

# **CORRECTIVE ACTION UNIT EVALUATION FOR ROCKET AREA WASTEWATER HOLDING LAGOONS (SSAs 22, 23, 24 and 25)**

**RFAAP, Radford Virginia**  
**RCRA Corrective Action Permit Number VA 1210020730**

**Prepared for:**

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**Prepared by:**

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Project #: 10-751

May, 2010



# **CORRECTIVE ACTION UNIT EVALUATION FOR ROCKET AREA WASTEWATER HOLDING LAGOONS (SSAs 22, 23, 24 and 25)**

## **1.0 EXECUTIVE SUMMARY**

As defined in the February 23, 2010 meeting between representatives of Radford Army Ammunition Plant (RFAAP) and US EPA Region III, specific Site Screening Areas (SSAs) would be grouped either programmatically or geographically to more effectively evaluate the criteria for their inclusion in the upcoming renewal of RCRA Corrective Action Permit VA 1210020730. The Units discussed herein are SSAs that serve as wastewater lagoons within the Rocket Area of the RFAAP Facility. They are designated as SSA 22, 23, 24 and 25.

All of the Units are not actively receiving storm water from the Rocket Area. Precipitation is the primary source for the water in the lagoons. As discussed below, the lagoons have never received wastewater from the Rocket Area. As these units have handled only stormwater, there is limited potential for the release of hazardous wastes from these units to soil, groundwater or surface water.

The water present in each lagoon, with the exception of SSA 25, where the depth of the lagoon was considered to be a confined space, was analyzed for the presence of lead. SSA 22 exceeded Virginia Surface Water Standards for waters that serve as public water supply. However, the depth of the lagoon (12 feet) and the chlorinated polyethylene liner prevent migration of the water to soil, groundwater or surface water.

Accordingly, as described below, it is appropriate to remove these units from further consideration under the Facility RCRA Corrective Action Permit.

## **2.0 INTRODUCTION AND BACKGROUND**

In accordance with the RCRA Corrective Action Permit VA 1210020730, the scope of this investigation has been determined by the RFAAP and the US EPA (the parties). See Part II – *Specific Facility Conditions* – Section D.7 below. The language in bold provides the regulatory basis for the scope of this investigation:

*“D- 7. Attachment A contains a list of thirty-one (31) identified Site Screening Areas (SSAs) which may pose a threat, or potential threat to human health and the environment. The Permittee shall submit to the EPA and the VDEQ SSP Work Plan(s) which shall outline the activities necessary to determine if there have been releases of hazardous substances, solid wastes, pollutants, contaminants, hazardous wastes, or hazardous constituents to the environment from the SSAs. **The scope of the SSPs shall be determined by the Parties.** The SSP Work Plans) shall include a proposed Deadline or Milestone for the submittal of an SSP Report(s)....”*

Each of the Units described in this report are located within the Rocket Area at the RFAAP Facility. **Figure 1 (see Attachment 1)** shows the locations of the wastewater lagoons. The lagoons were designed

to contain floor wash down water from the Rocket Manufacturing Area production buildings, and stormwater from the vicinity. The lagoons are lined with a chlorinated polyethylene liner to prevent infiltration into the soil and groundwater.

Operations records report that the lagoons were not routinely used, but acted as an emergency holding facility only in the event of fire suppression flow from the sprinkler systems in the adjacent buildings. The lagoons routinely collect stormwater, which evaporates and does not need removal. According to historical records, no wastewater was ever pumped into the lagoons from the surrounding buildings.

Originally it was proposed to sample any sediments present in the lagoons. No sediment was detected, therefore; in an abundance of caution, samples of the water present in the lagoons were collected on April 8, 2010. A sample was not collected from SSA 25 (the lagoon north of Building 4912-13 as the depth of the lagoon constituted a confined space entry).

The following presents a detailed description of the operational history of each of these units, and a rationale for their respective removal from the RCRA Corrective action Permit.

### **3.0 UNIT DESCRIPTION AND EVALUATION**

#### **3.1 SSA 22: WASTEWATER HOLDING LAGOON (EAST OF BUILDING 4912-19)**

The wastewater holding lagoon located east of Building 4912-19 was constructed in 1986 to contain floor wash down water (potentially contaminated with lead) from the Rocket Manufacturing Area production buildings, and storm water from the vicinity. The lagoon is approximately 30' long x 30' wide x 12' deep, and is lined with a chlorinated polyethylene liner to prevent infiltration into the soil and groundwater. The lagoon is physically located near active production Building 4912-19.

#### **Historical Information of Site**

1986-Present: Operations records report the lagoon is not routinely used, but is an emergency holding facility only, in the event of a fire suppression flow from the sprinkler system from surrounding buildings. In such instances, wastewater would be promptly pumped out of the lagoon into a tanker truck and delivered to the industrial wastewater treatment system. The lagoon routinely contains storm water, most of which evaporates and does not require removal.

#### **Spill / Cleanup Records of Site**

Rocket Area Supervision reported no knowledge of any spills that escaped the lagoon, nor cleanup actions performed at the lagoon.

#### **Historical Studies and Investigations Conducted at SSA-22**

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 69

## Migration Pathways Analysis

- ❖ Soil and Groundwater: The lagoon is lined with a chlorinated polyethylene liner. The liner is in good repair and exhibits no loss of integrity. No sediment is present within the lagoon. The lagoon liner prohibits the infiltration of water contained in the lagoon to soil and groundwater.
- ❖ Surface Water: Dissolved lead was present in the lagoon water at a concentration of 51.1 µg/L. This concentration is consistent with influence of naturally occurring soil from run-off. As described in the December 2001 *Facility Wide Background Study (IT Corporation)* for inorganic parameters (metals) the 95% Upper Confidence Level (UCL) for lead in surface soils is 17.9 mg/kg. The Virginia Water Quality Standard (February 2010) for lead in surface waters that supply public water systems is 15 µg/L. There is no evidence of connectivity between the lagoon and surface water. The depth of the lagoon prevents surface runoff of water from the lagoon, and the chlorinated polyethylene liner prevents infiltration to soil and groundwater. Evaporation is the primary mechanism for water loss from the lagoon.

## Basis for Removal from the RCRA Corrective Action Permit

This SSA should be removed from the RCRA Corrective Action Permit because there is no documentation or indication that any hazardous substances/wastes have been released to the environment at this facility. No further action or corrective action is warranted.

### 3.2 SSA 23: WASTEWATER HOLDING LAGOON (WEST OF BUILDING 4912-4)

The lagoon was constructed in 1986 to contain floor wash down water (potentially contaminated with nitroglycerin) from Rocket Manufacturing Area production buildings, and storm water from the vicinity. The lagoon is approximately 40' long x 40' wide x 12' deep, and is lined with a chlorinated polyethylene liner to prevent infiltration into the soil and groundwater. The lagoon is physically located near active production Building 4912-4.

## Historical Information of Site

1986-Present: Operations records report the lagoon is not routinely used, but is an emergency holding facility only, in the event of a fire suppression flow from the sprinkler system from surrounding buildings. In such instances, wastewater would be promptly pumped out of the lagoon into a tanker truck and delivered to the industrial wastewater treatment system. The lagoon routinely contains storm water, most of which evaporates and does not require removal.

## Spill / Cleanup Records of Site

Rocket Area Supervision reported no knowledge of any spills that escaped the lagoon, nor cleanup actions performed at the lagoon.

## Historical Studies and Investigations Conducted at SSA-23

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 69

## Migration Pathways Analysis

- ❖ Soil and Groundwater: The lagoon is lined with a chlorinated polyethylene liner. The liner is in good repair and exhibits no loss of integrity. No sediment is present within the lagoon. The lagoon liner prohibits the infiltration of water contained in the lagoon to soil and groundwater.
- ❖ Surface Water: Dissolved lead is present in the lagoon wastewater at a concentration of 13.4 µg/L. This concentration is consistent with influence of naturally occurring soil from run-off. As described in the December 2001 *Facility Wide Background Study (IT Corporation)* for inorganic parameters (metals) the 95% Upper Confidence Level (UCL) for lead in surface soils is 17.9 mg/kg. The Virginia Water Quality Standard (February 2010) for lead in surface waters that supply public water systems is 15 µg/L. There is no evidence of connectivity between the lagoon and surface water. The depth of the lagoon prevents surface runoff of water from the lagoon, and the chlorinated polyethylene liner prevents infiltration to soil and groundwater. Evaporation is the primary mechanism for water loss from the lagoon.

## Basis for Removal from the RCRA Corrective Action Permit

This SSA should be removed from the RCRA Corrective Action Permit because there is no documentation or indication that a reportable quantity of listed hazardous substances/wastes has been released to the environment at this facility. No further action or corrective action is warranted.

### 3.3 SSA 24: WASTEWATER HOLDING LAGOON (NORTH OF BUILDING 4912-10)

The lagoon was constructed in 1986 to contain floor wash down water (potentially contaminated with nitroglycerin) from Rocket Manufacturing Area production buildings, and storm water from the vicinity. The lagoon is approximately 25' long x 25' wide x 12' deep, and is lined with a chlorinated polyethylene liner to prevent infiltration into the soil and groundwater. The lagoon is physically located near production Building 4912-10, which is in standby status.

## Historical Information of Site

1986-Present: Operations records report the lagoon is not routinely used, but is an emergency holding facility only, in the event of a fire suppression flow from the sprinkler system from surrounding buildings. In such instances, wastewater would be promptly pumped out of the lagoon into a tanker truck and delivered to the industrial wastewater treatment system. The lagoon routinely contains storm water, most of which evaporates and does not require removal.

## Spill / Cleanup Records of Site

Rocket Area Supervision reported no knowledge of any spills that escaped the lagoon, nor cleanup actions performed at the lagoon.

## Historical Studies and Investigations Conducted at SSA-24

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 69

## Migration Pathways Analysis

- ❖ Soil and Groundwater: The lagoon is lined with a chlorinated polyethylene liner. The liner is in good repair and exhibits no loss of integrity. No sediment is present within the lagoon. The lagoon liner prohibits the infiltration of water contained in the lagoon to soil and groundwater.
- ❖ Surface Water: Dissolved lead was not present in the lagoon wastewater at detectable concentrations. There is no evidence of connectivity between the lagoon and surface water. The depth of the lagoon prevents surface runoff of water from the lagoon, and the chlorinated polyethylene liner prevents infiltration to soil and groundwater. Evaporation is the primary mechanism for water loss from the lagoon.

## Basis for Removal from the RCRA Corrective Action Permit

This SSA should be removed from the RCRA Corrective Action Permit because there is no documentation or indication that a reportable quantity of listed hazardous substances/wastes has been released to the environment at this facility. No further action or corrective action is warranted.

### 3.4 SSA 25: WASTEWATER HOLDING LAGOON (NORTH OF BUILDING 4912-13)

The lagoon was constructed in 1986 to contain floor wash down water from Rocket Manufacturing Area production buildings, and storm water from the vicinity. The lagoon is approximately 75' long x 75' wide x 20' deep, and is lined with a chlorinated polyethylene liner to prevent infiltration into the soil and groundwater. The lagoon is physically located near active production Building 4912-13.

## Historical Information of Site

1986-Present: Operations records report the lagoon is not routinely used, but is an emergency holding facility only, in the event of a fire suppression flow from the sprinkler system from surrounding buildings. In such instances, wastewater would be promptly pumped out of the lagoon into a tanker truck and delivered to the industrial wastewater treatment system. The lagoon routinely contains storm water, most of which evaporates and does not require removal.

## Spill / Cleanup Records of Site

Rocket Area Supervision reported no knowledge of any spills that escaped the lagoon, nor cleanup actions performed at the lagoon.

## Historical Studies and Investigations Conducted at SSA-66

- ❖ RCRA Facility Assessment of Radford Army Ammunition Plant; 1987; Prepared by A. T. Kearney for the Environmental Protection Agency; Section IV, page 69

## Migration Pathways Analysis

- ❖ Soil and Groundwater: The wastewater lagoon is lined with a chlorinated polyethylene liner. The liner is in good repair and shows no loss of integrity. The lagoon liner prohibits the infiltration of water contained in the lagoon to soil and groundwater. Due to the depth of the

lagoon, which was considered a confined space, no personnel entered the lagoon to determine if sediment was present.

- ❖ Surface Water: Water present in the lagoon was not sampled due to the depth of the lagoon, which was considered a confined space. Concentrations of lead in the water fraction are assumed to be within the range of non-detection to 50 µg/L. There is no evidence of connectivity between the lagoon and surface water. The depth of the lagoon prevents surface runoff of water from the lagoon. Evaporation is the primary mechanism for water loss from the lagoon.

### **Basis for Removal from the RCRA Corrective Action Permit**

This SSA should be removed from the RCRA Corrective Action Permit because there is no documentation or indication that a reportable quantity of listed hazardous substances/wastes has been released to the environment at this facility. No further action or corrective action is warranted.

**ATTACHMENT 1**

**FIGURES**



**ATTACHMENT 2**

**PHOTOGRAPHS**

**ATTACHMENT 3**

**LABORATORY RESULTS**

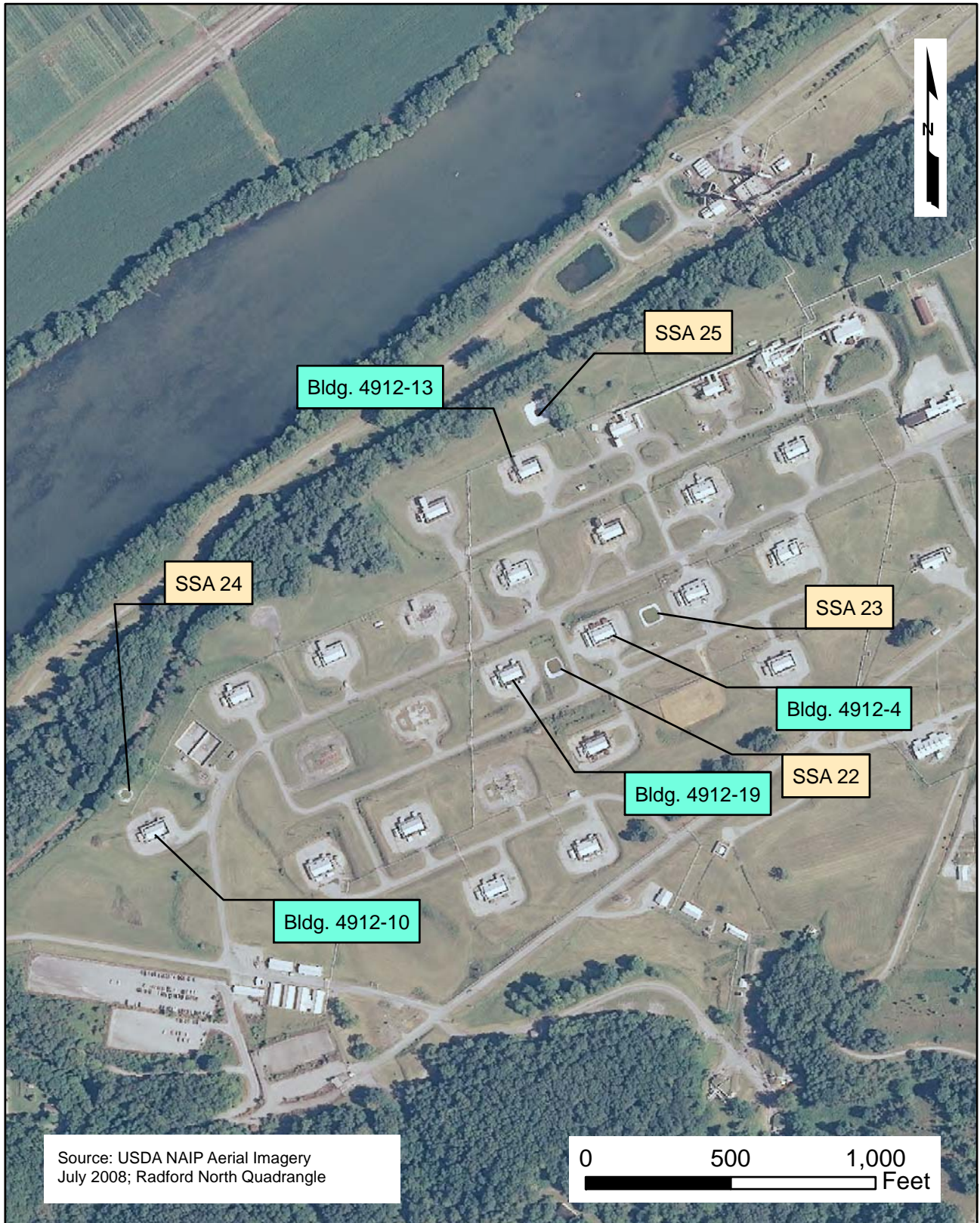






Photo 1. SSA 22 – Wastewater Holding Lagoon (West of Building 4912-19).



Photo 2. SSA 23 – Wastewater Holding Lagoon (West of Building 4912-4).



Photo 3. SSA 23 – Wastewater Holding Lagoon (West of Building 4912-4).



Photo 4. SSA 24 – Wastewater Holding Lagoon (West of Building 4912-10).





Photo 5. SSA 25 – Wastewater Holding Lagoon (West of Building 4912-13).



Photo 6. SSA 25 – Wastewater Holding Lagoon (West of Building 4912-13).



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April 16, 2010

Mr. Andy Kassoff  
EEE CONSULTING  
201 CHURCH ST. SE  
SUITE C  
BLACKSBURG VA 24060

TEL: (540) 953-0170

FAX (540) 953-0171

RE:

Dear Mr. Andy Kassoff:

Order No.: 1004763

REI Consultants, Inc. received 5 sample(s) on 4/9/2010 for the analyses presented in the following report.

Please note two changes you may see on your report.

- Results for "Dissolved" parameters will be shown under a separate sample ID, rather than as a separate analysis under the same sample ID. The sample ID for "Dissolved" parameters will include "Field Filtered" or "Lab Filtered", as appropriate.
- Metals results will no longer be identified as "Total" or "Total Recoverable". The methods have not been changed, only their appearance on the report.

If you have any questions regarding these results, please do not hesitate to call.

Sincerely,

Scott Gross

Project Manager







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## Report Narrative

Project Manager:: Scott Gross

WO#: 1004763

Date: 4/16/2010

CLIENT: EEE CONSULTING

Project:

All analyses were performed using documented laboratory SOPs that incorporate appropriate quality control procedures as described in the applicable methods. REI Consultants, Inc. (REIC) technical managers have verified compliance of reported results with the REIC's Quality Program and SOPs, except as noted in this case narrative. Any deviation from compliance or method modification is explained below and/or identified within the body of this report by a qualifier footnote which is defined at the bottom of each page.

All sample results are reported on an "as-received" wet weight basis unless otherwise noted.

Results reported for sums of individual parameters, such as Total Trihalomethanes (TTHM) and Total Haloacetic Acids (HAA5), may vary slightly from the sum of the individual parameter results. This apparent anomaly is caused by rounding individual results and summations at reporting, as required by EPA.

Following standard laboratory protocol, sample preservation, such as pH, is verified at time of extraction or analysis based on client requested parameters. Improper preservation is noted on the analytical bench sheet, extraction log, or preservation log and client is notified by close of following business day. All results are reported using preservation compliant samples unless otherwise noted in the analytical report.

The test results in this report meet all NELAP requirements for parameters for which accreditations are required or available. Any exceptions are noted in this report. This report may not be reproduced, except in full, without the written approval of REIC.

In compliance with federal guidelines and standard operating procedures, all reports, including raw data and supporting quality control, will be disposed of after five years unless otherwise arranged by the client via written notification or contract requirement.

If you have any questions please contact the project manager whose name is listed above.



**REI Consultants, Inc.****Analytical Results**

Date: 16-Apr-10

**CLIENT:** EEE CONSULTING**Client Sample ID:** 4912-19**Project:****Site ID:****WorkOrder:** 1004763 **Lab ID** 1004763-01A**DateReceived** 4/9/2010**Collection Date:** 4/8/2010 9:50:00 AM**Matrix:** SURFACE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
METALS BY ICP			E200.7			Analyst: LF	
Lead	0.0511	mg/L		0.0100	NA	04/12/10 11:30 AM	04/13/10 12:28 PM

**Key:** MCL Maximum Contaminant Level

MDL Minimum Detection Limit

NA Not Applicable

ND Not Detected at the PQL or MDL

PQL Practical Quantitation Limit

TIC Tentatively Identified Compound, Estimated Concentration

**Qualifiers:** B Analyte detected in the associated Method Blank

E Estimated Value above quantitation range

H Holding times for preparation or analysis exceeded

S Spike/Surrogate Recovery exceeds REIC control limits

\* Value exceeds MCL or Regulatory Limits

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**REI Consultants, Inc.****Analytical Results**

Date: 16-Apr-10

**CLIENT:** EEE CONSULTING**Client Sample ID:** 4912-4**Project:****Site ID:****WorkOrder:** 1004763 **Lab ID** 1004763-02A**DateReceived** 4/9/2010**Collection Date:** 4/8/2010 9:45:00 AM**Matrix:** SURFACE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
<b>METALS BY ICP</b>			<b>E200.7</b>			Analyst: LF	
Lead	0.0134	mg/L		0.0100	NA	04/12/10 11:30 AM	04/13/10 12:32 PM

**Key:** MCL Maximum Contaminant Level

MDL Minimum Detection Limit

NA Not Applicable

ND Not Detected at the PQL or MDL

PQL Practical Quantitation Limit

TIC Tentatively Identified Compound, Estimated Concentration

**Qualifiers:** B Analyte detected in the associated Method Blank

E Estimated Value above quantitation range

H Holding times for preparation or analysis exceeded

S Spike/Surrogate Recovery exceeds REIC control limits

\* Value exceeds MCL or Regulatory Limits

Page 3 of 6

# REI Consultants, Inc.

## Analytical Results

Date: 16-Apr-10

CLIENT: EEE CONSULTING

Client Sample ID: 4912-10

Project:

Site ID:

WorkOrder: 1004763 Lab ID 1004763-03A

DateReceived 4/9/2010

Collection Date: 4/8/2010 10:00:00 AM

Matrix: SURFACE WATER

Analyses	Result	Units	Qual	PQL	MCL	Prep Date	Date Analyzed
METALS BY ICP			E200.7			Analyst: LF	
Lead	ND	mg/L		0.0100	NA	04/12/10 11:30 AM	04/13/10 12:43 PM

Key: MCL Maximum Contaminant Level

MDL Minimum Detection Limit

NA Not Applicable

ND Not Detected at the PQL or MDL

PQL Practical Quantitation Limit

TIC Tentatively Identified Compound, Estimated Concentration

Qualifiers: B Analyte detected in the associated Method Blank

E Estimated Value above quantitation range

H Holding times for preparation or analysis exceeded

S Spike/Surrogate Recovery exceeds REIC control limits

\* Value exceeds MCL or Regulatory Limits

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