

## DOCUMENTATION OF ENVIRONMENTAL INDICATOR DETERMINATION

Interim Final 2/5/99

**RCRA Corrective Action  
Environmental Indicator (EI) RCRIS code (CA725)**

**Current Human Exposures Under Control**

**Facility Name:** INTERMET Radford and New River Foundries  
**Facility Address:** 1605 West Main Street and 1701 West Main Street, Radford, Virginia, 24141  
**Facility EPA ID #:** VAD010063006 and VAD981730930

1. Has **all** available relevant/significant information on known and reasonably suspected releases to soil, groundwater, surface water/sediments, and air, subject to RCRA Corrective Action (e.g., from Solid Waste Management Units (SWMU), Regulated Units (RU), and Areas of Concern (AOC)), been **considered** in this EI determination?

If yes - check here and continue with #2 below.

If no - re-evaluate existing data, or

If data are not available skip to #6 and enter "IN" (more information needed) status code.

**BACKGROUND**

**Definition of Environmental Indicators (for the RCRA Corrective Action)**

Environmental Indicators (EI) are measures being used by the RCRA Corrective Action program to go beyond programmatic activity measures (e.g., reports received and approved, etc.) to track changes in the quality of the environment. The two EI developed to-date indicate the quality of the environment in relation to current human exposures to contamination and the migration of contaminated groundwater. An EI for non-human (ecological) receptors is intended to be developed in the future.

**Definition of "Current Human Exposures Under Control" EI**

A positive "Current Human Exposures Under Control" EI determination ("YE" status code) indicates that there are no "unacceptable" human exposures to "contamination" (i.e., contaminants in concentrations in excess of appropriate risk-based levels) that can be reasonably expected under current land- and groundwater-use conditions (for all "contamination" subject to RCRA corrective action at or from the identified facility (i.e., site-wide)).

**Relationship of EI to Final Remedies**

While Final remedies remain the long-term objective of the RCRA Corrective Action program the EI are near-term objectives which are currently being used as Program measures for the Government Performance and Results Act of 1993, GPRRA). The "Current Human Exposures Under Control" EI are for reasonably expected human exposures under current land- and groundwater-use conditions ONLY, and do not consider potential future land- or groundwater-use conditions or ecological receptors. The RCRA Corrective Action program's overall mission to protect human health and the environment requires that Final remedies address these issues (i.e., potential future human exposure scenarios, future land and groundwater uses, and ecological receptors).

**Duration / Applicability of EI Determinations**

EI Determinations status codes should remain in RCRIS national database ONLY as long as they remain true (i.e., RCRIS status codes must be changed when the regulatory authorities become aware of contrary information).

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2. Are groundwater, soil, surface water, sediments, or air **media** known or reasonably suspected to be “contaminated”<sup>1</sup> above appropriately protective risk-based “levels” (applicable promulgated standards, as well as other appropriate standards, guidelines, guidance, or criteria) from releases subject to RCRA Corrective Action (from SWMUs, RUs or AOCs)?

Media	Yes	No	?	Rationale/Key Contaminants
Groundwater	X			VOCs, SVOCs, inorganics
Air (indoors) <sup>2</sup>		X		No significant volatile sources
Surface Soil (e.g. < 2 ft.)	X			SVOCs, inorganics, PCBs
Surface Water	X			SVOCs, inorganics
Sediment		X		No sources of sediment contamination
Subsurf. Soil (e.g. >2 ft.)	X			Landfill waste materials
Air (outdoors)		X		Air emissions regulated under Title V permit

\_\_\_\_\_ If no (for all media) - skip to #6, and enter “YE,” status code after providing or citing appropriate “levels,” and referencing sufficient supporting documentation demonstrating that these “levels” are not exceeded.

  X   If yes (for any media) - continue after identifying key contaminants in each “contaminated” medium, citing appropriate “levels” (or provide an explanation for the determination that the medium could pose an unacceptable risk), and referencing supporting documentation.

\_\_\_\_\_ If unknown (for any media) - skip to #6 and enter “IN” status code.

Footnotes:

<sup>1</sup> “Contamination” and “contaminated” describes media containing contaminants (in any form, NAPL and/or dissolved, vapors, or solids, that are subject to RCRA) in concentrations in excess of appropriately protective risk-based “levels” (for the media, that identify risks within the acceptable risk range).

<sup>2</sup> Recent evidence (from the Colorado Dept. of Public Health and Environment, and others) suggest that unacceptable indoor air concentrations are more common in structures above groundwater with volatile contaminants than previously believed. This is a rapidly developing field and reviewers are encouraged to look to the latest guidance for the appropriate methods and scale of demonstration necessary to be reasonably certain that indoor air (in structures located above (and adjacent to) groundwater with volatile contaminants) does not present unacceptable risks.

**Rationale and Reference(s):**

The April 2003 Description of Current Conditions identified 74 Solid Waste Management Units (SWMUs) at the Radford and New River Foundry facilities in Radford, Virginia. Based on evaluations of the operational histories and current status of the units, 34 SWMUs were designated as requiring additional investigation, and 40 SWMUs were designated as needing No Further Action (NFA).

The 34 SWMUs were to be investigated using a phased approach under the RCRA Corrective Action Program. The Phase I RFI Workplan approved by USEPA in December 2003 contained two primary components:

- 1) Collection of soil samples at ten SWMUs; and
- 2) Installation of six groundwater monitoring wells, and collection of site-wide groundwater samples.

These proposed investigative activities were designed to collect the information necessary for evaluation of the two Environmental Indicators. The remaining 24 SWMUs will be investigated under Corrective Action under a future RFI Phase, but are not expected to impact the EIs.

The Phase I field activities were performed in January 2004, and the Phase I Investigative Summary Report was submitted to USEPA in April 2004. The following sections summarize the results of the Phase I investigation for the four media identified as known or suspected to be “contaminated”, as defined herein. The screening criteria used for evaluation of the analytical data were proposed and approved under the Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) contained in the approved Phase I RFI Workplan.

#### GROUNDWATER:

Groundwater sampling data from Phase I were initially screened against USEPA Region III Risk-based Concentrations (RBCs) for Tap Water (using a hazard index of 0.1 for noncarcinogens), and primary drinking water Maximum Contaminant Levels (MCLs). The following constituents were detected above the Tap Water RBC criteria in at least one monitoring well. Constituents noted with an asterisk (\*) were also detected above the MCLs in at least one monitoring well; however, benzene was only detected above the MCL in an upgradient monitoring well, LFMW-9.

##### Volatile Organic Compounds (VOCs):

- 1,2-dibromo-3-chloropropane\*,
- Acrolein,
- Benzene\*,
- Chloroform, and
- Xylenes.

- Antimony\*,
- Arsenic\*,
- Barium,
- Chromium,
- Cobalt,
- Iron,
- Lead\*,
- Manganese,
- Selenium\*, and
- Thallium\*.

##### Semivolatile Organic Compounds (SVOCs):

- 2-methylnaphthalene,
- Benzo(a)anthracene,
- Benzo(a)pyrene\*,
- Benzo(k)fluoranthene,
- Dibenzofuran, and
- Naphthalene.

#### Inorganics:

Detection tables showing the screening exceedances are attached as **Tables 2, 3, and 4**. The locations of the various monitoring wells sampled during the Phase I field investigation can be found in figure 1 of the Phase I Investigation Summary Report dated April 2004.

#### SURFICIAL SOILS:

Surficial soil samples were collected at the following ten SWMUs:

- SWMU No. 38 Radford Foundry Cupola Baghouse;
- SWMU No. 42 Dry Slag Holding Area;
- SWMU No. 43 Radford Waste Building;
- SWMU No. 44 Inactive Shell Foundry Cupola Baghouse;
- SWMU No. 45 Scrap Iron Holding Area;
- SWMU No. 49 Drum Waste Storage Tank;
- SWMU No. 50 Used Oil Storage Tank;
- SWMU No. 51 Drum Storage Pad and Sump;
- SWMU No. 61 Emission Dust Treatment Area; and
- SWMU No. 62 Former Baseball Field.

The soil sampling results were screened against USEPA Region III RBCs for Industrial Soils and Residential Soils (using a hazard index of 0.1 for noncarcinogens), and SSLs for Groundwater Migration (DAF 20). The following constituents were detected above at least one of the Soil RBC criteria in at least one soil sample.

**Semivolatile Organic Compounds (SVOCs):**

- Benzo(a)anthracene,
- Benzo(a)pyrene,
- Benzo(b)fluoranthene,
- Benzo(k)fluoranthene,
- Dibenz(a,h)anthracene, and
- Indeno(1,2,3-cd)pyrene.

**Polychlorinated Biphenyls (PCBs):**

- PCB 1242,
- PCB 1248,
- PCB 1254, and
- PCB 1260.

- Aluminum,
- Antimony,
- Arsenic,
- Cadmium,
- Copper,
- Iron,
- Lead,
- Manganese,
- Silver,
- Thallium,
- Vanadium, and
- Zinc.

**Inorganics:**

In addition, hexachlorobenzene and acetone were detected in soil above Region III SSLs for Groundwater Migration (DAF 20); however, there were no exceedances of the project screening criteria in groundwater for either hexachlorobenzene or acetone. Detailed information of soil sample locations and results can be found in the Phase I Investigation Summary Report dated April 2004.

**SURFACE WATER:**

Based on the facility groundwater data, groundwater beneath the Facility appears to ultimately discharge to the New River running along the northwestern boundary of the site. Most of the subject SWMUs are located significant distances from the River, preventing significant discharges from groundwater impacts to surface water. However, due to the proximity of monitoring wells RFIMW-2, 3, 4, 5, and 7 to the River, the identified analytical detections in these monitoring wells are reasonably expected to discharge to surface water.

**SUBSURFACE SOILS:**

SWMUs No. 63, 64, 65, and 66 consist of permitted landfill units or older fill areas on the site property. Additional information on the waste-receiving histories and current closure status of each of the landfill SWMUs is provided in the April 2003 Description of Current Conditions document. Based on the available information, the subsurface waste materials within the units are reasonably expected to contain constituents above USEPA Region III RBCs.

**Current Human Exposures Under Control  
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3. Are there **complete pathways** between “contamination” and human receptors such that exposures can be reasonably expected under the current (land- and groundwater-use) conditions?

Summary Exposure Pathway Evaluation Table

Potential **Human Receptors** (Under Current Conditions)

“Contaminated” Media	Residents	Workers	Day-Care	Construction	Trespassers	Recreation	Food <sup>3</sup>
Groundwater	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>
Air (indoors)	_____	_____	_____	_____	_____	-	-
Soil (surface, e.g. <2 ft)	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>Yes</u>	<u>No</u>	<u>No</u>	<u>No</u>
Surface Water	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>
Sediment	_____	_____	_____	_____	_____	-	-
Soil (subsurface e.g. >2 ft)	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>	<u>No</u>
Air (outdoors)	_____	_____	_____	_____	_____	-	-

Instructions for Summary Exposure Pathway Evaluation Table:

1. Strike-out specific Media including Human Receptors’ spaces for Media which are not “contaminated”) as identified in #2 above.
2. Enter “yes” or “no” for potential “completeness” under each “Contaminated” Media -- Human Receptor combination (Pathway).

Note: In order to focus the evaluation to the most probable combinations some potential “Contaminated” Media - Human Receptor combinations (Pathways) do not have check spaces (“\_\_\_”). While these combinations may not be probable in most situations they may be possible in some settings and should be added as necessary.

- \_\_\_\_\_ If no (pathways are not complete for any contaminated media-receptor combination) - skip to #6, and enter ”YE” status code, after explaining and/or referencing condition(s) in-place, whether natural or man-made, preventing a complete exposure pathway from each contaminated medium (e.g., use optional Pathway Evaluation Work Sheet to analyze major pathways).
- X   If yes (pathways are complete for any “Contaminated” Media - Human Receptor combination) - continue after providing supporting explanation.
- \_\_\_\_\_ If unknown (for any “Contaminated” Media - Human Receptor combination) - skip to #6 and enter “IN” status code

Footnotes:

<sup>3</sup> Indirect Pathway/Receptor (e.g., vegetables, fruits, crops, meat and dairy products, fish, shellfish, etc.)

**Rationale and Reference(s):****GROUNDWATER:**

No complete exposure pathways for contaminated groundwater exist at the Facility. As described above, groundwater from the Facility discharges into the New River running along the northwestern property boundary of the site. No drinking water wells are located on the site property, and there are no other uses of groundwater by the Facility. Potable water for the Facility is supplied by the City of Radford, whose surface water intake is located approximately one mile upstream of the INTERMET site property. The nearest downstream surface water intake is the Blacksburg / Christiansburg / Virginia Tech Water Authority intake, which is located approximately five miles downstream near the Route 114 bridge crossing. Other nearby surface water intakes include the two Radford Arsenal intakes, located approximately eight to ten miles downstream.

Residential areas are located to the west, south, and east of the site, which are upgradient or cross-gradient from the facility SWMUs. In addition, previous investigations have indicated that there are no groundwater users within ½-mile radius of the INTERMET site property.

**SURFICIAL SOILS:**

The Facility is located on an industrial-zoned property in accordance with the City of Radford zoning code and is bounded by fencing encircling the site property. Both vehicular and pedestrian access are controlled through the facility's two main gates, which are either staffed by security personnel, or locked closed. All Facility employees, contractors, and visitors must enter and exit the site through the main gates. Based on the zoning, security, and access control measures in place at the Facility, unauthorized personnel, i.e. residents, trespassers, etc..., are prevented from coming into contact with potentially contaminated surficial soils. As such, no complete pathway between surficial soil contamination and *Residents / Daycare / Trespassers / Recreation / Food* Human Receptors exists. In addition, the status of the Facility as an active industrial plant with restricted access allows the use of only the EPA Region III Industrial Soil RBCs for screening purposes, rather than the Residential values.

Due to the presence of the surficial soil contamination on the plant property, potential exposures to *Workers or Construction* Human Receptors are possible. Information regarding the significance of the potential exposures and the controls in place to limit the exposures is described below in section 4.

**SURFACE WATER:**

As described above, the proximity of monitoring wells RFIMW-2, 3, 4, 5, and 7 may potentially indicate the discharge of contaminants from groundwater to surface water. Initial evaluation of the potential impacts to surface water was performed by comparing the detections in groundwater to 10x the National Recommended Water Quality Criteria (November 2002) for Organisms and Water + Organisms. **Tables 2, 3, and 4** show the calculated criteria and resulting screening.

However, the actual dilution capacity of the New River is believed to be significantly greater than provided by the generic 10x dilution criteria. Based on gauging data from the USGS Radford, Virginia gauge (#03171000), the VADEQ has estimated the 7Q10 flow of the New River at the INTERMET site property to be 919 cfs. A copy of the September 26, 1995 memorandum describing the 7Q10 derivation has been included in **Attachment A**. Using the 7Q10 flow and the available hydrogeologic information from the site, the actual dilution is conservatively estimated to be greater than 17,000X. The dilution factor calculation worksheet, including documentation of assumptions and information sources, is included in **Attachment B**. At this anticipated groundwater-to-surface water dilution, all detected constituents are well below National Recommended Water Quality Criteria.

**SUBSURFACE SOILS:**

The landfill areas are covered with a soil cover that ensures that no waste materials are exposed. In addition, vegetative growth is maintained on the surface in order to provide stability and control erosion. The presence of the cover systems eliminate exposure pathways by preventing contact between the waste materials and potential human receptors. Exposure pathways to subsurface soils through excavation or other construction activities are also controlled by the zoning and security in place at the Facility, as described above.

**Current Human Exposures Under Control  
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4. Can the **exposures** from any of the complete pathways identified in #3 be reasonably expected to be **“significant”**<sup>4</sup> (i.e., potentially “unacceptable” because exposures can be reasonably expected to be: 1) greater in magnitude (intensity, frequency and/or duration) than assumed in the derivation of the acceptable “levels” (used to identify the “contamination”); or 2) the combination of exposure magnitude (perhaps even though low) and contaminant concentrations (which may be substantially above the acceptable “levels”) could result in greater than acceptable risks)?

  X   If no (exposures can not be reasonably expected to be significant (i.e., potentially “unacceptable”) for any complete exposure pathway) - skip to #6 and enter “YE” status code after explaining and/or referencing documentation justifying why the exposures (from each of the complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

       If yes (exposures could be reasonably expected to be “significant” (i.e., potentially “unacceptable”) for any complete exposure pathway) - continue after providing a description (of each potentially “unacceptable” exposure pathway) and explaining and/or referencing documentation justifying why the exposures (from each of the remaining complete pathways) to “contamination” (identified in #3) are not expected to be “significant.”

       If unknown (for any complete pathway) - skip to #6 and enter “IN” status code

Footnotes:

<sup>4</sup> If there is any question on whether the identified exposures are “significant” (i.e., potentially “unacceptable”) consult a human health Risk Assessment specialist with appropriate education, training and experience.

**Rationale and Reference(s):**

The only potentially complete exposure pathways are between the identified surficial soil contamination and the *Workers* or *Construction* Human Receptors. This pathway reflects the potential for site workers to be exposed to surficial soil contamination by working in the immediate proximity of the SWMUs, or by performing construction-related activities such as excavation or demolition. The two primary routes of exposure for these scenarios would be ingestion of contaminated soil, or inhalation of contaminated dust produced by construction activities.

However, these potential exposures are anticipated to be insignificant based on the duration / intensity of exposure, and the institutional controls in place at the Facility. The various subject SWMUs with detected levels of contamination are associated with the Radford Foundry, which was closed in December 2003; all operational activities (melting, casting, grinding, finishing, etc...) have ceased. No employees work full-time within the SWMUs identified within the Radford Foundry facilities, and only a few employees work within or pass through the Radford Foundry structures. Furthermore, since March 2004, the area including the Cupola Baghouse (SWMU No. 38), Inactive Cupola Baghouse (SWMU No. 44), and Ironyard (SWMU No. 45) has been cordoned off with yellow caution tape to restrict access.

The Facility also utilizes Work Instructions to limit potential exposures to site personnel (i.e. *Workers* and *Construction* Human Receptors); see **Attachment C**. The Work Instructions ensure that no construction activities, (including the demolition of the plant structures) can occur in the vicinity of the identified SWMUs without the authorization and input of the appropriate Environmental personnel.

**Current Human Exposures Under Control**  
**Environmental Indicator (EI) RCRIS code (CA725)**

5. Can the “significant” **exposures** (identified in #4) be shown to be within **acceptable** limits?

- \_\_\_\_\_ If yes (all “significant” exposures have been shown to be within acceptable limits) - continue and enter “YE” after summarizing and referencing documentation justifying why all “significant” exposures to “contamination” are within acceptable limits (e.g., a site-specific Human Health Risk Assessment).
- \_\_\_\_\_ If no (there are current exposures that can be reasonably expected to be “unacceptable”)- continue and enter “NO” status code after providing a description of each potentially “unacceptable” exposure.
- \_\_\_\_\_ If unknown (for any potentially “unacceptable” exposure) - continue and enter “IN” status code

**Rationale and Reference(s):**

No response necessary due to the answer for question #4.



**Current Human Exposures Under Control  
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6. Check the appropriate RCRIS status codes for the Current Human Exposures Under Control EI event code (CA725), and obtain Supervisor (or appropriate Manager) signature and date on the EI determination below (and attach appropriate supporting documentation as well as a map of the facility):

X  Yes, "Current Human Exposures Under Control" has been verified. Based on a review of the information contained in this EI Determination, "Current Human Exposures" are expected to be "Under Control" at the **INTERMET Radford and New River** facilities, EPA ID # **VAD010063006 and VAD981730930**, located at **1605 West Main Street and 1701 West Main Street, Radford, Virginia, 24141** under current and reasonably expected conditions. This determination will be re-evaluated when the Agency/State becomes aware of significant changes at the facility.

NO - "Current Human Exposures" are NOT "Under Control."

IN - More information is needed to make a determination.

Completed by  (signature) /s/  Date  9/30/04   
 (print)   
 (title)

Supervisor  (signature) /s/  Date  9/30/04   
 (print)   
 (title)   
 (EPA Region or State)

Locations where References may be found:

EPA Region III, Philadelphia, PA

EPA Contact  Wanda Martinez  (email)  martinez.wanda@epa.gov   
 215-814-3434

Facility Contact:  Terry L. Moore  (e-mail)  tmoore@intermet.com   
 434 237-8726

**FINAL NOTE: THE HUMAN EXPOSURES EI IS A QUALITATIVE SCREENING OF EXPOSURES AND THE DETERMINATIONS WITHIN THIS DOCUMENT SHOULD NOT BE USED AS THE SOLE BASIS FOR RESTRICTING THE SCOPE OF MORE DETAILED (E.G., SITE-SPECIFIC) ASSESSMENTS OF RISK.**

**LIST OF ATTACHMENTS:**

Figure 1: Site Map

Table 1: SWMU Index

Table 2: OW / NRMW / UST - Series Groundwater Results

Table 3: LF - Series Groundwater Results

Table 4: RFI / WT - Series Groundwater Results

Table 5: SWMU No. 38 Soil Results

Table 6: SWMU No. 42/61 Soil Results

Table 7: SWMU No. 43 Soil Results

Table 8: SWMU No. 44 Soil Results

Table 9: SWMU No. 45 Soil Results

Table 10: SWMU No. 49/50 Soil Results

Table 11: SWMU No. 51 Soil Results

Table 12: SWMU No. 62 Soil Results

Attachment A: September 26, 1995 VADEQ Flow Frequency Determination Memorandum

Attachment B: Dilution Factor Calculation Worksheet

Attachment C: Work Instruction – Access to Solid Waste Management Units (SWMUs)

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION  
Water Quality Assessments and Planning  
629 E. Main Street P.O. Box 10009 Richmond, Virginia 23240

SUBJECT: Flow Frequency Determination  
Lynchburg Foundry, Radford Shell Plant VA#0000213  
TO: Jeff Hancock, WCRO  
FROM: Paul Herman, WOAP  
DATE: September 26, 1995  
COPIES: Ron Gregory, Charles Martin, File

RECEIVED

SEP 28 1995

DEQ - WATER DIVISION  
ROANOKE, VA

*9TH Original  
Ind*

The Lynchburg Foundry, Radford Shell Plant discharges to the New River near Radford, VA. Stream flow frequencies are required at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

The USGS has operated a continuous record gage on the New River at Radford, VA (#03171000) since 1940. The gage is approximately 1.5 miles downstream of the discharge point. The flow frequencies for the gage and the discharge point are presented below. The values at the discharge point were determined by drainage area proportions and do not address any withdrawals, discharges, or springs lying between the gage and the discharge point. The Radford WTP withdrawal lies upstream of the subject discharge point. Other withdrawals by the Foundry and the New River WTP are downstream of the gage.

New River at Radford, VA (#03171000):

Drainage Area = 2,748 mi<sup>2</sup>  
1Q10 = 710 cfs High Flow 1Q10 = 864 cfs  
7Q10 = 921 cfs High Flow 7Q10 = 1,272 cfs  
30Q5 = 1,202 cfs HM = 2,400 cfs

*not within 7010*

New River at discharge point (001, 002):

Drainage Area = 2,742.49 mi<sup>2</sup>  
1Q10 = 709 cfs 458 <sup>460</sup> High Flow 1Q10 = 862 cfs 557 <sup>460</sup>  
7Q10 = 919 cfs 594 " High Flow 7Q10 = 1,269 cfs 820 "  
30Q5 = 1,200 cfs 776 " HM = 2,395 cfs 1547

The high flow months are January through May. If you have any questions concerning this analysis, please let me know.

**Objective:** Calculation of an estimated dilution factor for the discharge of groundwater into the New River.

**Calculations:**

Groundwater discharge,  $Q = k * A * dh/dl$

$$Q = k * (D * L) * dh/dl$$

$$Q = 0.052 \text{ cfs}$$

Hydraulic Conductivity k	Depth D	Length L	Hydraulic Gradient dh/dl
<i>ft/s</i>	<i>ft</i>	<i>ft</i>	<i>ft/ft</i>
0.0000328	6.9	6,400	0.036

7Q10 of New River at facility outfalls: 919 cfs

Dilution Factor: 17,624 X

**Assumptions:**

- 1) Estimated hydraulic conductivity (k) = 3.28E-05 ft/s, based on assumed k value for fine sand
- 2) Length of property line along New River = 6,400 feet
- 3) Average hydraulic gradient across site = 0.036 ft/ft
- 4) Average depth of aquifer is 6.9 ft (assuming bottom of aquifer is depth to bedrock in RFIMW-2, 3, 4, 5, & 7).

**WORK INSTRUCTIONS**

Internet Radford Foundry  
Location

Environmental  
Category Designation

**Subject: Access to Solid Waste Management Units (SWMUs)**

This instruction has been designed to meet the requirements of:  
ISO/TS 16949:2002, ISO 9001:2000; ISO 14001:1996  
And relates to the Quality & Environmental Management System Manual - Clause X.X

**Scope: Control access to areas of the plant defined as SWMUs**

**Distribution:**

<u>Copy #:</u>	<u>Held by:</u>	<u>Location Held:</u>
RAD1 Master Copy	Environmental Engineer	Engineering

**Approval Status:**

Generated By: Environmental Engineer

Issue No.: 1

Issued By: Engineering Manager

Date: September 2004

Authorized By: Plant General Manager

**WORK INSTRUCTIONS**

Intermet Radford Foundry  
Location

Environmental  
Category Designation

**1.0 Reference:**

- 1.1 “Description of Current Conditions RCRA Corrective Action Program” Dated April 2003 Revision 1.
- 1.2 CQD206 Contractor Safety & Environmental Responsibility Manual pre-work safety meeting.
- 1.3 All full time employees at the Radford Foundry have been trained on this Work Instruction; training on this instruction is part of the initial job training for all new employees.

**2.0 Purpose:**

- 2.1 The purpose of this work instruction is to control potential exposures to employees and others from surface and subsurface contamination at areas designated as Solid Waste Management Units (SWMUs) in the “Description of Current Conditions RCRA Corrective Action Program.”

**3.0 General:**

- 3.1 The “Description of Current Conditions RCRA Corrective Action Program” is an EPA-approved document that defines certain areas of the plant as SWMUs.
- 3.2 SWMUs are areas where solid and/or hazardous wastes are, or have been, managed.
- 3.3 SWMUs are classified as either No Further Action (NFA), or as being retained for further investigation under the RCRA Facility Investigation (RFI) Phase of the RCRA Corrective Action Program.
- 3.4 There is no continuous worker exposure at any SWMU.
- 3.5 A limited number of contractors may perform work at the site.
- 3.6 **No excavation or demolition activities** are allowed at, or in the vicinity of, the SWMUs being retained for further investigation without the express written permission of the Environmental Engineer.
- 3.7 Employee or contractor exposure at these SWMUs is minimized because there is seldom reason for work in these areas.
- 3.8 This work instruction exists to control those potential exposures even further.

**4.0 No Further Action (NFA) SWMUs:**

- 4.1 No controls on exposure are required for the SWMUs classified as NFA.
- 4.2 Contractors are required to have a pre-work meeting to communicate potential safety hazards prior to starting work.
- 4.3 No specific mention of potential hazards from SWMUs is required.

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**Approval Status:**

Generated By: Environmental Engineer

Issue No.: 1

Issued By: Engineering Manager

Date: September 2004

Authorized By: Plant General Manager

**WORK INSTRUCTIONS**

Intermet Radford Foundry  
Location

Environmental  
Category Designation

**5.0 SWMUs Retained for RFI:**

5.1 Exposure controls are required for the SWMUs that were retained for further investigation under the RCRA Facility Investigation (RFI) Phase of the RCRA Corrective Action Program.

- 5.2 These SWMUs are divided into three categories:
1. Investigation Results Available – Surface Contamination;
  2. Investigation Results Available – No Surface Contamination; and
  3. No Investigation Results Available.

5.3 Investigation Results Available – Surface Contamination:

5.3.1 For SWMUs with investigation results available, all Radford Foundry employees have been given instructions to avoid areas where surface contamination exists above health based standards.

5.3.2 These SWMUs have been roped off with caution tape to identify the areas having restricted access.

5.3.3 The INTERMET Environmental Engineer or his designee must conduct the contractor’s pre-work meeting to communicate potential safety hazards prior to starting work.

5.3.4 If contractors must perform excavation or demolition activities in these areas, the Environmental Engineer or his designee discusses the specific hazards in the pre-work safety meeting, and the required express written permission from the Environmental Engineer is documented.

5.4 Investigation Results Available – No Surface Contamination:

5.4.1 **No excavation or demolition activities are** allowed at, or in the vicinity of, these SWMUs without the express written permission of the Environmental Engineer.

5.4.2 For SWMUs with investigation results showing no surface contamination, all Radford Foundry employees have been made aware of the results.

5.4.3 No access restriction is required for these SWMUs as long as surface disturbance is not part of the work duties.

5.4.4 Contractors are required to have a pre-work meeting to communicate potential safety hazards prior to starting work.

5.4.5 If contractors perform work in these areas that requires **surface disturbance**, the specific hazards are discussed in the pre-work safety meeting by the Environmental Engineer or his designee.

5.5 Investigation Results Not Available:

5.5.1 **No excavation or demolition activities are** allowed at, or in the vicinity of, these SWMUs without the express written permission of the Environmental Engineer.

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**Approval Status:**

Generated By: Environmental Engineer

Issue No.: 1

Issued By: Engineering Manager

Date: September 2004

Authorized By: Plant General Manager

# INTERNET CORPORATION

Reference No.: **RAD - ENV - 007**

## WORK INSTRUCTIONS

Page: 4 of 4

Internet Radford Foundry  
Location

Revision: 0

Environmental  
Category Designation

Date: -

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- 5.5.2 All Radford Foundry employees have been made aware of the list of areas to be investigated.
- 5.5.3 No access restriction is required for these SWMUs as long as surface disturbance is not part of the work duties.
- 5.5.4 Contractors are required to have a pre-work meeting to communicate potential safety hazards prior to starting work.
- 5.5.5 If contractors perform work in these areas that requires **surface disturbance**, the specific hazards are discussed in the pre-work safety meeting by the Environmental Engineer or his designee.

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### Approval Status:

Generated By: Environmental Engineer

Issue No.: 1

Issued By: Engineering Manager

Date: September 2004

Authorized By: Plant General Manager

QD111P-3, Plant Work Instruction Format Form





**Table 2**  
**OW/NRMW/USTMW-series Groundwater Results**

Specific Analyte List	(C/N) <sup>1</sup>	Region III Tap Water RBCs <sup>2</sup>	MCLs	MDL	RL	10x Water Quality Criteria - Water + Organism	10x Water Quality Criteria - Organism	OW-1A	OW-1B	OW-1B (Dissolved)	OW-2A	OW-2B	NRMW-1	USTMW-4	USTMW-5	USTMW-6
<b>Appendix IX Volatile Organic Compounds (ug/L)</b>																
1,2-Dibromo-3-chloropropane	C	0.047	0.2	0.22	1.0	~	~	1 U	1 U	NM	1 U	1.2	1 U	1 U	1 U	1 U
Benzene	C	0.34	5	0.096	1.0	22	510	1 U	1 U	NM	1 U	1 U	1.7	1 U	1 U	1 U
Chloroform	C	0.15	~	0.12	1.0	57	4,700	1 U	1 U	NM	1 U	1 U	1 U	1.3	1 U	1 U
Ethylbenzene	N	130	700	0.11	1.0	31,000	290,000	1 U	1 U	NM	1 U	1 U	3.4	1 U	1 U	1 U
<b>Appendix IX Semi-Volatile Organic Compounds (ug/L)</b>																
2-Methylnaphthalene	N	12	~	2.1	10	~	~	10 U	10 U	NM	10 U	10 U	80	10 U	18	110
Acenaphthene	N	37	~	1.0	10	6,700	9,900	6.4 J	10 U	NM	10 U	10 U	8.5 J	10 U	4.1 J	6.4 J
Anthracene	N	180	~	0.50	10	83,000	400,000	10 U	10 U	NM	10 U	10 U	1 J	10 U	10 U	10 U
Benzo(a)anthracene	C	0.092	~	0.80	10	0.038	0.18	10 U	1 J	NM	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	C	0.0092	0.2	0.59	10	0.038	0.18	10 U	0.73 J	NM	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	~	~	~	0.62	10	~	~	10 U	0.75 J	NM	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	C	9.2	~	0.78	10	0.038	0.18	10 U	1.2 J	NM	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	N	1.2	~	1.0	10	~	~	10 U	10 U	NM	10 U	10 U	6 J	10 U	10 U	3 J
Fluoranthene	N	150	~	0.61	10	1,300	1,400	10 U	1.7 J	NM	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	N	24	~	1.0	10	11,000	53,000	1.4 J	10 U	NM	10 U	10 U	8.2 J	10 U	5.9 J	11
Naphthalene	N	0.65	~	1.0	10	~	~	10 U	10 U	NM	10 U	10 U	55	10 U	10 U	14
Phenanthrene	~	~	~	1.0	10	~	~	10 U	10 U	NM	10 U	10 U	12	10 U	5.1 J	11
Pyrene	N	18	~	1.0	10	8,300	40,000	10 U	1.5 J	NM	10 U	10 U	10 U	10 U	10 U	10 U
<b>TAL Metals (mg/L)</b>																
Aluminum	N	3.7	~	0.014	0.2	~	~	0.37 *	7.7 *	0.028 B*	0.2 U	0.2 U	0.29 *	0.2 U	0.2 U	0.14 B
Antimony	N	0.0015	0.006	0.0037	0.02	0.056	6.4	0.0039 B	0.0077 B	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Arsenic	C	0.000045	0.01	0.005	0.01	0.00018	0.0014	0.01 U	0.01	0.01 U	0.01 U	0.01 U	0.007 B	0.01 U	0.01 U	0.01 U
Barium	N	0.26	2	0.001	0.01	10	~	0.59	0.17	0.11	0.29	0.1	1.1	0.16	0.58	0.72
Beryllium	N	0.0073	0.004	0.0004	0.004	~	~	0.004 U	0.00072 B	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U	0.004 U
Cadmium	N	0.0018	0.005	0.00086	0.005	~	~	0.005 U	0.0021 B	0.005 U	0.005 U	0.0011 B	0.005 U	0.005 U	0.005 U	0.005 U
Calcium	~	~	~	0.05	0.5	~	~	98	130	100	110	96	60	100	120	110
Chromium (assumes hexavalent)	N	0.011	0.1	0.0011	0.01	~	~	0.0025 B	0.029	0.01 U	0.01 U	0.0036 B	0.0032 B	0.0028 B	0.0025 B	0.01 U
Cobalt	N	0.073	~	0.0014	0.01	~	~	0.01 U	0.0084 B	0.01 U	0.0017 B	0.01 U	0.0018 B	0.01 U	0.01 U	0.01 U
Copper	N	0.15	1.3	0.0027	0.02	13	~	0.02 U	0.12	0.0075 B	0.02 U	0.0028 B	0.02 U	0.02 U	0.02 U	0.02 U
Iron	N	1.1	~	0.024	0.05	3	~	10	18	0.05 U	7.5	0.1	3.1	0.038 B	7.7	11
Lead	~	~	0.015	0.0025	0.005	~	~	0.0025 B	0.12	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Magnesium	~	~	~	0.05	0.5	~	~	47	97	83	53	52	35	31	49	50
Manganese	N	0.073	~	0.001	0.01	0.5	1	0.45	1.2	0.0076 B	2.3 *	0.22 *	0.35	0.0025 B*	1 *	0.58 *
Nickel	N	0.073	~	0.0022	0.04	6.1	46	0.04 U	0.016 B	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
Potassium	~	~	~	0.1	1	~	~	2.9	24	22	2.9	4.9	2.5	2.5	2.9	2.8
Sodium	~	~	~	0.18	0.5	~	~	38	57	56	71	270	150	16	16	15
Vanadium	N	0.026	~	0.0007	0.01	~	~	0.01 U	0.019	0.01 U	0.01 U	0.01 U	0.0013 B	0.01 U	0.01 U	0.01 U
Zinc	N	1.1	~	0.0013	0.02	74	260	0.0093 B	0.58	0.055	0.0063 B	0.03	0.012 B	0.0083 B	0.0058 B	0.0056 B
Mercury (assumes mercuric chloride)	N	0.0011	0.002	0.000078	0.0002	~	~	0.00012 B	0.000085 B	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U	0.0002 U

**Red** - Indicates an exceedance of the Maximum Contaminant Level (MCL)  
**Blue** - Indicates an exceedance of the EPA Region III Tap Water RBCs dated April 2003  
Indicates detection that exceeds Water + Organism criteria  
Indicates detection that exceeds Organism criteria

<sup>1</sup>Carcinogen/Non-Carcinogen taken from EPA Region III RBC table (April 2003)  
<sup>2</sup>Tap Water RBCs for noncarcinogens have been multiplied by a Hazard Quotient of 0.1 to account for cumulative effects on target organs.

**Qualifiers**  
U - Indicates that the compound was analyzed for but not detected.  
B (Inorganic) - Indicates the reported value was obtained from a reading less than the RL but greater than or equal to the MDL  
\* - Sample duplicate %RPD exceeded acceptance limits.  
J - Indicates the presence of a compound that meets the identification criteria, but the result is less than the sample RL and greater than the MDL.

**Table 3**  
**LF-series Groundwater Results**

Specific Analyte List	(C/N) <sup>1</sup>	Region III Tap Water RBCs <sup>2</sup>	MCLs	MDL	RL	10x Water Quality Criteria - Water + Organism	10x Water Quality Criteria - Organism	LFMW-5	LFMW-6	LFMW-7	GW-FD-2 (LFMW-7)	LFMW-8	LFMW-9	GW-FD-1 (LFMW-9)	LFMW-10	LFMW-11
<b>Appendix IX Volatile Organic Compounds (ug/L)</b>																
Acrolein	N	0.0042	~	6.6	20	1,900	2,900	20 U	20 U	20 U	120	20 U	200 U	20 U	20 U	20 U
Benzene	C	0.34	5	0.096	1.0	22	510	1 U	1 U	1 U	1 U	1 U	240	190 D	1 U	1 U
Chloroform	C	0.15	~	0.12	1.0	57	4,700	1 U	1 U	1 U	1 U	1 U	10 U	1 U	5	1 U
Ethylbenzene	N	130	700	0.11	1.0	31,000	290,000	1 U	1 U	1 U	1 U	1 U	17	16	1 U	1 U
Tetrachloroethene	C	0.53	5	0.43	1.0	6.9	33	1 U	0.49 J	1 U	1 U	1 U	10 U	1 U	1 U	1 U
Toluene	N	75	1,000	0.065	1.0	68,000	2,000,000	1 U	1 U	1 U	1 U	1 U	5.7 J	5.3	1 U	1 U
Xylene (total)	N	21	10,000	0.28	2.0	~	~	2 U	2 U	2 U	2 U	2 U	74	71	2 U	2 U
<b>Appendix IX Semi-Volatile Organic Compounds (ug/L)</b>																
2-Methylnaphthalene	N	12	~	2.1	10	~	~	10 U	10 U	10 U	10 U	10 U	19	20	10 U	10 U
Benzo(g,h,i)perylene	~	~	~	0.62	10	~	~	10 U	10 U	10 U	10 U	10 U	10 U	10 U	0.97 J	10 U
<b>TAL Metals (mg/L)</b>																
Aluminum	N	3.7	~	0.014	0.2	~	~	0.031 B	0.22	0.11 B	0.076 B	0.43	0.2 U	0.2 U	0.2 U	0.12 B
Arsenic	C	0.000045	0.01	0.005	0.01	0.00018	0.0014	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.0069 B	0.0053 B	0.01 U	0.01 U
Barium	N	0.26	2	0.001	0.01	10	~	0.098	0.19	0.48	0.47	0.12	0.22	0.23	0.13	0.11
Cadmium	N	0.0018	0.005	0.00086	0.005	~	~	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.00087 B	0.005 U	0.005 U
Calcium	~	~	~	0.05	0.5	~	~	62	120	120	120	110	130	130	75	83
Chromium (assumes hexavalent)	N	0.011	0.1	0.0011	0.01	~	~	0.0086 B	0.01 U	0.01 U	0.01 U	0.0011 B	0.0012 B	0.01 U	0.01 U	0.0012 B
Cobalt	N	0.073	~	0.0014	0.01	~	~	0.01 U	0.0016 B	0.0015 B	0.0021 B	0.0033 B	0.0019 B	0.0016 B	0.01 U	0.01 U
Iron	N	1.1	~	0.024	0.05	3	~	0.13	0.5	7.6	7.8	1.3	21	22	0.038 B	0.13
Magnesium	~	~	~	0.05	0.5	~	~	24	43	49	48	40	47	49	28	32
Manganese	N	0.073	~	0.001	0.01	0.5	1	0.012 *	0.54 *	2.2 *	2.2 *	1.1 *	1.5 *	1.6 *	0.01 U*	0.0025 B*
Nickel	N	0.073	~	0.0022	0.04	6.1	46	0.006 B	0.04 U	0.04 U	0.04 U	0.0034 B	0.04 U	0.04 U	0.04 U	0.04 U
Potassium	~	~	~	0.1	1	~	~	1.9	2.3	2.3	2.3	2.8	2.5	2.6	2.3	2
Sodium	~	~	~	0.18	0.5	~	~	3.8	4.7	16	15	20	10	11	6.7	5.3
Vanadium	N	0.026	~	0.0007	0.01	~	~	0.01 U	0.00084 B	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	N	1.1	~	0.0013	0.02	74	260	0.0072 B	0.0075 B	0.0069 B	0.0074 B	0.0063 B	0.0061 B	0.0082 B	0.0053 B	0.0076 B

**Red** - Indicates an exceedance of the Maximum Contaminant Level (MCL)  
**Blue** - Indicates an exceedance of the EPA Region III Tap Water RBCs dated April 2003  
Indicates detection that exceeds Water + Organism criteria  
Indicates detection that exceeds Organism criteria

<sup>1</sup>Carcinogen/Non-Carcinogen taken from EPA Region III RBC table (April 2003)  
<sup>2</sup>Tap Water RBCs for noncarcinogens have been multiplied by a Hazard Quotient of 0.1 to account for cumulative effects on target organs.

**Qualifiers**  
 U - Indicates that the compound was analyzed for but not detected.  
 B (Inorganic) - Indicates the reported value was obtained from a reading less than the RL but greater than or equal to the MDL.  
 \* - Sample duplicate %RPD exceeded acceptance limits.  
 J - Indicates the presence of a compound that meets the identification criteria, but the result is less than the sample RL and greater than the MDL.  
 D - Result is from a secondary dilution.

**Table 4**  
**RFIMW-series Groundwater Results**

Specific Analyte List	(C/N) <sup>1</sup>	Region III Tap Water RBCs	MCLs	MDL	RL	10x Water Quality Criteria - Water + Organism	10x Water Quality Criteria - Organism	RFIMW-2	RFIMW-3	RFIMW-4	RFIMW-5	RFIMW-6	RFIMW-7	WTMW-1	WTMW-2	WTMW-3
<b>Appendix IX Volatile Organic Compounds (ug/L)</b>																
Acetone	N	61	~	2.3	25	~	~	16 J	25 U	25 U	25 U	25 U	27	25 U	25 U	25 U
Chloroform	C	0.15	~	0.12	1.0	57	4,700	1 U	1 U	1 U	0.52 J	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	N	130	~	0.27	1.0	~	~	1 U	1 U	1 U	1 U	2.7	1 U	1 U	1 U	1 U
<b>Appendix IX, Semi-Volatile Organic Compounds (ug/L)</b>																
3-Methylcholanthrene	~	~	~	0.72	10	~	~	10 U	10 U	10 U	10 U	10 U	0.8 J	10 U	10 U	10 U
Benzo(a)pyrene	C	0.0092	0.2	0.59	10	0.038	0.18	10 U	10 U	2 J	10 U	10 U	1 J	10 U	10 U	10 U
Benzo(g,h,i)perylene	~	~	~	0.62	10	~	~	10 U	10 U	0.62 J	10 U	10 U	0.77 J	10 U	10 U	10 U
Benzo(k)fluoranthene	C	0.92	~	1.2	10	0.038	0.18	10 U	10 U	2.3 J	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	C	9.2	~	0.78	10	0.038	0.18	10 U	10 U	3.5 J	10 U	10 U	0.79 J	10 U	10 U	10 U
Dibenz(a,h)anthracene	C	0.0092	~	0.64	10	0.038	0.18	10 U	10 U	10 U	10 U	10 U	0.66 J	10 U	10 U	10 U
Fluoranthene	N	150	~	0.61	10	1,300	1,400	10 U	10 U	1.1 J	10 U	10 U	10 U	10 U	10 U	10 U
Phenanthrene	~	~	~	1.0	10	~	~	10 U	10 U	1.5 J	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	N	18	~	1.0	10	8,300	40,000	10 U	10 U	1.4 J	10 U	10 U	10 U	10 U	10 U	10 U
<b>TAL Metals (mg/L)</b>																
Aluminum	N	3.7	~	0.014	0.2	~	~	0.21	2 *	0.4	1.9 *	0.2 U	0.65	0.2 U	0.2 U	0.2 U
Antimony	N	0.0015	0.006	0.0037	0.02	0.056	6.4	0.02 U	0.013 B	0.02 U	0.0047 B	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Arsenic	C	0.000045	0.01	0.005	0.01	0.00018	0.0014	0.01 U	0.028	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium	N	0.26	2	0.001	0.01	10	~	0.1	0.094	0.17	0.078	0.31	0.22	0.26	0.053	0.088
Cadmium	N	0.0018	0.005	0.00086	0.005	~	~	0.005 U	0.001 B	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Calcium	~	~	~	0.05	0.5	~	~	88	35	110	43	110	120	92	28	27
Chromium (assumes hexavalent)	N	0.011	0.1	0.0011	0.01	~	~	0.0021 B	0.031	0.0019 B	0.0034 B	0.01 U	0.0094 B	0.01 U	0.01 U	0.01 U
Cobalt	N	0.073	~	0.0014	0.01	~	~	0.0026 B	0.0034 B	0.0019 B	0.0034 B	0.004 B	0.0076 B	0.0022 B	0.01 U	0.01 U
Copper	N	0.15	1.3	0.0027	0.02	13	~	0.02 U	0.0053 B	0.02 U	0.0043 B	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
Iron	N	1.1	~	0.024	0.05	3	~	0.57	1.4	0.51	1.9	3.5	5.3	2.2	0.059	0.28
Lead	~	~	0.015	0.0025	0.005	~	~	0.005 U	0.024	0.005 U	0.0058	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Magnesium	~	~	~	0.05	0.5	~	~	33	28	66	21	47	58	47	8.2	9.7
Manganese	N	0.073	~	0.001	0.01	0.5	1	4.7 *	0.77	0.48	0.74	3.2 *	11	2.9	0.12	0.83 *
Nickel	N	0.073	~	0.0022	0.04	6.1	46	0.04 U	0.017 B	0.04 U	0.0068 B	0.04 U	0.0097 B	0.04 U	0.04 U	0.04 U
Potassium	~	~	~	0.1	1	~	~	0.55 B	190	1.2	10	2.3	2	4.7	2.2	0.57 B
Selenium	N	0.018	0.05	0.0053	0.01	1.7	42	0.01 U	0.15	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	~	~	~	0.18	0.5	~	~	54	270	72	400	12	43	93	6	11
Thallium	N	0.00026	0.002	0.0057	0.01	0.017	0.063	0.01 U	0.01 U	0.01 U	0.01 U	0.0071 B	0.01 U	0.01 U	0.01 U	0.01 U
Vanadium	N	0.026	~	0.0007	0.01	~	~	0.01 U	0.0087 B	0.0018 B	0.0071 B	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Zinc	N	1.1	~	0.0013	0.02	74	260	0.009 B	0.14	0.0093 B	0.04	0.016 B	0.019 B	0.0064 B	0.011 B	0.019 B

**Red** - Indicates an exceedance of the Maximum Contaminant Level (MCL)  
**Blue** - Indicates an exceedance of the EPA Region III Tap Water RBCs dated April 2003  
**Yellow** - Indicates detection that exceeds Water + Organism criteria  
**Green** - Indicates detection that exceeds Organism criteria

<sup>1</sup>Carcinogen/Non-Carcinogen taken from EPA Region III RBC table (April 2003)  
<sup>2</sup>Tap Water RBCs for noncarcinogens have been multiplied by a Hazard Quotient of 0.1 to account for cumulative effects on target organs.

**Qualifiers**  
 U - Indicates that the compound was analyzed for but not detected.  
 B (Inorganic) - Indicates the reported value was obtained from a reading less than the RL but greater than or equal to the MDL  
 \* - Sample duplicate %RPD exceeded acceptance limits.  
 J - Indicates the presence of a compound that meets the identification criteria, but the result is less than the sample RL and greater than the MDL.