BOX
- 14 ☐ FEDEX TUBE

Standard Overnight (Delivery by next business afternoon. No Saturday delivery†)
- 51 ☐ YOUR PACKAGING
- 56 ☐ FEDEX LETTER*
- 52 ☐ FEDEX PAK*
- 53 ☐ FEDEX BOX
- 54 ☐ FEDEX TUBE

Economy Two-Day (Delivery by second business day †)
- 30 ☐ ECONOMY

Government Overnight (Restricted for authorized users only)
- 46 ☐ GOVT LETTER
- 41 ☐ GOVT PACKAGE

Freight Service (for pkgs. over 150 lbs.)
- 70 ☐ OVERNIGHT FREIGHT** (Confirmed reservation required)
- 80 ☐ TWO-DAY FREIGHT**

†Delivery commitment may be later in some areas. *Declared Value Limit $500. **Call for delivery schedule.

5 DELIVERY AND SPECIAL HANDLING (Check services required)
- 1 ☐ HOLD FOR PICK-UP (Fill in Box H)
- 2 ☐ DELIVER WEEKDAY
- 3 DELIVER SATURDAY (Extra charge) ☒ (Not available to all locations)
- 4 ☐ DANGEROUS GOODS (Extra charge)
- 5 ☐
- 6 ☐ DRY ICE ____ Lbs.
- 7 ☐ OTHER SPECIAL SERVICE ____
- 8 ☐
- 9 ☐ SATURDAY PICK-UP (Extra charge)
- 10 ☐
- ☐
- 12 ☐ HOLIDAY DELIVERY (If offered) (Extra charge)

6

PACKAGES	WEIGHT In Pounds Only	YOUR DECLARED VALUE (See right)
1	[illegible]	
Total	Total [illegible]	Total

DIM SHIPMENT (Chargeable Weight) ☐ ____ lbs.

L ____ x W ____ x H ____

Received At
- 1 ☐ Regular Stop
- 2 ☐ On Call Stop
- 3 ☐ Drop Box
- 4 ☐ B.S.C.
- 5 ☐ Station

SERVICE CONDITIONS, DECLARED VALUE AND LIMIT OF LIABILITY

Use of this airbill constitutes your agreement to the service conditions in our current Service Guide, available upon request. See back of sender's copy of this airbill for information. Service conditions may vary for Government Overnight Service. See U.S. Government Service Guide for details.

We will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, and document your actual loss for a timely claim. Limitations found in the current Federal Express Service Guide apply. Your right to recover from Federal Express for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of $100 or the declared value specified to the left. Recovery cannot exceed actual documented loss. The maximum Declared Value for FedEx Letter and FedEx Pak packages is $500.00.

In the event of untimely delivery, Federal Express will at your request and with some limitations refund all transportation charges paid. See Service Guide for further information.

7 Sender authorizes Federal Express to deliver this shipment without obtaining a delivery signature and shall indemnify and hold harmless Federal Express from any claims resulting therefrom.

Release Signature: ____

Federal Express Use

Base Charges	
Declared Value Charge	
Other 1	
Other 2	
Total Charges	

REVISION DATE 2/92
PART #13204 NCHEC 6/92
FORMAT #126
126
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MTG-3.400066

Public Availability Session
for
Monroe Township Groundwater Investigation

A public availability session will be held on Thursday, October 7, 1999, regarding the Monroe Township Groundwater Investigation in Monroe Township, New Jersey. Representatives of the United States Environmental Protection Agency (EPA), the Agency for Toxic Substances and Disease Registry (ATSDR), and the Gloucester County Health Department will be available to answer questions about the ongoing investigation.

The hours of availability are:

2:00-4:00 p.m.
7:00-9:00 p.m.

Please feel free to drop by any time during the hours listed above.

The availability session will be held in the courtroom at the Monroe Township Courthouse, 125 Virginia Avenue, Williamstown, New Jersey.

If you have questions related to this announcement, please call EPA On-Scene Coordinators Jim Haklar (732-321-6730) or Chait Agnihotri (732-906-6908) or EPA Community Involvement Coordinator Pat Seppi (212-637-3679). For health-related questions, please contact Artie Block, ATSDR, (732-906-6931).

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

July 9, 1999

Dear Resident:

In response to information provided by the Gloucester County Health Department (GCHD), the U.S. Environmental Protection Agency (EPA), in cooperation with the New Jersey Department of Environmental Protection and GCHD, is planning to collect drinking water samples from wells in Monroe Township. EPA would like to sample your drinking water well as part of a sampling event that will begin on or about July 26, 1999.

In order to conduct this water sampling event, EPA must have access to your home to collect the sample and to examine your water supply. There is no cost for this activity and you will be provided with a copy of the sampling results.

Please fill out and sign the enclosed *Consent for Access to Property* agreement so that it can be picked up at your home by an EPA representative, who will be collecting agreements between July 19 and July 22, 1999. If you wish to mail your completed access form to EPA, please return it, as soon as possible, in the self-addressed, postage-paid envelope enclosed with this letter. Only the property owner(s) can sign this form. Please note that EPA will not conduct activities on any property unless the property owner or a delegated representative is available.

If you would like to discuss this matter further, please call me at (732) 321-6730 or Chait Agnihotri, EPA On-Scene Coordinator, at (732) 906-6908. Alternatively, you can also contact Dennis Munhall, the EPA Site Assessment Manager, at (212) 637-4343.

Sincerely,

James S. Haklar, Ph.D., P.E.
On-Scene Coordinator
Emergency and Remedial Response Division

Enclosure

NOTICE OF PUBLIC AVAILABILITY

The United States Environmental Protection Agency (EPA) announces the availability for public review of files comprising the administrative record for the selection of a removal action at the Monroe Township Groundwater Contamination Site, Monroe Township, Gloucester County, New Jersey. The EPA seeks to inform the public of the availability of the record file at the repositories specified below.

The administrative record file includes documents which form the basis for the selection of a removal action at this site. Documents now in the record file include but are not limited to: Site QA Project Plan, Health and Safety Plan for Integrated Assessment, Sampling Trip Report, laboratory results, and the Action Memorandum.

The administrative record files are available for review during normal business hours at:

Monroe Township Library
306 South Main Street
Williamstown, New Jersey 08094
(856) 629-1212

U.S. EPA - Region II
Removal Action Branch
2890 Woodbridge Avenue
Edison, New Jersey 08837
(732) 906-6908

Additional guidance documents and technical literature are available at the following location:

U.S. EPA - Region II
Removal Record Branch
2890 Woodbridge Avenue
Edison, New Jersey 08837
(732) 906-6980

Written comments on the administrative record should be sent to:

Chaitanya Agnihotri
On-Scene Coordinator
Removal Action Branch
U.S. EPA - Region II
2890 Woodbridge Avenue
Edison, New Jersey 08837

MONROE TOWNSHIP GROUNDWATER INVESTIGATION
FACT SHEET
September 24, 1999

This fact sheet is intended to provide the latest information to residents and local officials concerning the Environmental Protection Agency's (EPA) investigation of groundwater in Monroe Township, Gloucester County.

During the week of July 26, 1999, drinking water samples were collected from 100 private residences in Monroe Township that rely on groundwater as the source for drinking water. The water sampling was conducted by the EPA, in cooperation with the New Jersey Department of Environmental Protection (NJDEP) and the Gloucester County Health Department (GCHD), in response to information provided by GCHD. The samples were taken from three areas in the Township: Tuckahoe Road, Winslow Road and Black Horse Pike. The water samples were analyzed for volatile organic compounds and inorganic compounds, as well as chloride and pH.

On the basis of results received in September 1999, EPA determined that 15 private wells exceeded EPA's drinking water standards (called maximum contaminant levels or MCLs) for tetrachloroethylene (PCE), mercury, and benzene. Elevated levels of lead, copper, and thallium were found in several of the water samples. The source of the contamination is unknown at this time.

Based on these results, EPA has recommended that the people who use the previously mentioned 15 wells stop using this water for drinking purposes. As an interim measure, EPA is providing bottled water to these people. EPA is also working to design treatment systems which will be provided to these houses as a longer-term remedy.

EPA plans to hold a public availability session at the Monroe Township Courthouse on Thursday, October 7, 1999 from 2-4 p.m. and 7-9 p.m. This will be an informal session to provide representatives from GCHD, EPA and the Agency for Toxic Substances and Disease Registry (ATSDR) with an opportunity to address questions or concerns from the public.

For additional information, please contact EPA On-Scene Coordinators Jim Haklar (732-321-6730) or Chait Agnihotri (732-906-6908) or EPA Community Involvement Coordinator Pat Seppi (212-637-3679. For health related questions, please contact Artie Block (ATSDR) at (732) 906-6931.

EPA REGIONAL GUIDANCE DOCUMENTS MTG-11.200001

The following documents are available for public review at the EPA Region II Field Office, 2890 Woodbridge Avenue, Edison, New Jersey 08837 during regular business hours.

* Glossary of EPA Acronyms.

* Superfund Removal Procedures--Revision #3. OSWER Directive 9360.0-03B, February 1988.

* Hazardous Waste Operations and Emergency Response.
Notice of Proposed Rule making and Public Hearings.
29 CFR Part 1910, Monday, August 10, 1987.

* Guidance on Implementation of Revised Statutory Limits on Removal Action.
OSWER Directive 9260.0-12, May 25, 1988.

* Redelegation of Authority under CERCLA and SARA.
OSWER Directive 9012.10, May 25, 1988.

* Removal Cost Management Manual.
OSWER Directive 9360.0-02B, April, 1988.

* Field Standard Operating Procedures (FSOP).
#4 Site Entry.
#6 Work Zones.
#8 Air Surveillance.
#9 Site Safety Plan.

* Standard Operating Safety Guides -- U.S. EPA Office of Emergency and Remedial Response, July 5, 1988.

* CERCLA Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund).

* SARA: Superfund Amendments and Reauthorization Act of 1986.

* NCP: National Oil and Hazardous Substances Pollution Contingency Plan. - Publication No. 9200.2-14.

* Guidance on Implementation of the "Contribute to Efficient Remedial Performance" Provision - Publication No. 9360.0-13.

Additional Guidance Documents are listed below and are available for review at the EPA Region II Removal Records Center.

* The Role of Expedited Response Actions (EPA) Under SARA - Publication No. 9360.0-15.

* Guidance on Non-NPL Removal Actions Involving Nationally Significant or Precedent Setting Issues - Publication No. 9360.0-19.

MTG-11.200002

* ARARS During Removal Actions - Publication No. 9360.3-02.

* Consideration of ARARS During Removal Actions -Publication No. 9360.3-02FS.

* Public Participation for OSCs - Community Relations and the Administrative Record - Publication No.9360.3-05.

* Superfund Removal Procedures - Removal Enforcement Guidance for On-Scene Coordinators - Publication No. 9360.3-06.

* QA/QC for Removal Actions - Publication No. 9360.4-01.

* Compendium for ERT Air Sampling Procedures - Publication No. 9360.4-05.