

Natural Resource Damages Sampling and Analysis Report

Sediment and Surface Water Sampling of the Viburnum Trend Lead Mining Sites in Iron, Crawford, Washington, Reynolds, Shannon and Dent Counties, Missouri

**Order Id #s: 110901130, 110901131, 110901132,
110901133, 110929003, 111024004 and 111213004**

August 29, 30 and 31, 2011

Prepared For:

Missouri Department of Natural Resources
Division of Environmental Quality
Hazardous Waste Program

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1.0 Introduction

Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986, the Missouri Department of Natural Resources (MDNR), Hazardous Waste Program (HWP), Natural Resource Damages (NRD) program conducted a NRD site assessment on selected streams located in and around the Viburnum Trend Lead Mining Sites (VTLMS). The streams selected for this assessment are potentially impacted by hazardous substances releases from the VTLMS. Furthermore, limited or no sediment and surface water sampling data exist for these streams at the present time. This assessment did not seek to address all streams potentially impacted by the VTLMS; it intentionally excluded streams (as a matter of prioritization) that were previously sampled as part of other sampling events.

The NRD program requested that the MDNR, Environmental Services Program (ESP) prepare and implement a sampling plan for the selected VTLMS streams. The scope of the assessment included collecting sediment and surface water samples at selected sites and analyzing them for a suite of mining-derived metals. This assessment was intended to provide stream-specific information about the presence and concentration of hazardous substances in the selected VTLMS streams.

2.0 Site Information

2.1 Description

The VTLMS are in six counties and comprise a mixture of properties owned by mining companies, the U.S. Forest Service (USFS) and private landowners. Approximately 45 miles of streams were included in this assessment and are typical of the stream types found in the area. They are primarily medium to fast running streams that vary greatly in volume depending upon the amount of rainfall occurring in the area. Sediment is primarily comprised of cobble, gravel, and sand with a small amount of fines (silt- and clay-sized particles) in slower depositional areas.

2.2 History

The VTLMS contain historic lead, zinc and barite mine locations listed in the Missouri Inventory of Mines, Occurrences and Prospects database. Both surface and underground mining occurred throughout the area historically within the State of Missouri. Mining is still occurring in the Viburnum Trend.

2.3 Contaminants of concern

The contaminants of concern that are associated with the mining activities at these sites are lead, zinc, cadmium, nickel, arsenic, and copper.

3.0 Site Reconnaissance

Site reconnaissance was conducted by ESP and HWP personnel at some of the VTLMS. Personnel from the ESP and HWP arrived at the VTLMS on May 24, 2011, and met with personnel from The Doe Run Company. The MDNR and Doe Run personnel traveled along the area roads and consulted maps to determine access points to each of the creeks selected for this assessment. Access points included areas where the creeks passed under bridges or where the creek was close enough to a road for sample equipment and personnel to be transported to the creek. A total of 34 access points were found, with the breakdown per creek as follows: Bills Creek - 6, Sweetwater Creek - 3, Neals Creek - 10, Left Fork of Neals Creek - 3, Crooked Creek - 5, Mill Rock Creek - 1, and Indian Creek - 6. In addition to locating sampling access points, the team also collected sediment samples at five locations in order to help establish sampling protocol and quality control measures.

4.0 Field Sampling

Non-random sampling was conducted to determine whether hazardous substances releases have occurred, and the types and concentrations of hazardous substances present. This report describes the methods used by field personnel to collect sediment and surface water samples.

4.1 Sampling location

The VTLMS are located along several stretches of streams primarily in Iron County near the town of Viburnum. These streams include Neals Creek, Left Fork of Neals Creek, Crooked Creek (with small portions located in Crawford and Dent Counties), Indian Creek (with a small portion located in Washington County), Mill Rock Creek (primarily in Crawford County, with a small portion in Iron County), Bills Creek (primarily in Reynolds County, with a small portion in Iron County), and Sweetwater Creek (primarily in Reynolds County, with a small portion in Shannon County). Refer to Appendix A (Figure 1, Site Location Map) for the locations of the streams that were sampled.

Appropriate reference samples were collected from locations believed to be unaffected by any previous site activities of the media collected. Reference sample locations were collected from three streams; Bee Fork (above Fletcher Mine) in Reynolds County, Tom's Creek (a tributary to West Fork Creek) in Reynolds County and Middle Fork of the Black River (above Strother Creek) in Iron County.

Stream sampling was conducted by four teams consisting of MDNR personnel and representatives of the Doe Run Company. Each team was assigned a unique series of three digit code numbers for each sampling location. For team one a "100" series of numbers was assigned; team 2 was assigned a "200" series; team 3 a "300" series; and team 4 a "400" series. All sampling locations were recorded on a site map with the corresponding global positioning system (GPS) coordinates recorded.

4.2 Record of sampling

Field personnel noted all observations, sample locations, descriptions, and methods in a bound field logbook. Copies of field notes may be found in Appendix D.

4.3 Sampling methods

All aspects of sampling were performed using standard operating procedures (SOPs) established within the ESP, Environmental Emergency Response/Field Services Section (EER/FSS) for the collection, preservation, and transport of various media sampled. Any modifications to the methods were noted in the field logbook and outlined in the sampling report submitted to the NRD program.

4.4 Sampling order

Wherever sediment and surface water samples were collected, personnel collected surface water grabs prior to the corresponding sediment grabs to minimize sediment disturbance.

4.5 Surface water sampling

Field instruments used during water sample collection, including pH, specific conductivity, Oxidation-Reduction Potential (ORP), and temperature meters, were calibrated daily on-site per manufacturers' specifications. The ORP pen used by Team Three would not calibrate on the final day of collection; therefore, ORP readings were not recorded by the team on August 30, 2011.

Surface water grab samples (500 milliliters (ml)) were collected by immersing the sample containers into the stream water. The sample containers were rinsed with a small volume of site (stream) water before collection of the grab sample. When entering the stream, personnel approached the water sampling location from downstream so as not to increase turbidity in the water sample during collection. A portion of the collected sample (approximately 250 ml) was reserved for analyses of total metals. The remainder of the sample (approximately 250 ml) was filtered back at the sampling vehicle and preserved for dissolved metal analysis. This portion of the sample (approximately 250 ml) was passed through a 0.45 micron filter via the use of a peristaltic pump to remove additional suspended particulates from the sample. All pump tubing and filter devices were dedicated, single-use equipment to eliminate cross-contamination.

Nitric acid was used in the field to chemically preserve the water samples collected for both total and dissolved metals. The container for total metals was acidified immediately upon collection, while the container for dissolved metals was acidified after filtration. Water samples were also preserved in the field by putting the containers in a cooler on ice after collection.

Mining company representatives did not collect water samples as part of this sampling event.

4.6 Sediment sampling

Sediment samples were collected at the same general locations as surface water samples. All sampling locations were assessed prior to stream entry to determine if sufficient sediment sample could be safely collected. Sediment composite samples were collected at locations of apparent sediment deposition in pools and backwater areas along the stream within a 100 square meter (m^2) area, centered generally around the point where the surface water sample was collected. Sediment was collected from within the 100 m^2 area using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler constructed by US Geological Survey staff (see pictures in Appendix B). Scoops were used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles. The number of scoops collected for each sample was noted in field log books. The scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 millimeter (mm)) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket. The sediment in the five-gallon bucket was homogenized with a large Teflon spoon. Because selected sediment samples were split between MDNR personnel and mining company consultants (i.e., replicate split samples), the sieved sediment in the five-gallon bucket was then poured into two pans joined side-by-side, making an effort to equally divide both the water and the sediment between the two pans. Each pan of sediment and water was then placed in another clean bucket and covered with a secure lid. One bucket containing a replicate split remained in the possession of MDNR personnel, while another bucket containing the other replicate split was given to the mining company consultants. The MDNR sample bucket of collected sediment was labeled with a unique sample number and returned to the ESP laboratory for further post processing. Excess water from the sieving process was pumped off the sample via the use of a peristaltic pump and tubing after a settling period of more than two days. Water was pumped off of the sample in this manner to minimize the removal of fine-grained particulates.

The mining consultants allowed the replicate split sample to settle for a period of time (Team One recorded a minimum of 15 minutes. Other teams observed a waiting period but did not record the time). Thereafter, a portion of the stream water was decanted off of the top of the sample and the sample was placed into a bucket. In comparison to the settling times and procedures used by MDNR staff mentioned above some finer suspended sediment were most likely inadvertently lost by the consultants as their water was decanted.

4.7 Sample quantity

A total of 34 access points were identified during the May 24, 2011, reconnaissance event. From these access points, efforts were made to collect samples both upstream and downstream from an access point. In some instances, stream conditions prevented collection from both upstream and downstream. Adverse conditions included property where permission to sample was not granted, sites where sediment deposition was not present, or areas that were deemed unsafe to sample (debris/obstacles in the creek, deep water, steep gradients, etc.). From the 34 access points, a total of 60 sediment and 65 surface water samples were collected. Some locations, where surface water samples were collected, did not have quantities of fine sediment that were

sufficient for collection. It was also noted that many streams near the headwaters were dry, rendering sample collection impossible. One stream, Mill Rock Creek, was a losing stream and dry at the mouth where it entered Huzzah Creek.

4.8 Decontamination

Clean or field decontaminated equipment were utilized for each separate sample collected to minimize the possibility of cross-contamination. Clean disposable nitrile gloves were worn by sampling personnel for each sample collected. All reusable sampling equipment (e.g., sieve buckets, scoops) were thoroughly rinsed with stream water at the sampling location. Decontaminated equipment was allowed to air dry until used again.

4.9 Sample container and preservation requirements

Refer to the following tables for container and preservation requirements on all samples.

Water Samples

Parameters	Container(s)/Volume	Preservative(s)	Holding Time
Total Metals	1 / 250-ml Nalgene bottle	Nitric Acid (HNO ₃) to pH<2, Cool	6 months
Hardness (Calcium and Magnesium)	1 / 250-ml Nalgene bottle	HNO ₃ to pH<2, Cool	6 months
Dissolved Metals	1 / 250-ml Nalgene bottle	Filter (0.45 μm), HNO ₃ to pH<2, Cool	6 months

Note: Total metals and hardness were combined into one sample container.

Sediment Samples

Parameters	Container(s)/Volume	Preservative(s)	Holding Time
Total Metals	1 / 8-oz glass jar	None	6 months

Note: Sediment samples were initially collected in five-gallon buckets with lids and returned to the ESP laboratory for drying, sieving and X-ray fluorescence (XRF) analysis. Samples submitted to the laboratory for metal analyses were transferred to 8-ounce glass jars.

4.10 Chain-of-custody

All submitted samples received a numbered label and the corresponding number was entered onto a chain-of-custody form indicating the description, location, date and time of collection, and analytes requested. Surface water samples were stored and transported on ice in coolers. Sediment samples remained in 5-gallon buckets until post processing. The ESP field personnel maintained custody of the samples until relinquishing them to a sample custodian at the State's

environmental laboratory within the ESP in Jefferson City for the analyses. Copies of the chain of custody forms may be found in Appendix D.

4.11 Screening sediment metals by XRF

Sediment samples were returned to the ESP laboratory and post processed for XRF analysis. Excess water was pumped off the sample by using a peristaltic pump and tubing. Water was pumped off the sample in a manner that minimized the removal of fine-grained particulates. Samples were spread out in aluminum foil pans and allowed to dry until the sample contained less than 20% moisture. The percent moisture was assumed to be less than 20% when all moist areas contained in an individual sample appeared dried. Once the samples dried, they were placed in individual plastic bags and analyzed for metal concentrations using an XRF analyzer. Samples were then sieved using a standard #60 soil sieve (250 micrometers (μm)). The sieved sediment samples were placed in plastic bags and analyzed again using an XRF analyzer. Sediment XRF results are presented in Tables 1 and 2 of Appendix C. Maps containing the results are presented in Figures 2-5 of Appendix A.

4.12 Confirmatory analyses

After sample preparation, sediment samples were screened with an X-ray Fluorescence (XRF) analyzer, with samples submitted to the ESP laboratory for confirmatory analyses. Ten percent of the #60 sieved samples (6) were submitted to the lab for analysis after completion of the XRF analysis. Twenty percent of the #10 sieved samples (12) were submitted for lab analysis after completion of the XRF analysis. All sediment samples were analyzed for lead, zinc, cadmium, arsenic, nickel and copper. Surface water samples were analyzed for total and dissolved metals and hardness (i.e., for calcium and magnesium). Surface water analytical results are presented in Table 5 of Appendix C. Maps containing the results are presented in Figures 6-9 of Appendix A.

After receipt of the initial confirmatory analyses, HWP personnel reviewed the results and determined that an additional 19 sediment samples should be analyzed by the laboratory. All samples were submitted to the lab for lead, zinc, cadmium, arsenic, nickel and copper analysis. Sediment collection data is provided in Table 1 of Appendix D. All sediment analytical results are presented in Tables 3 and 4 of Appendix C.

5.0 Data Quality

To help ensure that precise, accurate, representative, complete, and comparable data were achieved, all field work and analyses were conducted in accordance with the *Quality Assurance Project Plan (QAPP) for Natural Resources Damages, Revision 3, April 13, 2011*, and the *NRD Sampling and Analysis Plan* for the VTLMS. Unless otherwise noted in the sampling plan, ESP field personnel utilized SOPs established within the ESP for all samples collected.

5.1 Quality Assurance/Quality Control (QA/QC) samples

The ESP established the following definitions for QA/QC samples routinely included/collected during sampling events.

5.2 Duplicate (co-located) water samples

Duplicate water samples are used primarily to assess the precision associated with sampling methodology, and to a lesser extent, sample heterogeneity and analytical procedures.

ESP personnel routinely collect duplicate water samples at a rate of 10% of the total number of water samples collected, or at least one for each sampling day. Each duplicate sample was collected at the same location and time as its true sample, using the same equipment and technique. Each duplicate sample received a numbered label, was entered onto the chain-of-custody form, and submitted for the same analyses as its companion sample. A total of nine duplicate water samples were collected during the sampling event.

5.3 Replicate/Duplicate sediment samples

Replicate (split) samples are used primarily to check instrument precision and accuracy of a laboratory analysis, and to a lesser extent, sample handling procedures. Replicate samples (sediment) are collected by dividing or splitting one sample that has been mixed or homogenized into two samples for separate analyses. Whenever feasible, ESP personnel and mining company consultants split each stream sediment sample.

ESP personnel routinely collect replicate and duplicate samples at a rate of 10% of the total number of samples collected. For this project, ESP collected duplicates at a rate of 10%. Duplicate sediment samples were collected in the following manner. The first sample (or true sample) was collected and split as previously described in Section 4.6. Then a second sample was collected from the same 100 m² area as the first sample, following the same procedures as described in Section 4.6. In addition to assessing sample homogeneity, precision and accuracy, duplicate samples help assess the representativeness of the sample collection procedures.

A post processed replicate sample was collected for those samples sent to the ESP laboratory for confirmatory analysis. This replicate sample was collected after samples were dried, sieved, and screened using XRF analysis. From the samples selected for confirmatory analysis, 20% were selected for post processed replication. The selected samples were split into two separate samples and submitted for laboratory analysis. Each post processed replicate sample received a numbered label, was entered onto the chain-of-custody form, and submitted for the same analyses as its true sample.

6.0 Investigation Derived Wastes (IDW) Plan

Efforts were made to minimize IDW generation. The IDW may include sediment, aqueous liquids (surface water), decontamination fluids, disposable sampling equipment, and disposable personal protective equipment (PPE).

Field personnel returned unused sediments to their source immediately after generation. Disposable PPE and disposable sampling equipment was handled as solid waste, containerized,

and properly disposed. Wash and rinse waters generated during equipment decontamination was generally discharged to the ground on-site.

7.0 Site Safety

A safety briefing was held on-site prior to initiating field activities and field personnel read and signed the site-specific health and safety plan.

8.0 Reporting

Appendix A contains a figures of the site location and sampling locations. Photographs of the sampling equipment and sampling locations are presented in Appendix B. The analytical results of samples collected are presented in Appendix C. Field notes and chain of custody forms are presented in Appendix D. Tables outlining the information on all submitted samples are presented in Table 1 and Table 2 in Appendix D.

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APPENDIX A
Figures

Sediment and Surface Water Sampling of the
Viburnum Trend Lead Mining Sites in
Iron, Crawford, Washington, Reynolds,
Shannon and Dent Counties,
Missouri

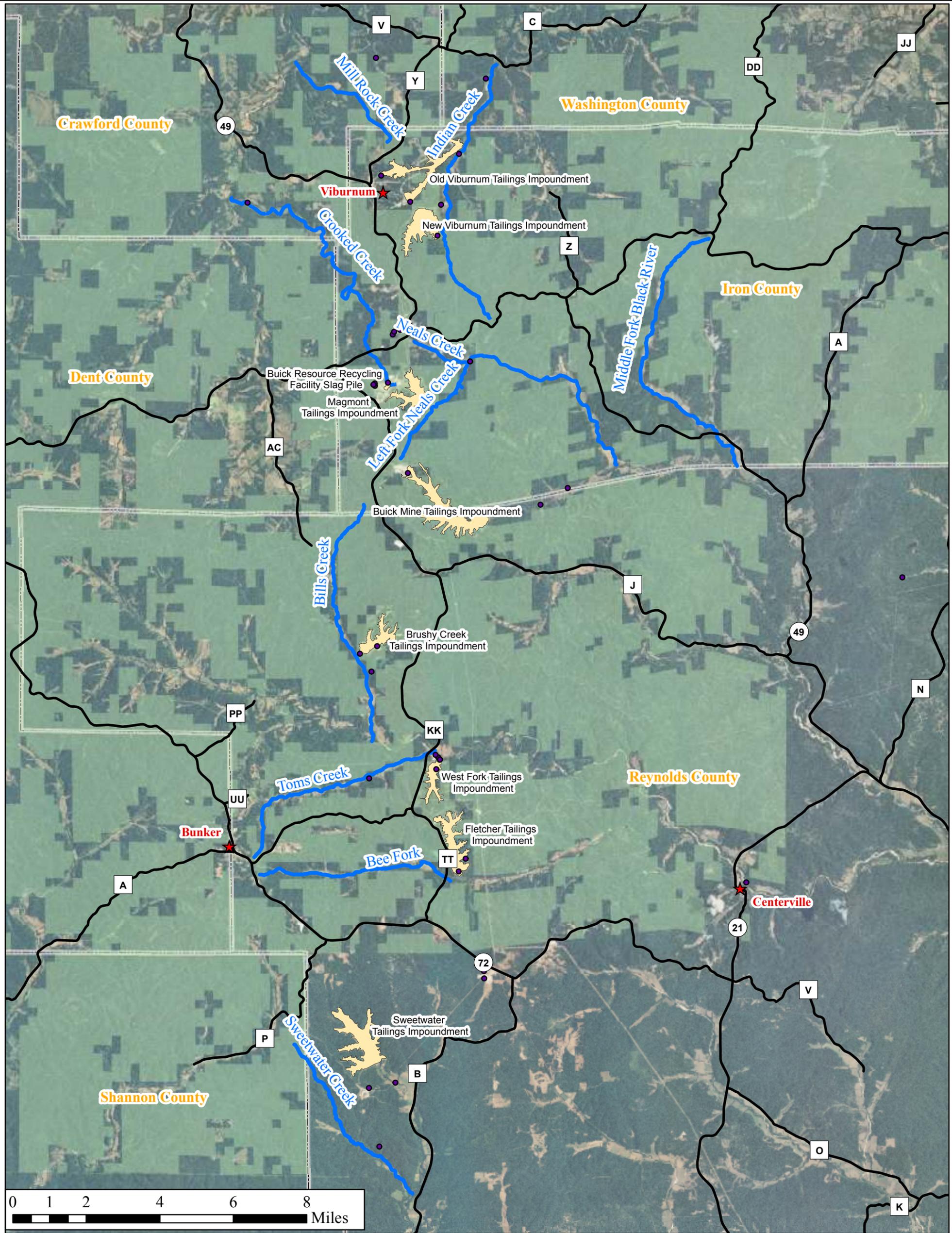
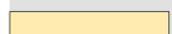
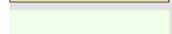
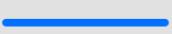


Figure 1: Site Location Map
Viburnum Trend Sampling Event 2011



Legend

	Metallic Mineral Waste		Missouri State Roads
	USFS Lands		Subject Stream
	County Boundary		NPDES Outfall
			Municipality

Map Created by Meagan Prestegard, January 2012

This map is located at M:/Superfund/NRD/Viburnum Trend

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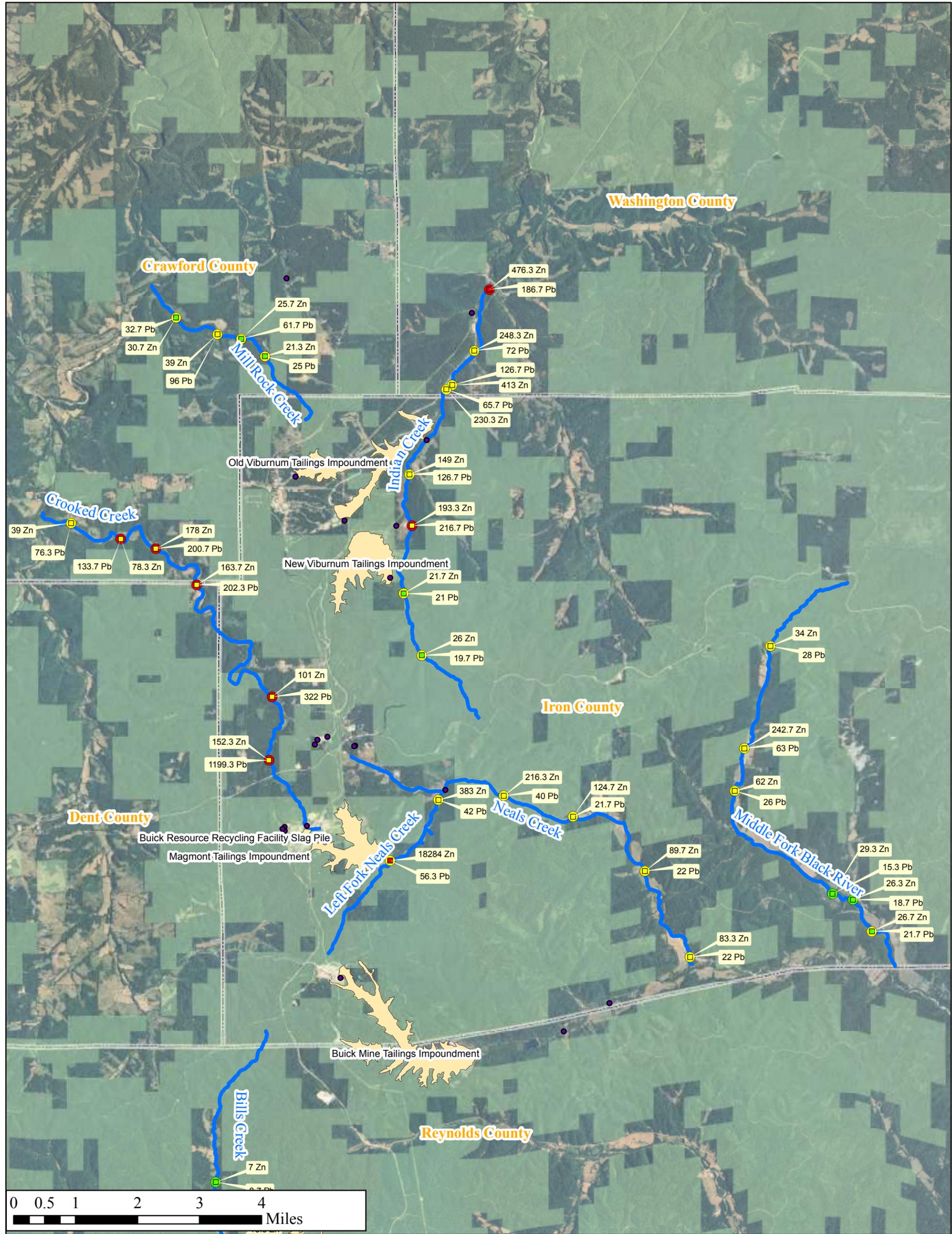


Figure 2: Sediment Sampling Results (<2 mm) Northern Portion Viburnum Trend Sampling 2011



Legend

Zinc Concentration #10 Sieve	Metallic Mineral Waste
Zinc (ppm)	USFS Lands
0.0 - 33.4	County Boundary
33.4 - 459.0 (above reference value)	NPDES Outfall
459.0 - 18284.0 (above PEC)	
Lead Concentration #10 Sieve	
Lead (ppm)	
0.0 - 18.7	
18.7 - 128.0 (above reference value)	
128.0 - 1200.0 (above PEC)	

Map Created by Meagan Prestegard, October 2011

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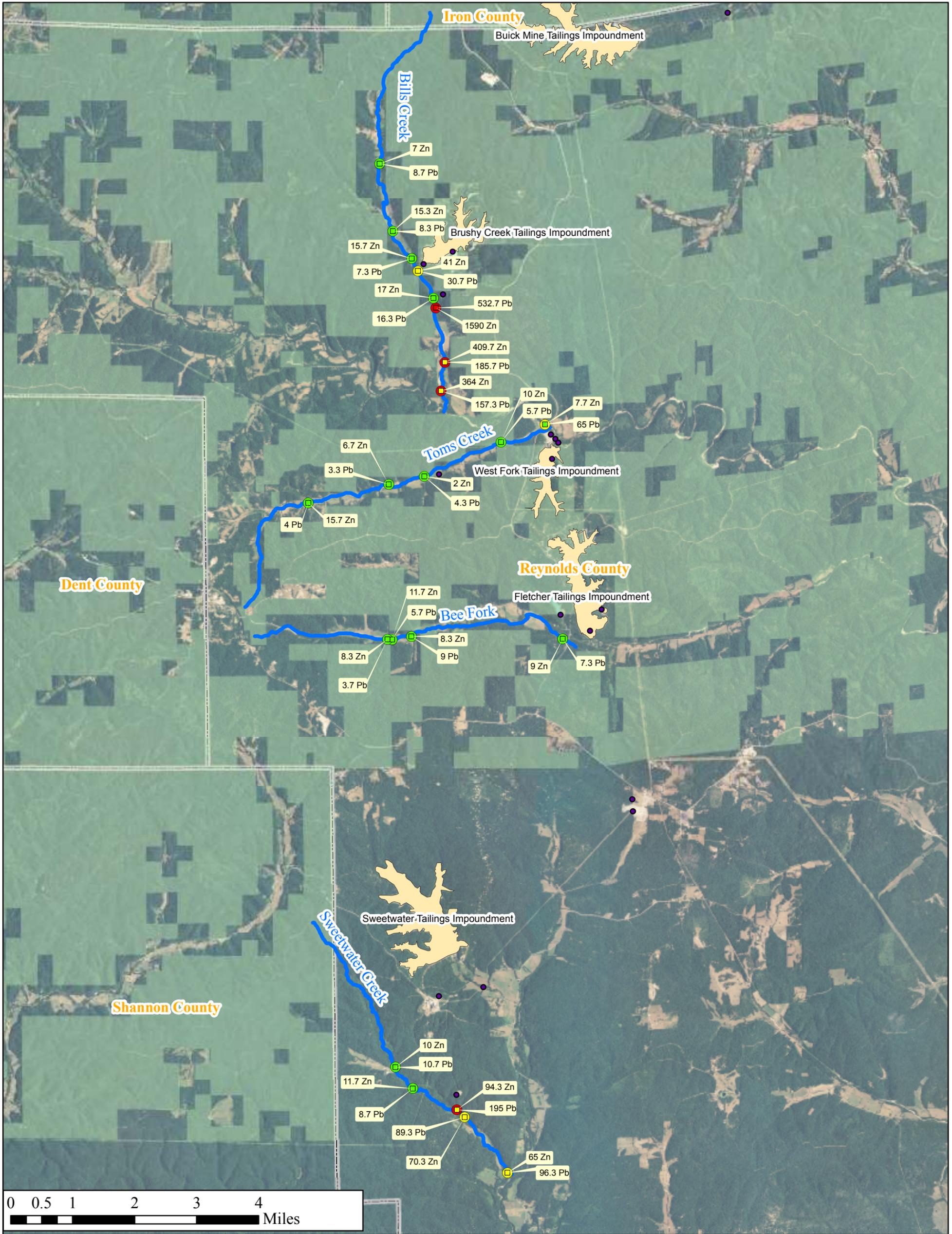


Figure 3: Sediment Sampling Results (<2 mm) Southern Portion Viburnum Trend Sampling 2011



Legend	
Zinc Concentration #10 Sieve	Metallic Mineral Waste
Zinc (ppm)	USFS Lands
0.0 - 33.4	County Boundary
33.4 - 459.0 (above reference value)	NPDES Outfall
459.0 - 18284.0 (above PEC)	
Lead Concentration #10 Sieve	
Lead (ppm)	
0.0 - 18.7	
18.7 - 128.0 (above reference value)	
128.0 - 1200.0 (above PEC)	

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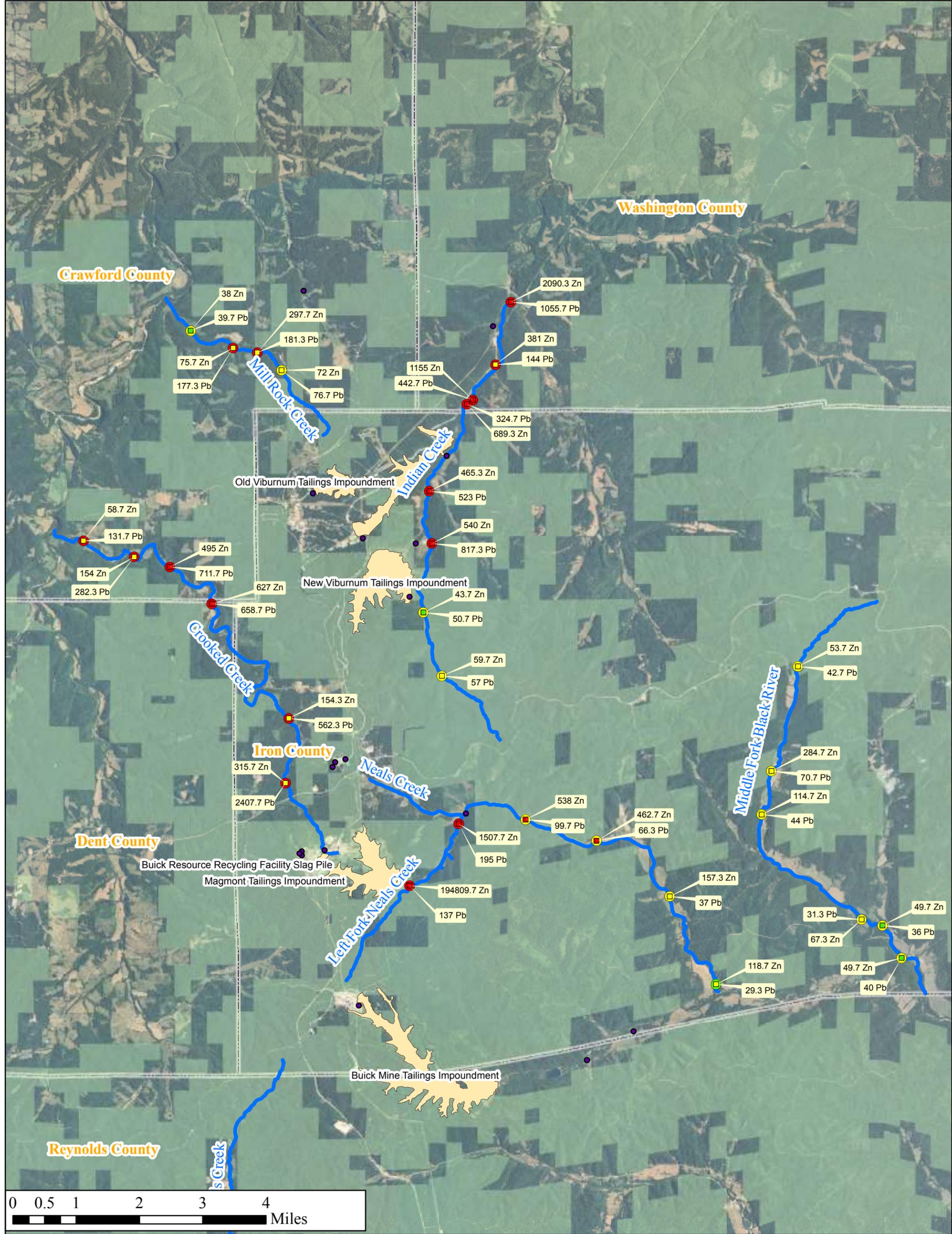


Figure 4: Sediment Sampling Results (<250 um) Northern Portion Viburnum Trend Sampling 2011



Legend	
Zinc Concentration #60 Sieve	<ul style="list-style-type: none"> 0.0 - 50.7 50.7 - 459.0 (above reference value) 459.0 - 194809.7 (above PEC)
Lead Concentration #60 Sieve	<ul style="list-style-type: none"> 0.0 - 30.2 30.2 - 128.0 (above reference value) 128.0 - 3557.3 (above PEC)
<ul style="list-style-type: none"> Metallic Mineral Waste USFS Lands County Boundary NPDES Outfall 	

Map Created by Meagan Prestegard, October 2011

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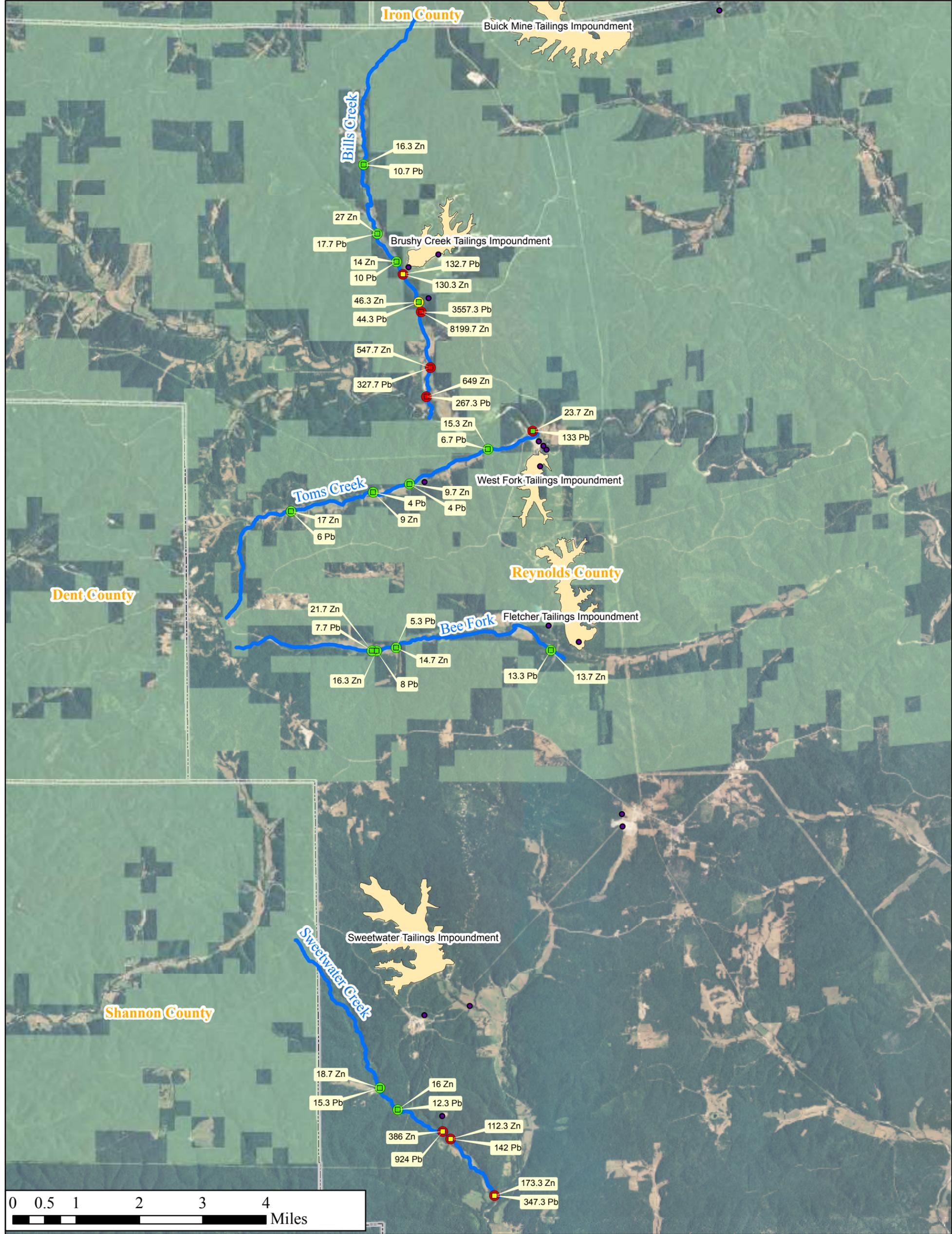


Figure 5: Sediment Sampling Results (<250 um) Southern Portion Viburnum Trend Sampling 2011



Legend	
Zinc Concentration #60 Sieve	Metalic Mineral Waste
Zinc (ppm)	USFS Lands
0.0 - 50.7	County Boundary
50.7 - 459.0 (above reference value)	NPDES Outfall
459.0 - 194809.7 (above PEC)	
Lead Concentration #60 Sieve	
Lead (ppm)	
0.0 - 30.2	
30.2 - 128.0 (above reference value)	
128.0 - 3557.3 (above PEC)	

Map Created by Meagan Prestegard, October 2011

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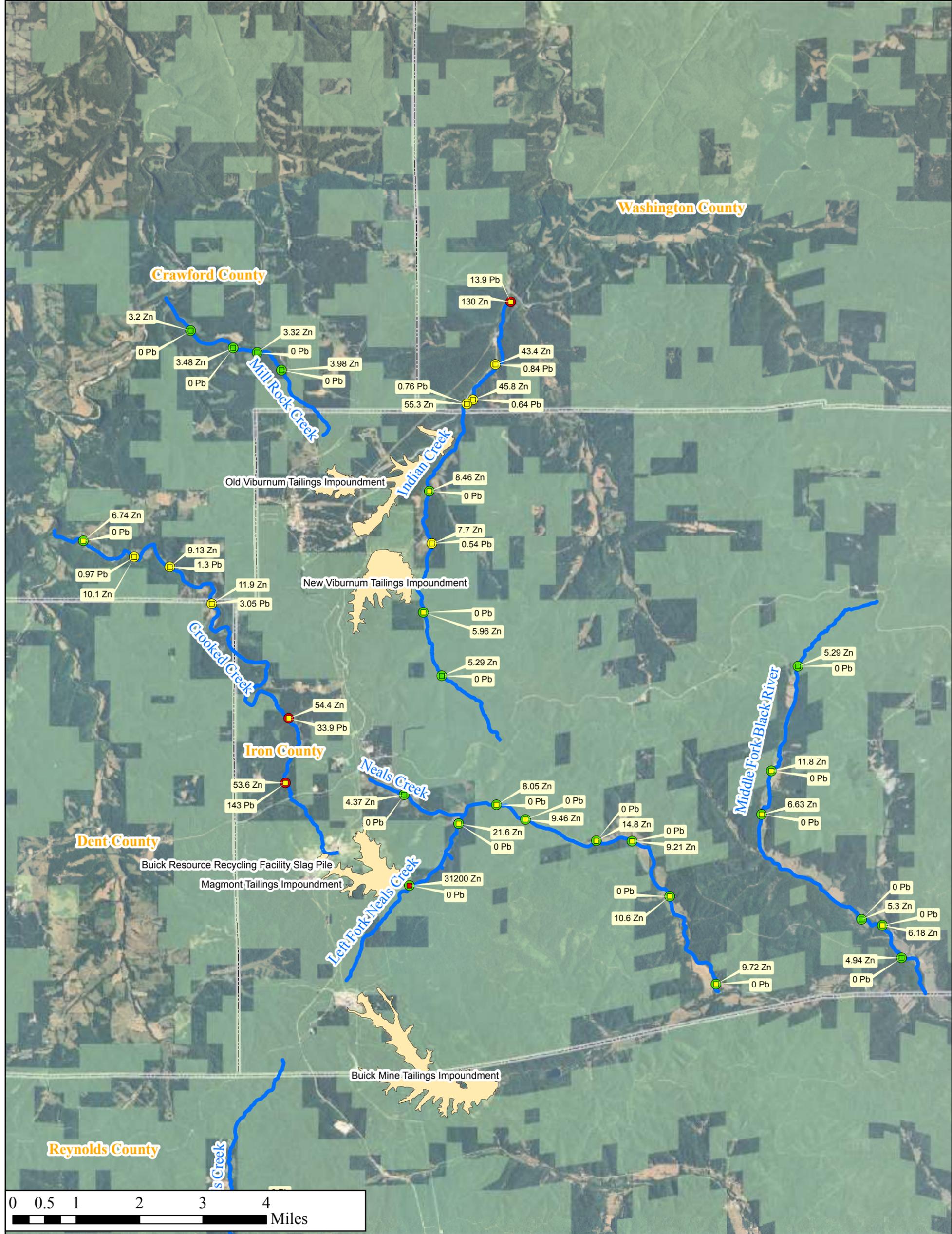
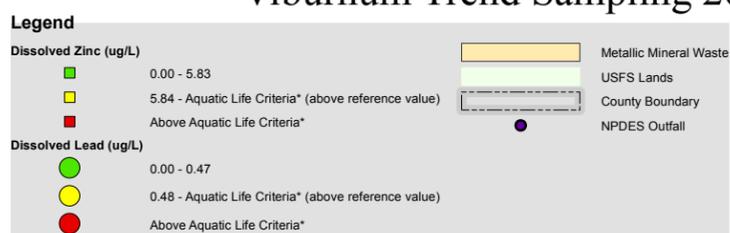


Figure 6: Surface Water Sampling Results - Dissolved Metals
Northern Portion
Viburnum Trend Sampling 2011



*Aquatic Life Criteria - Missouri Water Quality Standards, Missouri Code of State Regulations, 10 CSR 20-7.031, AQL (Protection of Aquatic Life) Hardness Dependent September 30, 2009

Map Created by Meagan Prestegard, November 2011

This map is located at M:/Superfund/NRD/Viburnum Trend

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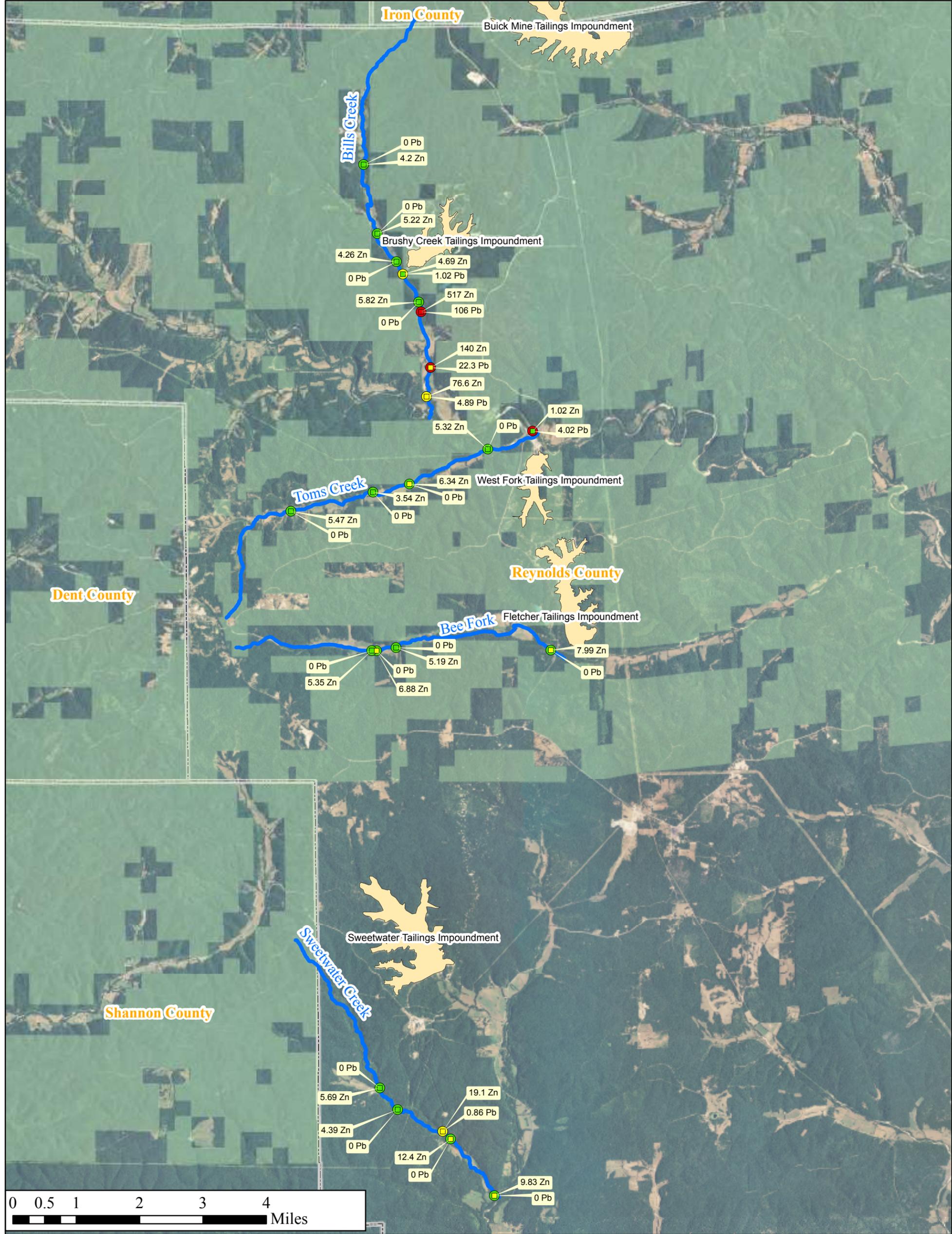
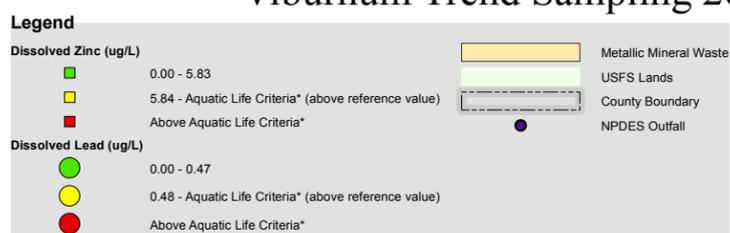


Figure 7: Surface Water Sampling Results - Dissolved Metals Southern Portion Viburnum Trend Sampling 2011



*Aquatic Life Criteria - Missouri Water Quality Standards, Missouri Code of State Regulations, 10 CSR 20-7.031, AQL (Protection of Aquatic Life) Hardness Dependent September 30, 2009

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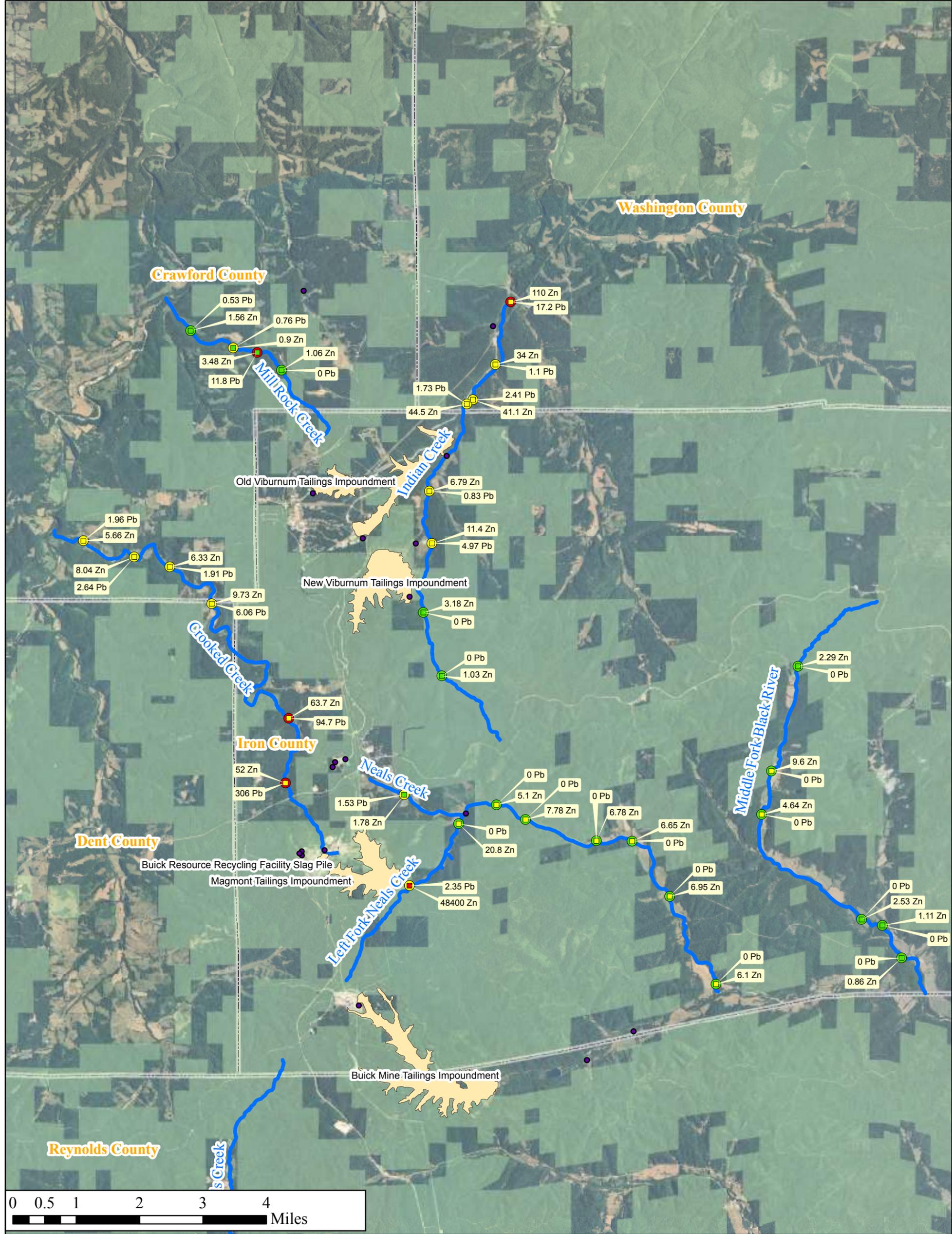


Figure 8: Surface Water Sampling Results - Total Metals
Northern Portion
Viburnum Trend Sampling 2011



Legend	
■ 0.00 - 3.56	■ Metallic Mineral Waste
■ 3.57 - Aquatic Life Criteria* (above reference value)	■ USFS Lands
■ Above Aquatic Life Criteria*	■ County Boundary
● 0.00 - 0.61	● NPDES Outfall
● 0.62 - Aquatic Life Criteria* (above reference value)	
● Above Aquatic Life Criteria*	

*Aquatic Life Criteria - Missouri Water Quality Standards, Missouri Code of State Regulations, 10 CSR 20-7.031, AQL (Protection of Aquatic Life) Hardness Dependent September 30, 2009

Map Created by Meagan Prestegard, November 2011

This map is located at M:/Superfund/NRD/Viburnum Trend

Although all data sets used to create this map have been compiled by the Missouri Department of Natural Resources, no warranty, expressed or implied, is made by the department as to the accuracy of the data and related materials. The act of distribution shall not constitute any such warranty, and no responsibility is assumed by the department in the use of these data or related materials.



Missouri Department of Natural Resources
Division of Environmental Quality
Hazardous Waste Program

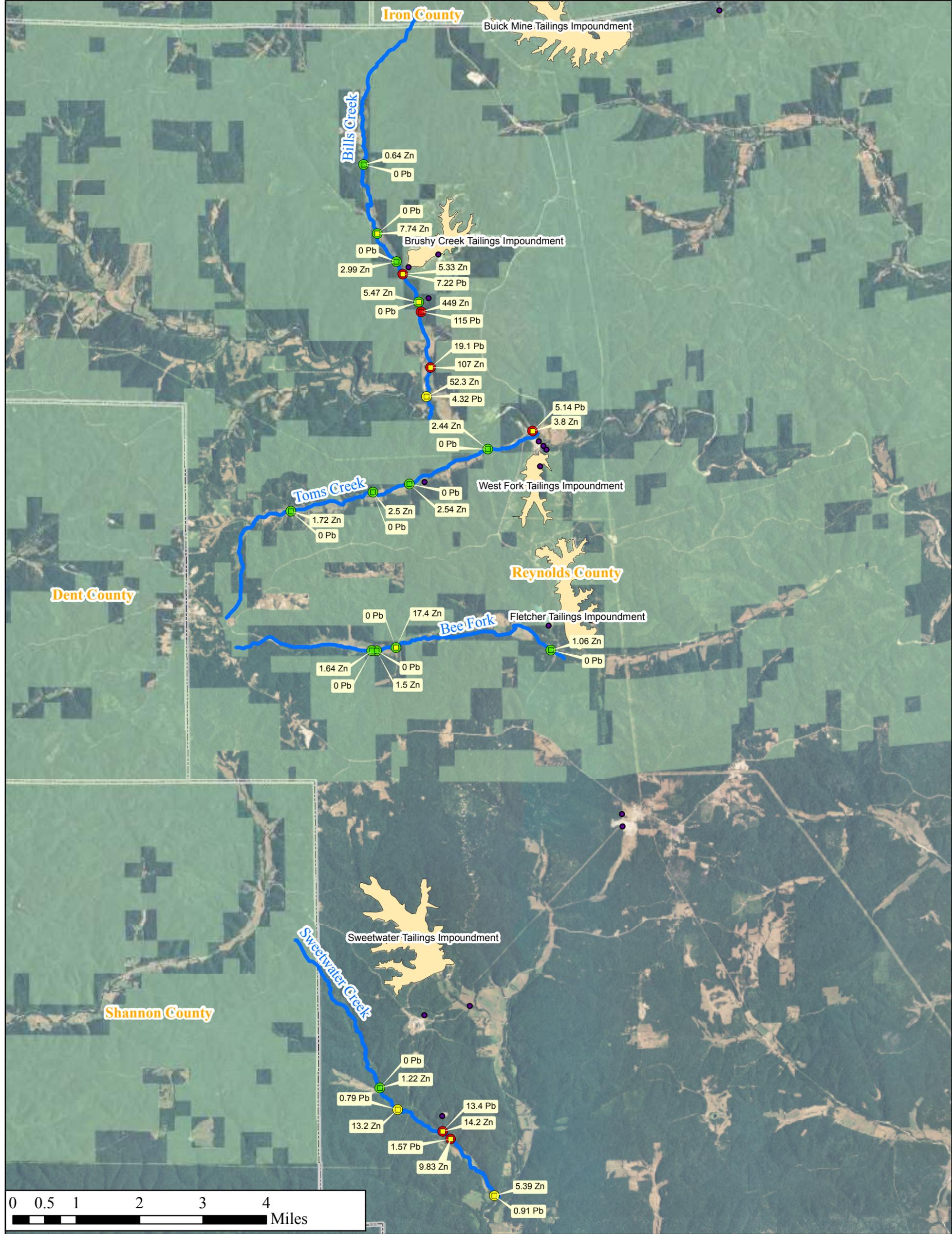


Figure 9: Surface Water Sampling Results - Total Metals
Southern Portion
Viburnum Trend Sampling 2011



Legend	
Total Zinc (ug/L)	Total Lead (ug/L)
0.00 - 3.56	0.00 - 0.61
3.57 - Aquatic Life Criteria* (above reference value)	0.62 - Aquatic Life Criteria* (above reference value)
Above Aquatic Life Criteria*	Above Aquatic Life Criteria*
Metalliferous Mineral Waste	USFS Lands
County Boundary	NPDES Outfall

*Aquatic Life Criteria - Missouri Water Quality Standards, Missouri Code of State Regulations, 10 CSR 20-7.031, AQL (Protection of Aquatic Life) Hardness Dependent September 30, 2009

Map Created by Meagan Prestegard, November 2011

This map is located at M:/Superfund/NRD/Viburnum Trend

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APPENDIX B
Photographic Log: Sampling Tools and Site Location Data

Sediment and Surface Water Sampling of the
Viburnum Trend Lead Mining Sites in
Iron, Crawford, Washington, Reynolds,
Shannon and Dent Counties,
Missouri



Figure 1- Sample scoop and sieve bucket



Figure 2- Close up of sample scoop

Viburnum Trend Sampling Event
Bee Fork Creek 8/29/11 to 8/30/2011



Photograph 1
Bee Fork Creek
Reynolds County, MO
Photo taken 08/30/11
By DNR-DEQ-HWP Staff

View of Bee Fork Creek at sediment and surface water sampling location 405.



Photograph 2
Bee Fork Creek
Reynolds County, MO
Photo taken 08/29/11
By DNR-DEQ-HWP Staff

View of sediment sampling procedure at location 402. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 3
Bee Fork Creek
Reynolds County, MO
Photo taken 08/29/11
By DNR-DEQ-HWP Staff

Scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket as shown here at sampling location 401.

Viburnum Trend Sampling Event
Bee Fork Creek 8/29/11 to 8/30/2011



Photograph 4
Bee Fork Creek
Reynolds County, MO
Photo taken 08/29/11
By DNR-DEQ-HWP Staff

View of surface water field measurements at location 403. Field instruments, including pH, specific conductivity, Oxidation-Reduction Potential (ORP), and temperature meters, were utilized during the collection of surface water samples.



Photograph 5
Bee Fork Creek
Reynolds County, MO
Photo taken 08/30/11
By DNR-DEQ-HWP Staff

View of surface water field measurements at location 405. Field instruments, including pH, specific conductivity, Oxidation-Reduction Potential (ORP), and temperature meters, were utilized during the collection of surface water samples.



Photograph 6
Bee Fork Creek
Reynolds County, MO
Photo taken 08/29/11
By DNR-DEQ-HWP Staff

Information from each site was recorded as shown here at location 401 per standard operating procedures established within the Environmental Services Program and per the site specific sampling plan.

Viburnum Trend Sampling Event
Bills Creek 8/29/2011, 8/30/2011



Photograph 1
Bills Creek
Reynolds County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of Bills Creek at sediment and surface water sampling location 302.



Photograph 2
Bills Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of sediment sampling procedure at location 313. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 3
Bills Creek
Reynolds County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of sediment sample collection at location 305. The scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket.

Viburnum Trend Sampling Event
Bills Creek 8/29/2011, 8/30/2011



Photograph 4

Bills Creek
Reynolds County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of replicate split sampling procedure at sediment sampling location 305. The sieved sediment sample is transferred from the five-gallon bucket and poured into two pans joined side-by-side, making an effort to equally divide both the water and the sediment between the two pans.



Photograph 5

Bills Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of surface water field measurements at location 313. Field instruments, including pH, specific conductivity, Oxidation-Reduction Potential (ORP), and temperature meters, were utilized during the collection of surface water samples.



Photograph 6

Bills Creek
Reynolds County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of surface water sample collection at location 306. Surface water grab samples (500 ml) were collected by immersing the sample containers into the stream water. The sample containers were rinsed with a small volume of site (stream) water before collection of the grab sample.

Viburnum Trend Sampling Event
Crooked Creek 8/30/2011



Photograph 1
Crooked Creek
Iron County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of Crooked Creek at sediment and surface water sampling location 108.



Photograph 2
Crooked Creek
Dent County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of sediment sampling procedure at location 107. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 3
Crooked Creek
Crawford County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of surface water field measurements at location 105. Field instruments, including pH, specific conductivity, Oxidation-Reduction Potential (ORP), and temperature meters, were utilized during the collection of surface water samples.

Viburnum Trend Sampling Event
Crooked Creek 8/30/2011



Photograph 4
Crooked Creek
Crawford County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of sediment sample collection with scoop sampler at location 106.



Photograph 5
Crooked Creek
Crawford County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of sediment sample collection at location 106. The scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket.



Photograph 6
Crooked Creek
Crawford County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of replicate split sampling procedure at sediment sampling location 105. The sieved sediment sample is transferred from the five-gallon bucket and poured into two pans joined side-by-side, making an effort to equally divide both the water and the sediment between the two pans.

Viburnum Trend Sampling Event
Indian Creek 8/29/2011, 8/30/2011



Photograph 1
Indian Creek
Washington County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of Indian Creek at sediment and surface water sampling location 204.



Photograph 2
Indian Creek
Iron County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of sediment sampling at location 205. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 3
Indian Creek
Washington County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of Indian Creek at sediment and surface water sampling location 202.

Viburnum Trend Sampling Event
Indian Creek 8/29/2011, 8/30/2011



Photograph 4
Indian Creek
Iron County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of sediment sampling at location 206.



Photograph 5
Indian Creek
Iron County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of Indian Creek at sediment and
surface water sampling location 208.



Photograph 6
Indian Creek
Iron County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of Indian Creek at sediment and
surface water sampling location 205.

Viburnum Trend Sampling Event
Left Fork of Neals Creek 8/31/2011



Photograph 1
Left Fork of Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of Left Fork of Neals Creek at sediment and surface water sampling location 413 facing upstream.



Photograph 2
Left Fork of Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of Left Fork of Neals Creek at sediment and surface water sampling location 413 facing downstream.



Photograph 3
Left Fork of Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of Left Fork of Neals Creek at sediment and surface water sampling location 412 facing downstream.

Viburnum Trend Sampling Event
Left Fork of Neals Creek 8/31/2011



Photograph 4
Left Fork of Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of sediment sampling procedure at location 412. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 5
Left Fork of Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

Scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket as shown here at sampling location 312.



Photograph 6
Left Fork of Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of surface water sample collection at location 412. Surface water grab samples (500 ml) were collected by immersing the sample containers into the stream water. The sample containers were rinsed with a small volume of site (stream) water before collection of the grab sample.

Viburnum Trend Sampling Event

Middle Fork of the Black River 8/30/2011, 8/31/2011



Photograph 1

Middle Fork of the Black River
Iron County, MO

Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of Middle Fork of the Black River at sediment and surface water sampling location 212.



Photograph 2

Middle Fork of the Black River
Iron County, MO

Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of sediment sampling at location 212. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 3

Middle Fork of the Black River
Iron County, MO

Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of sediment sampling procedure at location 212. The scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket.

Viburnum Trend Sampling Event
Middle Fork of the Black River 8/30/2011, 8/31/2011



Photograph 4
Middle Fork of the Black River
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of surface water sample collection at location 213. Surface water grab samples (500 ml) were collected by immersing the sample containers into the stream water. The sample containers were rinsed with a small volume of site (stream) water before collection of the grab sample.



Photograph 5
Middle Fork of the Black River
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of sediment sampling at location 213.



Photograph 6
Middle Fork of the Black River
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of the Middle Fork of the Black River at sediment and surface water sampling location 215.

Viburnum Trend Sampling Event
Mill Rock Creek 8/29/2011, 8/31/2011



Photograph 1
Mill Rock Creek
Crawford County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of Mill Rock Creek at sediment and surface water sampling location 101.



Photograph 2
Mill Rock Creek
Crawford County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of sediment sampling at location 109. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 3
Mill Rock Creek
Crawford County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of sediment sampling procedure at location 101. The scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket.

Viburnum Trend Sampling Event
Mill Rock Creek 8/29/2011, 8/31/2011



Photograph 4
Mill Rock Creek
Crawford County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of replicate split sampling procedure at sediment sampling location 101. The sieved sediment sample is transferred from the five-gallon bucket and poured into two pans joined side-by-side, making an effort to equally divide both the water and the sediment between the two pans.



Photograph 5
Mill Rock Creek
Crawford County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of sediment sample in sieve bucket at location 103.



Photograph 6
Mill Rock Creek
Crawford County, MO
Photo taken 08/29/11 by
DNR-DEQ-HWP Staff

View of surface water sample collection at location 103. Surface water grab samples (500 ml) were collected by immersing the sample containers into the stream water. The sample containers were rinsed with a small volume of site (stream) water before collection of the grab sample.

Viburnum Trend Sampling Event
Neals Creek 8/31/2011



Photograph 1
Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of Neals Creek at sediment and surface water sampling location 319.



Photograph 2
Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of sediment sampling procedure at location 314. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 3
Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

Scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket as shown here at sampling location 314.

Viburnum Trend Sampling Event
Neals Creek 8/31/2011



Photograph 4
Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of replicate split sampling procedure at sediment sampling location 315. The sieved sediment sample is transferred from the five-gallon bucket and poured into two pans joined side-by-side, making an effort to equally divide both the water and the sediment between the two pans.



Photograph 5
Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of surface water field measurements at location 317. Field instruments, including pH, specific conductivity, Oxidation-Reduction Potential (ORP), and temperature meters, were utilized during the collection of surface water samples.



Photograph 6
Neals Creek
Iron County, MO
Photo taken 08/31/11 by
DNR-DEQ-HWP Staff

View of surface water sample collection at location 319. Surface water grab samples (500 ml) were collected by immersing the sample containers into the stream water. The sample containers were rinsed with a small volume of site (stream) water before collection of the grab sample.

Viburnum Trend Sampling Event
Sweetwater Creek 8/30/2011



Photograph 1
Sweetwater Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of Sweetwater Creek at sediment and surface water sampling location 406 facing upstream.



Photograph 2
Sweetwater Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of sediment sampling procedure at location 314. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 3
Sweetwater Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

Scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket as shown here at sampling location 314.

Viburnum Trend Sampling Event
Sweetwater Creek 8/30/2011



Photograph 4
Sweetwater Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

Sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket. The sieve is shown here at sampling location 406 with larger rock material in the sieve.



Photograph 5
Sweetwater Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of surface water field measurements at location 409. Field instruments, including pH, specific conductivity, Oxidation-Reduction Potential (ORP), and temperature meters, were utilized during the collection of surface water samples.



Photograph 6
Sweetwater Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of surface water sample collection at location 407. Surface water grab samples (500 ml) were collected by immersing the sample containers into the stream water. The sample containers were rinsed with a small volume of site (stream) water before collection of the grab sample.

Viburnum Trend Sampling Event
Toms Creek 8/30/2011



Photograph 1
Toms Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of Toms Creek at sediment and surface water sampling location 308.



Photograph 2
Toms Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of sediment sampling procedure at location 308. Sediment was collected using a 3-inch diameter by 24-inch length polyvinyl chloride (PVC) scoop sampler. The scoop was used to collect shallow stream sediment to a depth of 8 cm with an attempt to minimize the loss of finer-grained particles.



Photograph 3
Toms Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

Scoops of sediment were poured into a sieve bucket equipped with a US #10 (2 mm) stainless steel screen at the bottom, with the finer-grained sediment captured in a clean five-gallon bucket placed directly below the sieve bucket as shown here at sampling location 311.

Viburnum Trend Sampling Event
Toms Creek 8/30/2011



Photograph 4
Toms Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of replicate split sampling procedure at sediment sampling location 310. The sieved sediment sample is transferred from the five-gallon bucket and poured into two pans joined side-by-side, making an effort to equally divide both the water and the sediment between the two pans.



Photograph 5
Toms Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of surface water sample collection at location 307. Surface water grab samples (500 ml) were collected by immersing the sample containers into the stream water. The sample containers were rinsed with a small volume of site (stream) water before collection of the grab sample.



Photograph 6
Toms Creek
Reynolds County, MO
Photo taken 08/30/11 by
DNR-DEQ-HWP Staff

View of surface water sample collection at location 308. Surface water grab samples (500 ml) were collected by immersing the sample containers into the stream water. The sample containers were rinsed with a small volume of site (stream) water before collection of the grab sample.

APPENDIX C
Tables

Sediment and Surface Water Sampling of the
Viburnum Trend Lead Mining Sites in
Iron, Crawford, Washington, Reynolds,
Shannon and Dent Counties,
Missouri

**TABLE 1: ANALYTICAL RESULTS FOR SEDIMENT SAMPLES (<2mm) COLLECTED AUGUST 29-31,2011
AND ANALYZED WITH AN INNOVEX X-RAY FLUORESCENCE (XRF) INSTRUMENT
FOR THE VIBURNUM TREND SAMPLING EVENT**

- All values listed in parts per million (ppm).
- “Avg” indicates “Average.”
- Shaded sample results exceed the probable effects concentration (PEC). The PEC represents the concentration that is likely to result in adverse effects on sediment-dwelling organisms. PECs are 128 ppm – lead, 459 ppm – zinc, 4.98 ppm – cadmium, 33 ppm – arsenic, 48.6 ppm – nickel, and 149 ppm – copper.

XRF Analysis Date	Sample ID	Stream Name	Lead		Zinc		Cadmium		Arsenic		Nickel		Copper	
			Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)
09/21/11	401	Bee Fork	7.3	2.0	9.0	2.0	28.0	13.0	2.3	1.0	12.3	5.0	9.7	4.0
09/21/11	402	Bee Fork	5.7	2.0	11.7	2.0	22.7	12.0	1.7	1.0	30.3	5.7	14.0	4.0
09/21/11	403	Bee Fork	3.7	2.0	8.3	2.0	46.3	12.0	2.0	1.0	4.0	4.7	5.3	3.7
09/21/11	405	Bee Fork	9.0	2.0	8.3	2.0	38.3	12.0	1.3	1.0	12.3	5.0	4.3	3.3
09/23/11	301	Bills Creek	157.3	4.7	364.0	8.0	-35.0	13.7	-3.3	4.0	36.7	7.0	2.0	4.0
09/22/11	302	Bills Creek	185.7	5.0	409.7	9.0	22.3	13.0	11.0	3.0	48.3	6.7	3.0	4.0
09/21/11	303	Bills Creek	532.7	8.7	1590.0	19.0	30.3	13.0	38.3	5.3	181.7	10.3	6.3	4.7
09/22/11	304	Bills Creek	16.3	2.0	17.0	3.0	47.3	13.0	3.7	1.0	12.7	6.3	5.7	3.7
09/22/11	305	Bills Creek	30.7	3.7	41.0	4.7	-58.3	20.0	4.3	3.3	-6.3	8.0	-0.7	5.0
09/22/11	306	Bills Creek	7.3	3.0	15.7	3.7	-60.0	19.3	-0.3	2.0	-12.3	7.7	-3.0	5.0
09/21/11	312	Bills Creek	8.3	2.0	15.3	2.7	18.7	13.0	3.0	1.0	18.0	6.0	6.3	4.0
09/22/11	313	Bills Creek	8.7	3.0	7.0	3.0	-36.0	20.0	2.0	3.0	-9.7	8.3	-3.0	5.0
09/23/11	104	Crooked Creek	76.3	3.7	39.0	3.0	-30.7	14.0	5.3	3.0	-12.7	6.7	9.7	4.0
09/21/11	105	Crooked Creek	133.7	6.3	78.3	6.0	-34.0	20.3	11.7	5.7	-0.7	10.0	10.3	6.0
09/21/11	106	Crooked Creek	200.7	5.7	178.0	6.3	36.3	13.0	21.3	3.3	49.0	7.7	21.3	4.3
09/22/11	107	Crooked Creek	202.3	5.7	163.7	5.7	23.0	13.7	23.3	3.7	58.0	8.0	18.3	4.7
09/22/11	108	Crooked Creek	322.0	6.7	101.0	4.7	68.0	13.0	24.7	4.0	26.3	6.0	27.7	4.3
09/22/11	110	Crooked Creek	1199.3	20.0	152.3	8.3	-12.7	21.0	66.0	16.3	5.7	11.0	56.0	7.7
09/21/11	201	Indian Creek	186.7	7.0	476.3	13.3	-47.7	19.3	10.0	6.7	18.3	10.3	20.3	6.0
09/22/11	202	Indian Creek	72.0	3.3	248.3	7.0	41.3	13.0	9.0	2.0	21.0	6.3	17.0	4.0
09/22/11	203	Indian Creek	126.7	6.0	413.0	12.7	-30.3	20.7	2.3	5.7	18.7	10.3	24.0	6.7
09/21/11	204	Indian Creek	65.7	3.0	230.3	7.0	44.7	13.0	7.3	2.0	20.7	6.0	18.0	4.0

XRF Analysis Date	Sample ID	Stream Name	Lead		Zinc		Cadmium		Arsenic		Nickel		Copper	
			Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)
09/23/11	206	Indian Creek	216.7	5.7	193.3	6.7	-28.7	15.0	17.7	5.0	11.3	8.0	151.3	7.3
09/21/11	207	Indian Creek	21.0	2.0	21.7	3.0	18.0	13.0	7.3	2.0	28.7	7.3	8.7	4.0
09/23/11	208	Indian Creek	19.7	2.0	26.0	3.0	6.3	13.0	5.0	1.3	36.3	6.7	7.3	4.0
09/21/11	412	Left Fork of Neals Creek	42.0	3.0	383.0	8.7	25.7	13.0	4.0	2.0	94.3	8.0	10.0	4.0
09/21/11	413	Left Fork of Neals Creek	56.3	5.0	18284.0	167.3	-23.3	22.3	-3.7	4.3	1829.7	48.7	5.0	12.3
09/22/11	209	Middle Fork of Black River	21.7	3.3	26.7	4.0	-48.7	19.3	0.0	3.0	5.7	8.3	5.0	5.0
09/23/11	210	Middle Fork of Black River	18.7	2.3	26.3	3.0	-29.0	14.0	2.7	2.0	-6.3	5.0	1.0	3.7
09/21/11	211	Middle Fork of Black River	15.3	3.0	29.3	4.0	-5.3	20.0	1.3	3.0	-4.3	8.0	9.0	5.7
09/21/11	212	Middle Fork of Black River	26.0	2.0	62.0	4.0	37.0	12.0	2.3	1.0	14.3	5.0	10.0	4.0
09/21/11	213	Middle Fork of Black River	63.0	5.0	242.7	9.7	-26.7	19.7	0.7	4.0	-5.0	9.3	6.0	5.7
09/22/11	214	Middle Fork of Black River	28.0	2.3	34.0	3.0	26.0	13.0	2.7	1.3	18.7	5.3	12.3	4.0
09/22/11	101	Mill Rock Creek	96.0	5.3	39.0	4.3	-34.0	20.0	3.7	5.0	1.0	9.7	11.0	6.0
09/22/11	102	Mill Rock Creek	61.7	3.0	25.7	3.0	34.3	13.0	7.3	2.0	29.3	6.7	12.7	4.0
09/22/11	103	Mill Rock Creek	25.0	3.0	21.3	3.0	6.3	13.0	9.0	2.0	14.0	6.7	10.0	4.0
09/22/11	109	Mill Rock Creek	32.7	4.0	30.7	4.7	-27.0	20.0	0.7	3.0	10.3	10.0	10.0	6.0
09/22/11	215	Neals Creek	40.0	3.0	216.3	6.7	50.0	12.7	6.3	2.0	46.3	6.7	7.7	4.0
09/21/11	314	Neals Creek	22.0	3.3	83.3	5.7	-64.3	19.7	1.3	3.0	0.7	8.7	1.3	5.3
09/22/11	315	Neals Creek	22.0	2.0	89.7	4.0	31.0	12.0	1.0	1.0	21.0	5.3	8.0	4.0
09/23/11	317	Neals Creek	21.7	2.0	124.7	5.0	14.3	12.7	2.3	1.0	21.0	5.3	7.7	4.0
09/21/11	406	Sweetwater Creek	96.3	3.7	65.0	4.0	15.7	13.0	6.0	2.3	15.7	5.3	9.0	4.0
09/23/11	407	Sweetwater Creek	89.3	4.0	70.3	4.0	22.0	12.3	4.3	2.0	7.7	5.0	5.7	4.0
09/22/11	409	Sweetwater Creek	195.0	5.3	94.3	4.3	27.0	13.0	13.7	3.0	16.3	5.3	12.7	4.0
09/23/11	410	Sweetwater Creek	8.7	2.0	11.7	2.3	22.3	12.7	2.7	1.0	14.0	5.3	8.7	3.7
09/21/11	411	Sweetwater Creek	10.7	3.0	10.0	3.0	-14.7	19.0	0.0	2.3	-6.7	8.0	-0.3	5.0
09/21/11	307	Toms Creek	65.0	3.0	7.7	2.0	21.3	13.0	6.0	2.0	11.0	5.0	5.0	4.0
09/22/11	308	Toms Creek	5.7	2.0	10.0	2.0	12.7	13.0	1.3	1.0	16.0	5.0	4.0	4.0
09/22/11	309	Toms Creek	4.3	3.0	2.0	3.0	-20.7	19.3	0.0	2.0	1.0	7.3	-3.7	5.0
09/21/11	310	Toms Creek	3.3	2.0	6.7	2.0	40.3	12.0	0.7	1.0	5.7	4.0	0.0	3.0
09/21/11	311	Toms Creek	4.0	3.0	15.7	3.3	-55.7	18.7	-1.3	2.0	-10.7	6.7	-5.7	4.7

**TABLE 2: ANALYTICAL RESULTS FOR SEDIMENT SAMPLES (<250µm) COLLECTED AUGUST 29-31,2011
AND ANALYZED WITH AN INNOVEX X-RAY FLUORESCENCE (XRF) INSTRUMENT
FOR THE VIBURNUM TREND SAMPLING EVENT**

- All values listed in parts per million (ppm).
- “Avg” indicates “Average.”
- Shaded sample results exceed the probable effects concentration (PEC). The PEC represents the concentration that is likely to result in adverse effects on sediment-dwelling organisms. PECs are 128 ppm – lead, 459 ppm – zinc, 4.98 ppm – cadmium, 33 ppm – arsenic, 48.6 ppm – nickel, and 149 ppm – copper.

XRF Analysis Date	Sample ID	Stream Name	Lead		Zinc		Cadmium		Arsenic		Nickel		Copper	
			Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)
09/30/11	401	Bee Fork	13.3	2.0	13.7	2.0	1.7	13.0	2.3	1.0	19.0	5.0	5.3	4.0
10/03/11	402	Bee Fork	8.0	2.0	16.3	2.3	-22.3	14.0	-0.3	2.0	-5.0	5.3	2.3	4.0
09/30/11	403	Bee Fork	7.7	2.0	21.7	3.0	18.7	13.0	1.3	1.0	20.0	5.3	8.7	4.0
09/30/11	405	Bee Fork	5.3	2.0	14.7	2.3	8.3	12.7	2.0	1.0	18.0	5.0	2.3	3.7
09/30/11	301	Bills Creek	267.3	6.0	649.0	11.3	33.7	12.7	12.0	4.0	57.3	7.3	7.3	4.0
09/30/11	302	Bills Creek	327.7	7.0	547.7	10.3	12.0	13.0	5.3	4.0	54.3	7.0	10.7	4.0
09/30/11	303	Bills Creek	3557.3	31.7	8199.7	65.0	47.7	15.0	130.0	14.7	740.7	22.3	41.0	8.7
09/30/11	304	Bills Creek	44.3	3.0	46.3	3.0	37.0	12.0	4.0	2.0	25.0	6.0	6.0	4.0
10/03/11	305	Bills Creek	132.7	4.3	130.3	5.0	-24.7	14.0	-3.3	4.0	16.7	7.0	15.3	4.0
10/03/11	306	Bills Creek	10.0	2.0	14.0	2.3	22.0	12.7	1.7	1.0	16.3	5.0	4.7	4.0
10/03/11	312	Bills Creek	17.7	2.0	27.0	3.0	38.3	12.7	2.7	1.0	23.0	6.0	9.7	4.0
10/03/11	313	Bills Creek	10.7	2.0	16.3	3.0	11.7	13.0	2.3	1.0	14.3	5.3	7.3	4.0
10/03/11	104	Crooked Creek	131.7	4.0	58.7	4.0	18.7	13.0	9.3	3.0	21.0	6.3	18.3	4.0
10/03/11	105	Crooked Creek	282.3	6.3	154.0	5.7	28.7	13.0	13.7	4.0	44.3	7.0	30.3	5.0
10/03/11	106	Crooked Creek	711.7	10.7	495.0	10.3	37.7	15.0	-1.7	9.0	122.7	11.0	70.3	6.0
10/03/11	107	Crooked Creek	658.7	10.0	627.0	12.0	83.3	14.0	31.7	6.0	106.7	9.0	66.0	6.0
10/03/11	108	Crooked Creek	562.3	9.0	154.3	5.3	-13.0	14.0	4.7	7.3	24.7	7.3	58.3	5.3
10/03/11	110	Crooked Creek	2407.7	22.7	315.7	8.7	58.0	14.0	140.0	11.7	44.0	8.0	139.0	7.7
09/30/11	201	Indian Creek	1055.7	14.0	2090.3	24.7	14.0	14.0	42.7	8.0	128.0	11.0	128.3	8.0
09/30/11	202	Indian Creek	144.0	5.0	381.0	9.0	25.0	13.0	5.7	3.0	41.3	7.0	42.3	5.0
10/03/11	203	Indian Creek	442.7	8.3	1155.0	16.3	-11.7	15.0	-12.3	7.0	47.3	10.0	93.3	7.0
10/03/11	204	Indian Creek	324.7	7.0	689.3	11.7	-35.7	14.0	-13.0	6.0	25.0	8.0	46.7	5.3

XRF Analysis Date	Sample ID	Stream Name	Lead		Zinc		Cadmium		Arsenic		Nickel		Copper	
			Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)	Avg	Avg Error (+/-)
10/03/11	206	Indian Creek	817.3	12.7	540.0	12.0	-45.3	16.0	-21.7	10.3	51.3	11.3	387.0	12.0
09/30/11	207	Indian Creek	50.7	3.0	43.7	3.7	7.3	13.0	3.7	2.0	33.3	6.7	19.3	4.0
09/30/11	208	Indian Creek	57.0	3.3	59.7	3.7	39.3	12.7	4.0	2.0	22.0	6.7	14.0	4.0
09/30/11	412	Left Fork of Neals Creek	195.0	5.3	1507.7	18.3	45.3	13.0	14.7	3.3	334.7	13.7	24.3	5.3
09/30/11	413	Left Fork of Neals Creek	137.0	10.3	194809.7	2096.3	64.7	26.0	-58.3	6.7	17055.3	247.0	-554.3	46.7
09/30/11	209	Middle Fork of Black River	40.0	3.0	49.7	3.3	12.7	13.0	4.3	2.0	23.3	5.7	11.0	4.0
09/30/11	210	Middle Fork of Black River	36.0	2.7	49.7	3.3	49.0	12.0	2.3	1.7	15.7	5.7	12.3	4.0
09/30/11	211	Middle Fork of Black River	31.3	3.0	67.3	4.0	49.0	12.0	3.0	2.0	15.7	5.7	11.7	4.0
10/03/11	212	Middle Fork of Black River	44.0	3.0	114.7	5.0	15.3	12.3	4.7	2.0	21.0	6.0	12.0	4.0
10/03/11	213	Middle Fork of Black River	70.7	3.0	284.7	7.3	28.0	12.3	6.7	2.0	21.0	6.3	20.3	4.0
10/03/11	214	Middle Fork of Black River	42.7	3.0	53.7	3.3	35.3	12.0	4.0	2.0	22.7	5.7	17.0	4.0
09/30/11	101	Mill Rock Creek	177.3	5.3	75.7	4.7	4.7	13.0	8.7	3.3	32.0	8.0	22.3	5.0
10/03/11	102	Mill Rock Creek	181.3	5.3	297.7	8.0	-11.3	15.0	0.3	5.0	16.3	8.7	20.7	5.0
09/30/11	103	Mill Rock Creek	76.7	4.0	72.0	4.0	44.7	13.0	8.3	2.0	26.0	7.7	17.3	4.7
10/03/11	109	Mill Rock Creek	39.7	3.0	38.0	3.0	37.0	13.0	3.3	2.0	26.3	7.0	13.0	4.0
10/03/11	215	Neals Creek	99.7	4.0	538.0	10.3	-26.7	14.0	6.3	3.7	105.0	9.7	15.0	4.3
10/03/11	314	Neals Creek	29.3	2.7	118.7	5.0	27.0	12.0	4.3	2.0	30.0	6.0	10.7	4.0
10/03/11	315	Neals Creek	37.0	3.0	157.3	5.7	21.3	13.0	3.7	2.0	46.3	6.3	21.0	4.0
10/03/11	317	Neals Creek	66.3	3.3	462.7	9.3	36.3	13.0	5.3	2.0	58.3	7.0	15.3	4.3
09/30/11	406	Sweetwater Creek	347.3	6.7	173.3	6.0	2.7	13.0	19.7	4.0	34.3	6.3	22.3	4.0
09/30/11	407	Sweetwater Creek	142.0	4.0	112.3	4.7	48.7	12.0	6.7	2.7	7.7	4.3	8.0	4.0
09/30/11	409	Sweetwater Creek	924.0	11.3	386.0	8.3	21.3	13.0	44.3	6.3	39.0	6.7	53.3	5.0
09/30/11	410	Sweetwater Creek	12.3	2.0	16.0	2.7	9.3	13.0	2.3	1.0	20.0	5.3	6.3	4.0
09/30/11	411	Sweetwater Creek	15.3	2.0	18.7	3.0	11.7	13.0	2.0	1.0	19.3	5.7	10.3	4.0
09/30/11	307	Toms Creek	133.0	4.0	23.7	3.0	15.0	12.0	6.0	2.7	12.0	4.7	3.7	3.7
09/30/11	308	Toms Creek	6.7	2.0	15.3	2.3	59.0	12.0	0.3	1.0	9.7	4.7	3.3	3.3
09/30/11	309	Toms Creek	4.0	2.0	9.7	2.0	45.0	12.0	2.0	1.0	6.3	4.3	4.0	3.3
09/30/11	310	Toms Creek	4.0	2.0	9.0	2.0	23.0	12.0	0.0	1.0	6.0	4.3	3.3	3.3
10/03/11	311	Toms Creek	6.0	2.0	17.0	2.3	18.3	12.0	1.3	1.0	18.0	5.0	6.7	4.0

**TABLE 3: SELECTED ANALYTICAL LABORATORY RESULTS FOR SEDIMENT SAMPLES (<2 mm)
COLLECTED AUGUST 29-31, 2011 VIBURNUM TREND SAMPLING EVENT**

- All values listed in parts per million (mg/kg) unless otherwise noted.
- Sample results in shaded cells exceed the PEC¹

Sample ID	105		208		301		309		413		414		Sediment Quality Guidelines
Stream Name	Crooked Creek		Indian Creek		Bills Creek		Toms Creek		Left Fork Neals		Left Fork Neals		USGS PEC ¹
Date Collected	08/30/11		08/30/11		08/29/11		08/30/11		08/31/11		08/31/11		
Laboratory Number	1106565		1106567		1106566		1106568		1106563		1106564		
Metals													
Arsenic	13.4		4.71		4.99		<1.25	ND	4.03		4.84		33
Cadmium	6.6		<0.1	ND	0.956		<0.1	ND	0.332	05	0.552		4.98
Copper	8.24	09	3.37		5.79		1		4.06		39.7		149
Lead	110		18.5	09	166		2.27	05	65.2		58.6		128
Nickel	16		5.48		36.9		2.3		473		1120		48.6
Zinc	97.6		22.5	09	438		4.34		7860	09	20700	09	459

¹ PEC - Probable Effects Concentration (PEC), U.S. Geological Survey Consensus-Based Sediment Quality Guidelines, June 2000

05 - Estimated value, detected below practical quantitation limit

09 - Sample was diluted during analysis

ND - Not detected at reported value

**TABLE 4: SELECTED ANALYTICAL LABORATORY RESULTS FOR SEDIMENT SAMPLES (<250 µm)
COLLECTED AUGUST 29-31, 2011, VIBURNUM TREND SAMPLING EVENT**

	<ul style="list-style-type: none"> ● All values listed in parts per million (mg/kg) unless otherwise noted. ● Sample results in shaded cells exceed the PEC¹, see page 5 													
Sample ID	101		102		104		105		106		107		108	
Stream Name	Mill Rock Creek		Mill Rock Creek		Crooked Creek		Crooked Creek		Crooked Creek		Crooked Creek		Crooked Creek	
Date Collected	08/29/11		08/29/11		08/30/11		08/30/11		08/30/11		08/30/11		08/30/11	
Laboratory Number	1106571		1106579		1106614		1106615		1106597		1106609		1106604	
Metals														
Arsenic	7		6.76		6.66		13.8		21.9		17.8	09	28.3	
Cadmium	0.583	11	0.875	11	4.02		15.6		59.1		76.6		8.9	
Copper	24.7		42.5		16.3		29.4		68.3		61.7		65.9	
Lead	166		160		118		255		594		601		577	
Nickel	15.8		24.7		12.1		24.7		91.8		81.3		22.4	
Zinc	62.3		275		53.1		136		409		539		164	

¹ PEC - Probable Effects Concentration (PEC), U.S. Geological Survey Consensus-Based Sediment Quality Guidelines, June 2000

05 - Estimated value, detected below practical quantitation limit

06 - Estimated value, quality control data outside limits

09 - Sample was diluted during analysis

11 - Estimated value, matrix interference

ND - Not detected at reported value

**TABLE 4: SELECTED ANALYTICAL LABORATORY RESULTS FOR SEDIMENT SAMPLES (<250 µm)
COLLECTED AUGUST 29-31, 2011, VIBURNUM TREND SAMPLING EVENT Page 2 of 5**

	<ul style="list-style-type: none"> ● All values listed in parts per million (mg/kg) unless otherwise noted. ● Sample results in shaded cells exceed the PEC¹, see page 5 											
Sample ID	109		110		201		202		203		204	
Stream Name	Mill Rock Creek		Crooked Creek		Indian Creek		Indian Creek		Indian Creek		Indian Creek	
Date Collected	08/31/11		08/31/11		08/29/11		08/29/11		08/29/11		08/29/11	
Laboratory Number	1106578		1106606		1106600		1106599		1106577		1106608	
Metals												
Arsenic	2.55		127		14.1		4.61		8.59		6.53	
Cadmium	0.228	11, 05	58.3		8.73	09	2.85		9.38		4.01	
Copper	14.7		141		130		41.4		109		73.5	
Lead	33.7		2200		893		134		404		400	
Nickel	14.3		26.8		84.1		18.4	09	46.1		26.8	
Zinc	35.1		288		1410		324		1100	09	565	

¹ PEC - Probable Effects Concentration (PEC), U.S. Geological Survey Consensus-Based Sediment Quality Guidelines, June 2000

05 - Estimated value, detected below practical quantitation limit

06 - Estimated value, quality control data outside limits

09 - Sample was diluted during analysis

11 - Estimated value, matrix interference

ND - Not detected at reported value

**TABLE 4: SELECTED ANALYTICAL LABORATORY RESULTS FOR SEDIMENT SAMPLES (<250 µm)
COLLECTED AUGUST 29-31, 2011, VIBURNUM TREND SAMPLING EVENT Page 3 of 5**

	<ul style="list-style-type: none"> ● All values listed in parts per million (mg/kg) unless otherwise noted. ● Sample results in shaded cells exceed the PEC¹, see page 5 													
Sample ID	205		206		210		215		301		302		303	
Stream Name	Indian Creek		Indian Creek		Middle Fork Black River		Neals Creek		Bills Creek		Bills Creek		Bills Creek	
Date Collected	08/30/11		08/30/11		08/30/11		08/31/11		08/29/11		08/29/11		08/29/11	
Laboratory Number	1106605		1106603		1106574		1106602		1106610		1106601		1106572	
Metals														
Arsenic	11.3		17.1		4.33		4.14		3.52		3.6		22.1	
Cadmium	7.52		9.06		0.279	11, 05	1.04		1.76		2.09		10.8	
Copper	228		505		10.7		18.2		9.55		7.04		63.9	
Lead	453		757		33.3		78.6		255		307		3330	
Nickel	36.4		48.8		9.25		54.7		48.8		35.7		534	
Zinc	416		542	09	53.8		392		605		490		6530	09

¹ PEC - Probable Effects Concentration (PEC), U.S. Geological Survey Consensus-Based Sediment Quality Guidelines, June 2000

05 - Estimated value, detected below practical quantitation limit

06 - Estimated value, quality control data outside limits

09 - Sample was diluted during analysis

11 - Estimated value, matrix interference

ND - Not detected at reported value

**TABLE 4: SELECTED ANALYTICAL LABORATORY RESULTS FOR SEDIMENT SAMPLES (<250 µm)
COLLECTED AUGUST 29-31, 2011, VIBURNUM TREND SAMPLING EVENT Page 4 of 5**

	<ul style="list-style-type: none"> ● All values listed in parts per million (mg/kg) unless otherwise noted. ● Sample results in shaded cells exceed the PEC¹, see page 5 											
Sample ID	305		307		308		314		317		401	
Stream Name	Bills Creek		Toms Creek		Toms Creek		Neals Creek		Neals Creek		Bee Fork Creek	
Date Collected	08/30/11		08/30/11		08/30/11		08/31/11		08/31/11		08/29/11	
Laboratory Number	1106607		1106612		1106569		1106580		1106581		1106575	
Metals												
Arsenic	2.97		<1.25	ND	<1.25	ND	4.06		2.53		1.45	05
Cadmium	1.77		0.111	05	<0.1	ND	0.254	11, 05	0.841		0.112	05
Copper	22		2.83		2.29		10.7		15.4	09	5.38	
Lead	135		155		5.36		27.7		65.2	09	13.4	
Nickel	13.7		3.74	09	3.85		20		41.6	09	8.72	
Zinc	117		15.6		9.65		111		421	09	15.6	

¹ PEC - Probable Effects Concentration (PEC), U.S. Geological Survey Consensus-Based Sediment Quality Guidelines, June 2000

05 - Estimated value, detected below practical quantitation limit

06 - Estimated value, quality control data outside limits

09 - Sample was diluted during analysis

11 - Estimated value, matrix interference

ND - Not detected at reported value

**TABLE 4: SELECTED ANALYTICAL LABORATORY RESULTS FOR SEDIMENT SAMPLES (<250 µm)
COLLECTED AUGUST 29-31, 2011, VIBURNUM TREND SAMPLING EVENT Page 5 of 5**

	<ul style="list-style-type: none"> ● All values listed in parts per million (mg/kg) unless otherwise noted. ● Sample results in shaded cells exceed the PEC¹ 										
Sample ID	406		407		409		412		413		Sediment Quality Guidelines
Stream Name	Sweetwater Creek		Sweetwater Creek		Sweetwater Creek		Neals Creek		Left Fork Neals Creek		USGS PEC¹
Date Collected	08/30/11		08/30/11		08/30/11		08/31/11		08/31/11		
Laboratory Number	1106573		1106598		1106613		1106611		1106576		
Metals											
Arsenic	3.39		1.87	05	1.64	05	7.3		9.07		33
Cadmium	1.51		2.11		2.23		1.86		2.41		4.98
Copper	17		9.45		10.7		27.2	06	26		149
Lead	298		174		203		202		207	09	128
Nickel	14.5		5.3		5.71		261		4940		48.6
Zinc	134		122		111		1230		103000	09	459

¹ PEC - Probable Effects Concentration (PEC), U.S. Geological Survey Consensus-Based Sediment Quality Guidelines, June 2000

05 - Estimated value, detected below practical quantitation limit

06 - Estimated value, quality control data outside limits

09 - Sample was diluted during analysis

11 - Estimated value, matrix interference

ND - Not detected at reported value

**TABLE 5: ANALYTICAL LABORATORY RESULTS FOR SURFACE WATER SAMPLES COLLECTED AUGUST 29-31, 2011
VIBURNUM TREND SAMPLING EVENT**

- All values listed in parts per billion (µg/L) unless otherwise noted.
- Sample results in shaded cells exceed the MO WQS Aquatic life value
- NL denotes benchmark value not listed in reference source.
- See benchmarks on page 6
- NA denotes not analyzed

Sample ID		101	102	103	104	105	Dup - 105	106	107	108	109	110						
Stream Name		Mill Rock	Mill Rock	Mill Rock	Crooked	Crooked	Crooked	Crooked	Crooked	Crooked	Mill Rock	Crooked						
Date Collected		29-Aug-11	29-Aug-11	29-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11	31-Aug-11	31-Aug-11						
Laboratory Number		AB58930	AB58931	AB58932	AB58933	AB58934	AB58935	AB58936	AB58937	AB58938	AB58939	AB58940						
Water Quality Indicators																		
Calcium	mg/L	48.7	51.7	51.1	77.5	78.4	79.2	82.3	84.6	95.0	46.4	77.2						
Magnesium	mg/L	35.9	34.6	35.0	46.3	47.4	47.7	49.9	51.4	58.5	36.7	33.0						
pH	pH	8.49	8.20	8.34	7.96	7.86	NA	8.43	8.47	8.12	8.17	8.35						
Specific Conductivity	uS/cm	453	442	474	1036	1047	NA	1103	1104	1061	471	19.93						
Temperature	C	24.3	24.8	21.8	21.9	20.9	NA	22.5	23.4	22.6	21.9	26.5						
Hardness, as CaCO ₃	mg/L	269	272	272	384	391	394	411	423	478	267	329						
Oxidation Reduction Potential	mV	100	65	62	62	54	NA	49	59	54	182	74						
Metals, Dissolved																		
Arsenic	ug/L	0.57	05	0.51	05	<0.5	ND	2.5	3.1	3.06	4.95	5.92	3.39	<0.5	ND	235	09	
Cadmium	ug/L	<0.1	ND	<0.1	ND	<0.1	ND	1.44	2.5	2.57	2.65	2.33	2.29	<0.1	ND	34.2	09	
Copper	ug/L	0.65	05	0.66	05	0.52	05	2.46	2.66	2.3	2.95	3.47	4.03	0.62	05	129	09	
Lead	ug/L	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	0.97	05	1.03	1.3	3.05	33.9	<0.5	ND	143	09
Mercury	ug/L	NA		NA		NA		NA	NA	NA	NA	NA	NA	NA		NA		
Nickel	ug/L	0.58	05	0.54	05	<0.5	ND	2.3	3.72	3.5	8.49	14	48.3	<0.5	ND	19.9	09	
Zinc	ug/L	3.48		3.32		3.98		6.74	10.1	8.16	9.13	11.9	54.4	3.2		53.6	09	
Metals, Total																		
Arsenic	ug/L	<0.50	ND	<0.50	ND	<0.50	ND	1.78	2.14	2.26	3.66	4.45	3.2	<0.50	ND	217	09	
Cadmium	ug/L	<0.10	ND	<0.10	ND	<0.10	ND	1.92	2.73	2.85	2.5	2.46	1.66	<0.10	ND	45.1	09	
Copper	ug/L	<0.50	ND	1.16		<0.50	ND	2.41	2.38	2.51	2.82	3.76	15	0.52	05	138	09	
Lead	ug/L	0.76	05	11.8		<0.50	ND	1.96	2.64	3.63	1.91	6.06	94.7	0.53	05	306	09	
Nickel	ug/L	<0.50	ND	0.84	05	<0.50	ND	2.23	3.33	3.42	8.47	14.6	54.3	<0.50	ND	20.2	09	
Zinc	ug/L	0.9	05	3.48		1.06		5.66	8.04	9.24	6.33	9.73	63.7	1.56		52	09	

¹ MO WQS - Missouri Water Quality Standards, benchmarks for drinking water, groundwater, protection of aquatic life, fish consumption, and irrigation/livestock watering use categories, Missouri Code of State Regulations, 10 CSR 20-7.031, September 30, 2009.
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 09 - Sample was diluted during analysis
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TABLE 5: ANALYTICAL LABORATORY RESULTS FOR SURFACE WATER SAMPLES COLLECTED AUGUST 29-31, 2011

VIBURNUM TREND SAMPLING EVENT Page 2 of 6

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Sample ID		Dup - 110	201	202	203	204	Dup - 204	205	206	207	Dup - 207	208	209
Stream Name		Crooked	Indian	Middle Fork Black									
Date Collected		31-Aug-11	29-Aug-11	29-Aug-11	29-Aug-11	29-Aug-11	29-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11
Laboratory Number		AB58941	AB58877	AB58878	AB58879	AB58880	AB58881	AB58882	AB58883	AB58884	AB58885	AB58886	AB58887
Water Quality Indicators													
Calcium	mg/L	76.0	60.1	60.8	62.6	64.4	65.3	71.9	75.3	49.3	50.0	45.1	35.3
Magnesium	mg/L	32.6	40.7	40.1	41.3	42.2	42.9	45.6	50.1	30.1	30.7	26.8	20.4
pH		NA	8.21	8.09	8.03	7.89	NA	8.11	8.29	8.42	NA	8.16	8.17
Specific Conductivity	uS/cm	NA	597	591	602	637	NA	647	701	426	NA	403	334
Temperature	C	NA	25.6	25.8	25.4	24.2	NA	20	19.3	22.9	NA	22.7	25
Hardness, as CaCO ₃	mg/L	324	318	317	326	335	340	367	394	326	251	223	172
Oxidation Reduction Potential	mV	NA	118	64	54	53	NA	35	24	12	NA	22	17
Metals, Dissolved													
Arsenic	ug/L	226 09	2.74	0.7	0.74 05	0.68 05	0.77 05	0.51 05	0.59 05	<0.5 ND	<0.5 ND	<0.5 ND	<0.5 ND
Cadmium	ug/L	33.2 09	0.64	0.37	0.21	0.54	0.38	0.11 05	0.13 05	<0.1 ND	<0.1 ND	<0.1 ND	<0.1 ND
Copper	ug/L	127 09	2.77	1.82	1.62	1.85	1.78	1.26	2.8	0.56 05	<0.50 ND	<0.50 ND	<0.50 ND
Lead	ug/L	141 09	13.9	0.84	0.64 05	0.76 05	1.09	<0.5 ND	0.54 05	<0.5 ND	<0.5 ND	<0.5 ND	<0.5 ND
Mercury	ug/L	NA											
Nickel	ug/L	19.5 09	16.5	3.17	3.58	3.4	2.65	0.88 05	1.24	<0.5 ND	<0.5 ND	0.55 05	<0.5 ND
Zinc	ug/L	48 09	130	43.4	45.8	55.3	38.3	8.46	7.7	5.96	<0.50 ND	5.29	4.94
Metals, Total													
Arsenic	ug/L	220 09	1.94	<0.50	<0.50 ND								
Cadmium	ug/L	45.6 09	0.57	0.37	0.35	0.45	0.42	<0.10 ND					
Copper	ug/L	144 09	5.16	1.77	1.84	1.91	2.81	1.68	5.11	0.72 05	<0.50 ND	<0.50 ND	<0.50 ND
Lead	ug/L	342 09	17.2	1.1	2.41	1.73	6.64	0.83 05	4.97	<0.50 ND	<0.50 ND	<0.50 ND	<0.50 ND
Nickel	ug/L	20.4 09	16.5	2.92	3.46	3.02	2.9	1.21	2.17	1.48	<0.50 ND	<0.50 ND	<0.50 ND
Zinc	ug/L	52.7 09	110	34	41.1	44.5	44.4	6.79	11.4	3.18	2.56	1.03	0.86 05

¹ MO WQS - Missouri Water Quality Standards, benchmarks for drinking water, groundwater, protection of aquatic life, fish consumption, and irrigation/livestock watering use categories,

Missouri Code of State Regulations, 10 CSR 20-7.031, September 30, 2009.

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TABLE 5: ANALYTICAL LABORATORY RESULTS FOR SURFACE WATER SAMPLES COLLECTED AUGUST 29-31, 2011

VIBURNUM TREND SAMPLING EVENT Page 3 of 6

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Sample ID		210	211	212	213	214	215	301	302	303	Dup - 303	304	305	306										
Stream Name		Middle Fork Black	Neals	Bills																				
Date Collected		30-Aug-11	30-Aug-11	31-Aug-11	31-Aug-11	31-Aug-11	31-Aug-11	29-Aug-11																
Laboratory Number		AB58888	AB58889	AB58890	AB58891	AB58892	AB58893	AB58908	AB58909	AB58910	AB58911	AB58912	AB58913	AB58914										
Water Quality Indicators																								
Calcium	mg/L	36.2	36.1	36.8	37.2	30.6	45.6	67.8	69.2	73.5	73.4	59.3	54.6	47.4										
Magnesium	mg/L	20.4	20.8	21.6	22.2	18.1	31.2	42.1	43.2	46.0	45.9	35.8	32.4	28.8										
pH	pH	7.92	7.59	8.11	7.96	7.80	8.41	8.05	8.19	8.36	NA	8.08	7.53	7.97										
Specific Conductivity	uS/cm	333	344	345	345	284	437	644	668	689	NA	490	458	399										
Temperature	C	24.6	24.5	20.9	19.6	20.8	23.1	26	26.8	26.6	NA	25.6	24	24.2										
Hardness, as CaCO ₃	mg/L	174	176	181	184	151	242	343	351	373	372	295	270	237										
Oxidation Reduction Potential	mV	22	109	53	61	13	45	180	263	229	NA	305	690	NA										
Metals, Dissolved																								
Arsenic	ug/L	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	0.8	05	1.14	1.8	1.72	<0.5	ND	<0.5	ND	<0.5	ND		
Cadmium	ug/L	<0.1	ND	<0.1	ND	<0.1	ND	<0.1	ND	<0.1	ND	0.73	05	0.48	0.49	1.01	0.55	0.56	0.59					
Copper	ug/L	0.75	05	0.72	05	0.55	05	0.6	05	<0.50	ND	0.86	05	0.8	05	0.94	05	1.12	0.53	05	<0.50	ND	<0.50	ND
Lead	ug/L	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	4.89	05	22.3	106	104	<0.5	ND	1.02		<0.5	ND		
Mercury	ug/L	NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		NA		
Nickel	ug/L	0.6	05	<0.5	ND	0.52	05	0.66	05	<0.5	ND	3.78		10.6	20.5	65	62.2	0.67	05	0.83	05	<0.5	ND	
Zinc	ug/L	6.18		5.3		6.63		11.8		5.29		9.46		76.6	140	517	488	9.46	5.82		4.69		4.26	
Metals, Total																								
Arsenic	ug/L	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	1.16	1.17	<0.50	ND	<0.50	ND	<0.50	ND	
Cadmium	ug/L	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	0.28	05	0.84	0.67	0.88	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND
Copper	ug/L	<0.50	ND	<0.50	ND	0.66	05	0.53	05	<0.50	ND	0.73	05	0.58	05	1.15	1.2	1.22	<0.50	ND	0.78	05	<0.50	ND
Lead	ug/L	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	4.32	05	19.1	115	116	<0.50	ND	7.22		<0.50	ND		
Nickel	ug/L	<0.50	ND	<0.50	ND	0.59	05	<0.50	ND	<0.50	ND	3.94	05	8.8	19	61.8	62.8	<0.50	ND	0.66	05	<0.50	ND	
Zinc	ug/L	1.11		2.53		4.64		9.6		2.29		7.78		52.3	107	449	460	7.78	5.47		5.33		2.99	

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TABLE 5: ANALYTICAL LABORATORY RESULTS FOR SURFACE WATER SAMPLES COLLECTED AUGUST 29-31, 2011

VIBURNUM TREND SAMPLING EVENT Page 4 of 6

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Sample ID		307	Dup - 307	308	309	310	311	312	313	314	Dup - 314	315	316
Stream Name		Toms	Toms	Toms	Toms	Toms	Toms	Bills	Bills	Neals	Neals	Neals	Neals
Date Collected		30-Aug-11	31-Aug-11	31-Aug-11	31-Aug-11	31-Aug-11							
Laboratory Number		AB58915	AB58916	AB58917	AB58918	AB58919	AB58920	AB58921	AB58922	AB58923	AB58924	AB58925	AB58926
Water Quality Indicators													
Calcium	mg/L	32.0	32.0	31.4	35.8	35.4	25.7	49.8	50.7	44.3	43.1	47.0	48.3
Magnesium	mg/L	18.9	18.9	18.5	21.3	20.9	14.6	30.2	31.6	26.5	26.3	28.8	30.7
pH		8.17	NA	7.89	8.13	8.07	7.62	7.48	8.07	7.85	NA	8.03	8.22
Specific Conductivity	uS/cm	269	NA	260	299	287	222	398	409	355	NA	378	376
Temperature	C	20.2	NA	22	20.5	21.5	24.1	24.2	23.9	22.2	NA	22.5	22.7
Hardness, as CaCO ₃	mg/L	158	158	155	177	174	124	249	257	220	216	236	247
Oxidation Reduction Potential	mV	NA											
Metals, Dissolved													
Arsenic	ug/L	<0.5	ND										
Cadmium	ug/L	<0.1	ND	0.56	0.62	0.54	0.59	0.54	0.61	0.58	0.55	<0.1	ND
Copper	ug/L	<0.50	ND	<0.50	ND	0.61	05	<0.50	ND	<0.50	ND	<0.50	ND
Lead	ug/L	4.02	4.1	<0.5	ND								
Mercury	ug/L	NA											
Nickel	ug/L	<0.5	ND	0.57	05	<0.5	ND	0.55	05	0.51	05	<0.5	ND
Zinc	ug/L	1.02	5.28	5.32	6.34	3.54	3.54	5.47	5.22	4.2	9.72	6.4	10.6
Metals, Total													
Arsenic	ug/L	<0.50	ND										
Cadmium	ug/L	<0.10	ND										
Copper	ug/L	0.5	05	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	0.89	05
Lead	ug/L	5.14	5.37	<0.50	ND								
Nickel	ug/L	0.67	05	<0.50	ND	<0.50	ND	<0.50	ND	0.74	05	<0.50	ND
Zinc	ug/L	3.8	1.07	2.44	2.54	2.5	1.72	7.74	0.64	05	6.1	5.48	6.95

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TABLE 5: ANALYTICAL LABORATORY RESULTS FOR SURFACE WATER SAMPLES COLLECTED AUGUST 29-31, 2011

VIBURNUM TREND SAMPLING EVENT Page 5 of 6

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Sample ID		317	318	319	401	402	403	Dup - 403	405	406	407	Dup - 407	409											
Stream Name		Neals	Neals	Neals	Bee Fork	Sweetwater	Sweetwater	Sweetwater	Sweetwater															
Date Collected		31-Aug-11	31-Aug-11	31-Aug-11	29-Aug-11	29-Aug-11	29-Aug-11	29-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11	30-Aug-11											
Laboratory Number		AB58927	AB58928	AB58929	AB58894	AB58895	AB58896	AB58897	AB58898	AB58899	AB58900	AB58901	AB58902											
Water Quality Indicators																								
Calcium	mg/L	47.7	43.5	41.4	29.4	13.7	13.9	13.7	12.7	16.6	12.5	12.7	13.5											
Magnesium	mg/L	31.5	32.1	33.1	17.5	7.82	7.99	8.05	7.26	9.93	7.54	7.76	7.87											
pH		8.32	8.50	8.65	7.40	7.05	6.75	6.75	7.76	7.38	7.09	7.09	7.12											
Specific Conductivity	uS/cm	399	383	385	267	128.6	131.9	131.9	113	158.6	121.1	121.1	129.4											
Temperature	C	22.1	24.1	27.2	25.6	25.6	25.9	25.9	20.6	24	25.7	25.7	27.3											
Hardness, as CaCO ₃	mg/L	249	241	240	145	66.4	67.6	67.4	61.6	82.3	62.3	63.7	66.1											
Oxidation Reduction Potential	mV	NA	NA	NA	67	51	51	51	82	70	43	43	42											
Metals, Dissolved																								
Arsenic	ug/L	0.52	05	0.54	05	0.6	05	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	
Cadmium	ug/L	0.59	05	0.55	05	0.54	05	0.96	1.07	5.16	2.63	0.88	1.22	1.98	0.74	1.2	0.53	05						
Copper	ug/L	0.9	05	0.8	05	1.05	05	0.72	05	<0.50	ND	<0.50	ND	<0.50	05	0.58	05	0.64	05	<0.50	ND	0.53	05	
Lead	ug/L	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	0.86	05	
Mercury	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA									
Nickel	ug/L	3.77	05	3.64	05	0.63	05	0.66	05	0.8	05	0.54	05	0.59	05	0.64	05	0.65	05	1.12	05	0.92	05	1.18
Zinc	ug/L	14.8	05	8.05	05	4.37	05	7.99	05	6.88	05	5.35	05	6.78	05	5.19	05	9.83	05	12.4	05	11	05	19.1
Metals, Total																								
Arsenic	ug/L	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50
Cadmium	ug/L	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	<0.10	ND	0.21
Copper	ug/L	0.55	05	0.7	05	1.1	05	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	05	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	1.1
Lead	ug/L	<0.50	ND	<0.50	ND	1.53	05	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	<0.50	ND	0.91	05	1.57	05	1.41	05	13.4
Nickel	ug/L	2.6	05	3.64	05	0.5	05	<0.50	ND	0.5	05	<0.50	ND	0.56	05	1.1	05	0.55	05	1.04	05	0.74	05	1.09
Zinc	ug/L	6.78	05	5.1	05	1.78	05	1.06	05	1.5	05	1.64	05	4.01	05	17.4	05	5.39	05	9.83	05	7.42	05	14.2

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05 - Estimated value, detected below practical quantitation limit

09 - Sample was diluted during analysis

ND - Not detected at reported value

"Dup" indicates "Duplicate"

TABLE 5: ANALYTICAL LABORATORY RESULTS FOR SURFACE WATER SAMPLES COLLECTED AUGUST 29-31, 2011

VIBURNUM TREND SAMPLING EVENT Page 6 of 6

- All values listed in parts per billion (µg/L) unless otherwise noted. ● Sample results in shaded cells exceed the MO WQS Aquatic life value
- NL denotes benchmark value not listed in reference source.
- NA denotes not analyzed

Sample ID		410	411	412	413	Dup - 413	MO WQS ¹									
Stream Name		Sweetwater	Sweetwater	Left Fork Neals	Left Fork Neals	Left Fork Neals										
Date Collected		30-Aug-11	30-Aug-11	31-Aug-11	31-Aug-11	31-Aug-11	DW / GW	Aq. Life	Aq. Life (Hardness Dependent)	Fish Consmp	Irr. / Lvstock					
Laboratory Number		AB58903	AB58904	AB58905	AB58906	AB58907										
Water Quality Indicators																
Calcium	mg/L	13.0	12.4	40.5	260	249	NL	NL	NL	NL	NL	NL	NL			
Magnesium	mg/L	7.57	7.33	33.8	215	203	NL	NL	NL	NL	NL	NL	NL			
pH		7.42	7.68	7.95	7.49	7.49	NL	NL	NL	NL	NL	NL	NL			
Specific Conductivity	uS/cm	118	108.5	424	2.07	2.07	NL	NL	NL	NL	NL	NL	NL			
Temperature	C	25.6	25.6	23.6	23.9	23.9	NL	NL	NL	NL	NL	NL	NL			
Hardness, as CaCO ₃	mg/L	63.6	61.1	240	1,535	1,458	NL	NL	NL	NL	NL	NL	NL			
Oxidation Reduction Potential	mV	21	21	72	108	108	NL	NL	NL	NL	NL	NL	NL			
Metals, Dissolved																
Arsenic	ug/L	<0.5	ND	<0.5	ND	1.78	1.75	50	20	NL	NL	NL	100			
Cadmium	ug/L	1.53	1.16	0.91	4.47	3.47	5	*	see table below	NL	NL	NL	NL			
Copper	ug/L	<0.50	ND	<0.50	ND	0.58	05	0.52	05	0.6	05	1300	*	see table below	NL	500
Lead	ug/L	<0.5	ND	<0.5	ND	<0.5	ND	<0.5	ND	15	*	see table below	NL	NL	NL	
Mercury	ug/L	NA	NA	NA	<0.1	ND	<0.1	ND	2	0.5	NL	NL	NL	NL		
Nickel	ug/L	0.51	05	<0.5	ND	10.2	5870	09	6000	09	100	*	see table below	NL	NL	
Zinc	ug/L	4.39	5.69	21.6	31200	09	32300	09	5000	*	see table below	NL	NL	NL		
Metals, Total																
Arsenic	ug/L	<0.50	ND	<0.50	ND	1.74	1.66	50	20	NL	NL	NL	100			
Cadmium	ug/L	<0.10	ND	<0.10	ND	2.64	2.57	5	*	see table below	NL	NL	NL			
Copper	ug/L	<0.50	ND	<0.50	ND	0.61	05	0.68	05	1300	*	see table below	NL	500		
Lead	ug/L	0.79	05	<0.50	ND	<0.50	ND	2.35	1.92	15	*	see table below	NL	NL		
Nickel	ug/L	1.41	<0.50	ND	10.2	6830	09	6630	09	100	*	see table below	NL	NL		
Zinc	ug/L	13.2	1.22	20.8	48400	09	45200	09	5000	*	see table below	NL	NL			

	MO WQS* Aquatic Life - Hardness Dependent									
	50-74 hardness	75-99 hardness	100-124 hardness	125-149 hardness	150-174 hardness	175-199 hardness	200-224 hardness	225-249 hardness	250+ hardness	
Cadmium	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5
Copper	5	7	9	11	13	14	16	18	20	20
Lead	1	2	3	3	4	5	5	6	7	7
Nickel	29	41	52	63	73	84	94	103	113	113
Zinc	65	92	117	142	165	188	211	233	255	255

¹ MO WQS - Missouri Water Quality Standards, benchmarks for drinking water, groundwater, protection of aquatic life, fish consumption, and irrigation/livestock watering use categories, Missouri Code of State Regulations, 10 CSR 20-7.031, September 30, 2009.

05 - Estimated value, detected below practical quantitation limit

09 - Sample was diluted during analysis

ND - Not detected at reported value

"Dup" indicates "Duplicate"

APPENDIX D
Collection and Analytical Data, Field Notes, and Chain of Custody

Sediment and Surface Water Sampling of the
Viburnum Trend Lead Mining Sites in
Iron, Crawford, Washington, Reynolds,
Shannon and Dent Counties,
Missouri

**Table 1A: Viburnum Trend Lead Mining Site, Iron, Crawford, Washington, Reynolds,
Shannon and Dent Counties, Missouri**

Soil Sample Collection Data

Sample Number	Date Collected	Time Collected	Location Collected/Description
1106563	8/31/11	1046	Left Fork Neals Creek at location 413, pre-sieve.
1106564	8/31/11	1046	Left Fork of Neals Creek at location 414, pre-sieve.
1106565	8/30/11	1025	Crooked Creek at location 105, pre-sieve.
1106566	8/29/11	1201	Bills Creek at location 301, pre-sieve.
1106567	8/30/11	1248	Indian Creek at location 208, pre-sieve.
1106568	8/30/11	1045	Toms Creek at location 309, pre-sieve.
1106569	8/30/11	0955	Toms Creek along CR 900 at location 308, post #60 sieve.
1106570	8/30/11	0955	Duplicate of 1106569.
1106571	8/29/11	1450	Mill Rock Creek, Carter property at location 101, post #60 sieve.
1106572	8/29/11	1509	Bills Creek below all Doe Run outfalls at location 303, post #60 sieve.
1106573	8/30/11	1045	Sweetwater Creek on Doe Run property at location 406, post #60 sieve.
1105674	8/30/11	1559	Middle Fork Black River at CR 65 curve next to stream at location 210, post #60 sieve.
1106575	8/29/11	1335	Bee Fork Creek on Doe Run property at location 401, post #60 sieve.
1106576	8/31/11	1047	Left Fork Neal's Creek on Cominco property at location 413, post #60 sieve.
1106577	8/29/11	1645	Indian Creek on Doe Run property, mile 3 at location 203, post #60 sieve.
1106578	8/31/11	1022	Mill Rock Creek on Sellers property at location 109, post #60 sieve.
1106579	8/29/11	1620	Mill Rock Creek on Doe Run property at location 102, post #60 sieve.
1106580	8/31/11	0830	Neals Fork Creek north of CR 66 crossing, downstream-most sample at location 314, post #60 sieve.
1106581	8/31/11	1111	Neals Creek on Asher property at location 317, post #60 sieve.
1106597	8/30/11	1220	Crooked Creek at Turnbaugh property, #60 sieve. Location ID: 106.
1106598	8/30/11	1145	Sweetwater Creek at Doe Run property and CR 758, #60 sieve. Location ID: 407.
1106599	8/29/11	1615	Indian Creek at mile 2 upstream of mining facility road, #60 sieve. Location ID: 202.
1106600	8/29/11	1500	Indian Creek at mile 1, #60 sieve. Location ID: 201.
1106601	8/29/11	1333	Bills Creek at east bank, #60 sieve. Location ID: 302.
1106602	8/31/11	1227	Neals Creek near CR 79, #60 sieve. Location ID: 215.
1106603	8/30/11	0945	Indian Creek at Doe Run property, mile 5, #60 sieve. Location ID: 206.
1106604	8/30/11	1620	Crooked Creek at Pryor property, #60 sieve. Location ID: 108.
1106605	8/30/11	0830	Indian Creek at Doe Run property, mile 4, #60 sieve. Location ID: 205.
1106606	8/31/11	1450	Crooked Creek at Doe Run property, #60 sieve. Location ID: 110.
1106607	8/30/11	1645	Bills Creek downstream of BC 003 outfall, #60 sieve. Location ID: 305.

**Table 1A: Viburnum Trend Lead Mining Site, Iron, Crawford, Washington, Reynolds,
Shannon and Dent Counties, Missouri**

Soil Sample Collection Data

Sample Number	Date Collected	Time Collected	Location Collected/Description
1106608	8/29/11	1710	Indian Creek at Doe Run property, #60 sieve. Location ID: 204.
1106609	8/30/11	1420	Crooked Creek at Chandler property, #60 sieve. Location ID: 107.
1106610	8/29/11	1201	Bills Creek at lowermost (downstream) point, #60 sieve. Location ID: 301.
1106611	8/31/11	0900	Left Fork of Neal's Creek at Cominco property, #60 sieve. Location ID: 412.
1106612	8/30/11	0850	Toms Creek at West Fork confluence, #60 sieve. Location ID: 307.
1106613	8/30/11	1259	Sweetwater Creek at Doe Run property, #60 sieve. Location ID: 409.
1106614	8/30/11	0930	Crooked Creek at Cottrell property low water bridge, #60 sieve. Location ID: 104.
1106615	8/30/11	1025	Crooked Creek at Usher property, #60 sieve. Location ID: 105.

**Table 2A: Viburnum Trend Lead Mining Site, Iron, Crawford, Washington, Reynolds,
Shannon and Dent Counties, Missouri**

Water Sample Collection Data			
Sample Number	Date Collected	Time Collected	Location Collected/Description
1103341	8/29/11	1201	Bills Creek (demo sample) downstream at road crossing. Location ID: 301.
1103342	8/29/11	1333	Bills Creek slow running area along east bank. Location ID: 302.
1103343	8/29/11	1451	Bills Creek below all Doe Run outfalls. Location ID: 303.
1103344	8/29/11	1451	Blind Duplicate of 1103343.
1103345	8/29/11	1525	Bills Creek above last Doe Run outfall BC-001. Location ID: 304.
1103346	8/29/11	1635	Bills Creek just downstream of BC-003 outfall. Location ID: 305.
1103347	8/29/11	1711	Bills Creek upstream of BC-003 outfall. Location ID: 306.
1103348	8/30/11	0834	Toms Creek at West Fork confluence. Location ID: 307.
1103349	8/30/11	0834	Duplicate of 1103348.
1103350	8/30/11	0947	Toms Creek at CR 900, gully about ¾ mile upstream of confluence. Location ID: 308.
1103351	8/30/11	1045	Toms Creek at private drive off of CR 909, Bob Jordan property. Location ID: 309.
1103352	8/30/11	1126	Toms Creek at west side of Jordon property. Location ID: 310.
1103353	8/30/11	1236	Toms Creek at Carol Jordan property just downstream of cow fence. Location ID: 311.
1103354	8/30/11	1350	Bills Creek on Moss property. Location ID: 312.
1103355	8/30/11	1424	Bills Creek on Holmes property. Location ID: 313.
1103356	8/31/11	0830	Neals Creek farthest downstream point just north of CR 66 crossing. Location ID: 314.
1103357	8/31/11	0830	Duplicate of 1103356.
1103358	8/31/11	0948	Neals Creek at south end of Barton property. Location ID: 315.
1103359	8/31/11	1037	Neals Creek at corner of CR 74 and CR 79 just upstream of confluence of Henderson Creek. Location ID: 316.
1103360	8/31/11	1111	Neals Creek at Vernon Asher property. Location ID: 317.
1106870	8/31/11	1227	Neals Creek on US Forest Service property. Location ID: 318.
1106871	8/31/11	1315	Neals Creek near headwaters on Dodson property. Location ID: 319.
1106401	8/29/11	1545	Indian Creek mile one from confluence. Location ID: 201.
1106402	8/29/11	1615	Indian Creek mile two just upstream of road crossing past mining facility road. Location ID: 202.
1106403	8/29/11	1645	Indian Creek mile three off Doe Run haul road downstream where it crosses the creek. Location ID: 203.
1106404	8/29/11	1710	Indian Creek mile three off Doe Run haul road upstream where it crosses the creek. Location ID: 204.
1106405	8/29/11	1710	Duplicate of 1106404.
1106406	8/30/11	0840	Indian Creek mile four upstream from Iron County Road and Frank Bay Road. Location ID: 205.
1106407	8/30/11	0845	Indian Creek mile five upstream from Tailings Mound Road entrance. Location ID: 206.
1106408	8/30/11	1119	Indian Creek mile six from US Forest Service Road "Fargo" at CR 82 and Highway 32. Location ID: 207.

**Table 2A: Viburnum Trend Lead Mining Site, Iron, Crawford, Washington, Reynolds,
Shannon and Dent Counties, Missouri**

Water Sample Collection Data			
Sample Number	Date Collected	Time Collected	Location Collected/Description
1106409	8/30/11	1119	Duplicate of 1106408.
1106410	8/30/11	1248	Indian Creek mile seven Forest Service Road across from church on CR 82. Location ID: 208.
1106411	8/30/11	1517	Middle Fork Black River mile one near confluence at Miller property. Location ID: 209.
1106412	8/30/11	1559	Middle Fork Black River mile two off of CR 65 at curve nearest to stream on Gehringer property. Location ID: 210.
1106413	8/30/11	1650	Middle Fork Black River mile two off of Highway 49 at Bill farm property. Location ID: 211.
1106414	8/31/11	0825	Middle Fork Black River mile three at CR 72 on Benz property. Location ID: 212.
1106415	8/31/11	0900	Middle Fork Black River mile four, US Forest Service property off of CR 72 downstream of Benz property. Location ID: 213.
1106416	8/31/11	0955	Middle Fork Black River mile five off of CR 72 at stream crossing. Location ID: 214.
1106417	8/31/11	1227	Neals Creek off of CR 79 at Ozark Trail Stream crossing. Location ID: 215.
1106501	8/29/11	1326	Bee Fork by Route TT collected before Doe Run outfall.
1106502	8/29/11	1532	Bee Fork by creek crossing along road on Sutton property.
1106503	8/29/11	1619	Bee Fork at LePlant property.
1106504	8/29/11	1619	Duplicate of 1106503.
1106505	8/30/11	0904	Bee Fork at Hill property.
1106506	8/30/11	1044	Sweetwater Creek at CR 760 and CR 758 on Doe Run property.
1106507	8/30/11	1141	Sweetwater Creek at CR 758 above AR1 on Doe Run property.
1106508	8/30/11	1141	Duplicate of 1106507.
1106509	8/30/11	1258	Sweetwater Creek at private road crossing on Doe Run property
1106510	8/30/11	1350	Sweetwater Creek at river access road on Doe Run property.
1106511	8/30/11	1438	Sweetwater Creek at CR 759 on Doe Run property.
1106512	8/31/11	0858	Left Fork of Neal's Creek on Asher property.
1106513	8/31/11	1046	Left Fork of Neal's Creek at decant ditch on Cominco property.
1106514	8/31/11	1046	Duplicate of 1106513.
1106551	8/29/11	1450	Mill Rock Creek on Carter property. Location ID: 101.
1106552	8/29/11	1620	Mill Rock Creek on Doe Run property. Location ID: 102.
1106553	8/29/11	1730	Mill Rock Creek on Doe Run property near US Forest Service property. Location ID: 103.
1106554	8/30/11	0930	Crooked Creek at low water bridge on Cottrell property. Location ID: 104.
1106555	8/30/11	1025	Crooked Creek on Usher property. Location ID: 105.
1106556	8/30/11	1025	Duplicate of 1106555.

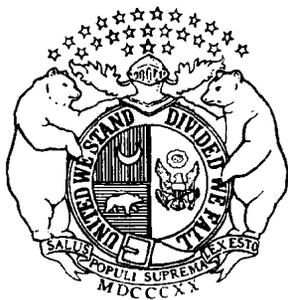
**Table 2A: Viburnum Trend Lead Mining Site, Iron, Crawford, Washington, Reynolds,
Shannon and Dent Counties, Missouri**

Water Sample Collection Data			
Sample Number	Date Collected	Time Collected	Location Collected/Description
1106557	8/30/11	1220	Crooked Creek on Turnbaugh property. Location ID: 106.
1106558	8/30/11	1420	Crooked Creek Chandler property upstream of fence. Location ID: 107.
1106559	8/30/11	1620	Crooked Creek Pryor property. Location ID: 108.
1106560	8/31/11	1022	Mill Rock Creek on Sellers property. Location ID: 109.
1106561	8/31/11	1450	Crooked Creek Doe Run property north of highway 32. Location ID: 110.
1106562	8/31/11	1450	Duplicate of 1106561.

Mace, Brenda

From: Hannon, Ken
Sent: Thursday, December 01, 2011 9:03 AM
To: Mace, Brenda
Cc: Klahr, Frances
Subject: Corrections to Viburnum sampling

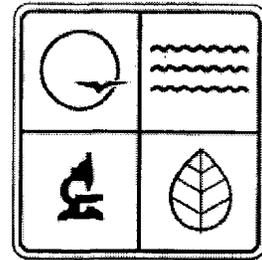
Brenda, while looking at the results for the Viburnum Trend report (Order ID Number 111024004) Frances and I found a couple of errors. On sample AB62188 The sample reference ID is missing. It should be 401. Also sample AB62191 states Crooked Creek in the sample comment section. It should be Mill Rock Creek. Can we print out an Addendum for those two changes? Let me know if you have any questions. Thanks!



Addendum

Missouri Department of Natural Resources Environmental Services Program

Addendum



Reason: Site changed

Order ID 111024004

Program, Contact: HWP Frances Klahr

Report Date: 11/25/2011

LDPR/JobCode: FEVIB



Sample: AB62191



Customer #: 1106578

Facility ID:

Site: Viburnum NRD Site

County:

Sample Reference ID: 109

Collector: KEN HANNON

Affiliation: ESP

Collect Date: 8/31/2011 10:22:00AM

Entry Point:

Sample Comment: Composite sediment sample. Mill Rock Creek, Seller's property.

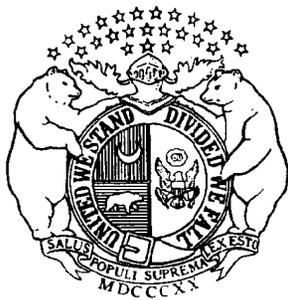
Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	2550		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	228	11, 05	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	14700		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	33700		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	14300		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	35100		µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	1.6		%	13,542	Infrared Drying

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

Qualifier Descriptions

- | | |
|--|---|
| 01 Improper collection method | 02 Improper preservation |
| 03 Exceeded holding time | 04 Analyzed by Contract Laboratory |
| 05 Estimated value, detected below PQL | 06 Estimated value, QC data outside limits |
| 07 Estimated value, analyte outside calibration range | 08 Analyte present in blank at > 1/2 reported value |
| 09 Sample was diluted during analysis | 10 Laboratory error |
| 11 Estimated value, matrix interference | 12 Insufficient quantity |
| 13 Estimated value, true result is > reported value | 14 Estimated value, non-homogeneous sample |
| 15 No Result - Failed Quality Controls Requirements | 16 Not analyzed - related analyte not detected |
| 17 Results in dry weight | 18 Sample pH is outside the acceptable range |
| 19 Estimated value | 20 Not analyzed - Instrument failure |
| 21 No result - spectral interference | 22 pH was performed at the Laboratory |
| 23 Contract Lab specific qualifier - see sample comments | 24 No result - matrix interference |
| 25 No Result: Excessive Chlorination | 26 No Result: Excessive Dechlorination |
| ND Not detected at reported value | |

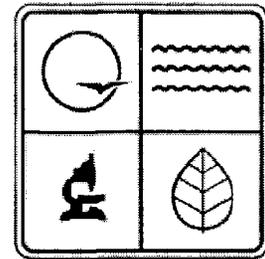
Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality



Addendum

Missouri Department of Natural Resources
Environmental Services Program

Addendum



Reason: Sample Reference added

Order ID 111024004 Program, Contact: HWP Frances Klahr
Report Date: 11/25/2011 LDPR/JobCode: FEVIB



Sample: AB62188



Customer #: 1106575

Facility ID: Site: Viburnum NRD Site
County: Sample Reference ID: 401
Collector: KEN HANNON Affiliation: ESP Collect Date: 8/29/2011 1:35:00PM
Entry Point:
Sample Comment: Composite sediment sample. Bee Fork, Doe Run property.

Table with 7 columns: Test, Parameter, Result, Qualifier, Units, QC Batch ID, Method. Rows include various metal recoverability tests and Percent Moisture.

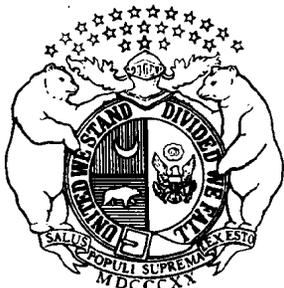
The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

Chris Boldt (handwritten signature)

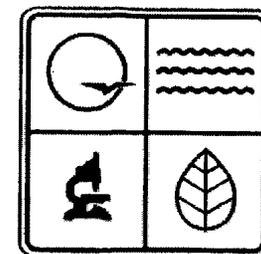
Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality

Qualifier Descriptions

- 01 Improper collection method
02 Improper preservation
03 Exceeded holding time
04 Analyzed by Contract Laboratory
05 Estimated value, detected below PQL
06 Estimated value, QC data outside limits
07 Estimated value, analyte outside calibration range
08 Analyte present in blank at > 1/2 reported value
09 Sample was diluted during analysis
10 Laboratory error
11 Estimated value, matrix interference
12 Insufficient quantity
13 Estimated value, true result is > reported value
14 Estimated value, non-homogeneous sample
15 No Result - Failed Quality Controls Requirements
16 Not analyzed - related analyte not detected
17 Results in dry weight
18 Sample pH is outside the acceptable range
19 Estimated value
20 Not analyzed - Instrument failure
21 No result - spectral interference
22 pH was performed at the Laboratory
23 Contract Lab specific qualifier - see sample comments
24 No result - matrix interference
25 No Result: Excessive Chlorination
26 No Result: Excessive Dechlorination
ND Not detected at reported value



Missouri Department of Natural Resources
Environmental Services Program



Order ID 110929003

Program, Contact: HWP Frances Klahr

Report Date: 10/31/2011

LDPR/JobCode: FEVIB



Sample: AB60983



Customer #: 1106563

Facility ID:

County: Reynolds

Collector: KEN HANNON

Entry Point:

Sample Comment: Sediment sample from left Fork Neal's Creek, Loc. 413, 1106563. Composite.

Site: NRD Viburnum

Sample Reference ID: 413

Affiliation: ESP

Collect Date: 8/31/2011 10:46:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	4030		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	332	05	µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Copper	4060		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Lead	65200		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	473000		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	7860000	09	µg/kg	13,310	SW 846 6010B
Percent Moisture	Percent Moisture	0.7		%	13,213	Infrared Drying

Sample: AB60984



Customer #: 1106564

Facility ID:

County: Reynolds

Collector: KEN HANNON

Entry Point:

Sample Comment: Sediment sample from left Fork Neal's Creek, 414, 1106564. Composite.

Site: NRD Viburnum

Sample Reference ID: 414

Affiliation: ESP

Collect Date: 8/31/2011 10:46:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	4840		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	552		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Copper	39700		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Lead	58600		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	1120000		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	20700000	09	µg/kg	13,310	SW 846 6010B
Percent Moisture	Percent Moisture	0.4		%	13,213	Infrared Drying

Sample: AB60985**Customer #: 1106565****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Sediment sample from Crooked Creek, 105, 1106565. Composite.**Site: NRD Viburnum**
Sample Reference ID: 105**Affiliation: ESP****Collect Date: 8/30/2011 10:25:00AM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	13400		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	6600		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Copper	8240	09	µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Lead	110000		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	16000		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	97600		µg/kg	13,310	SW 846 6010B
Percent Moisture	Percent Moisture	0.7		%	13,213	Infrared Drying

Sample: AB60986**Customer #: 1106566****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Sediment sample from Bills Creek, 301, 1106566. Composite.**Site: NRD Viburnum**
Sample Reference ID: 301**Affiliation: ESP****Collect Date: 8/29/2011 12:01:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	4990		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	956		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Copper	5790		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Lead	166000		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	36900		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	438000		µg/kg	13,310	SW 846 6010B
Percent Moisture	Percent Moisture	0.7		%	13,213	Infrared Drying

Sample: AB60987**Customer #: 1106567****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Sediment sample from Indian Creek. Loc #208, 1106567. Composite.**Site: NRD Viburnum**
Sample Reference ID: 208**Affiliation: ESP****Collect Date: 8/30/2011 12:48:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	4710		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	<100	ND	µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Copper	3370		µg/kg	13,310	SW 846 6010B

Sample: AB60987

Customer #: 1106567

Facility ID:
County:

Site: NRD Viburnum
Sample Reference ID: 208

Collector: KEN HANNON

Affiliation: ESP

Collect Date: 8/30/2011 12:48:00PM

Entry Point:

Sample Comment: Sediment sample from Indian Creek. Loc #208, 1106567. Composite.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Lead	18500	09	µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	5480		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	22500	09	µg/kg	13,310	SW 846 6010B
Percent Moisture	Percent Moisture	0.7		%	13,213	Infrared Drying

Sample: AB60988

Customer #: 1106568

Facility ID:
County:

Site: NRD Viburnum
Sample Reference ID: 309

Collector: KEN HANNON

Affiliation: ESP

Collect Date: 8/30/2011 10:45:00AM

Entry Point:

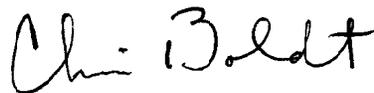
Sample Comment: Sediment sample from Tom's Creek. Loc#309, 1106568. Composite

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	<1250	ND	µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	<100	ND	µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Copper	1000		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Lead	2270	05	µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	2300		µg/kg	13,310	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	4340		µg/kg	13,310	SW 846 6010B
Percent Moisture	Percent Moisture	0.2		%	13,213	Infrared Drying

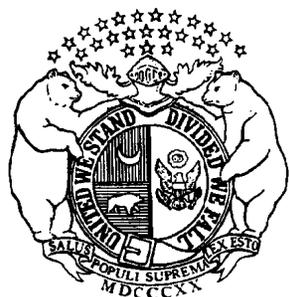
The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

Qualifier Descriptions

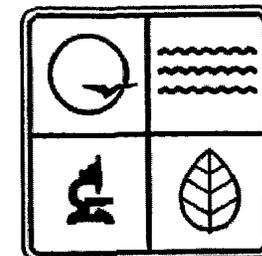
- | | |
|--|---|
| 01 Improper collection method | 02 Improper preservation |
| 03 Exceeded holding time | 04 Analyzed by Contract Laboratory |
| 05 Estimated value, detected below PQL | 06 Estimated value, QC data outside limits |
| 07 Estimated value, analyte outside calibration range | 08 Analyte present in blank at > 1/2 reported value |
| 09 Sample was diluted during analysis | 10 Laboratory error |
| 11 Estimated value, matrix interference | 12 Insufficient quantity |
| 13 Estimated value, true result is >= reported value | 14 Estimated value, non-homogeneous sample |
| 15 No Result - Failed Quality Controls Requirements | 16 Not analyzed - related analyte not detected |
| 17 Results in dry weight | 18 Sample pH is outside the acceptable range |
| 19 Estimated value | 20 Not analyzed - Instrument failure |
| 21 No result - spectral interference | 22 pH was performed at the Laboratory |
| 23 Contract Lab specific qualifier - see sample comments | 24 No result - matrix interference |
| 25 No Result: Excessive Chlorination | 26 No Result: Excessive Dechlorination |
| ND Not detected at reported value | |



Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality



Missouri Department of Natural Resources
Environmental Services Program



Order ID 111024004

Program, Contact: HWP Frances Klahr

Report Date: 11/25/2011

LDPR/JobCode: FEVIB



Sample: AB62182



Customer #: 1106569

Facility ID:
County:

Site: Viburnum NRD Site
Sample Reference ID: 308

Collector: KEN HANNON

Affiliation: ESP

Collect Date: 8/30/2011 9:55:00AM

Entry Point:

Sample Comment: Composite sediment sample from Tom's Creek along C.R. 900.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	<1250	ND	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	<100	ND	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	2290		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	5360		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	3850		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	9650		µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	0.8		%	13,542	Infrared Drying

Sample: AB62183



Customer #: 1106570

Facility ID:
County:

Site: Viburnum NRD Site
Sample Reference ID:

Collector: KEN HANNON

Affiliation: ESP

Collect Date: 8/29/2011 12:00:00AM

Entry Point:

Sample Comment: Composite, blind replicate.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	1600	05	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	<100	ND	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	2400		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	5590		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	4320		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	10600		µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	0.4		%	13,542	Infrared Drying

Sample: AB62184



Customer #: 1106571

Facility ID:
County:

Site: Viburnum NRD Site
Sample Reference ID: 101

Collector: KEN HANNON

Affiliation: ESP

Collect Date: 8/29/2011 2:50:00PM

Entry Point:

Sample Comment: Composite sediment sample. Mill Rock Creek, Carter property.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	7000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	583	11	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	24700		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	166000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	15800		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	62300		µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	2.1		%	13,542	Infrared Drying

Sample: AB62185



Customer #: 1106572

Facility ID:
County:

Site: Viburnum NRD Site
Sample Reference ID: 303

Collector: KEN HANNON

Affiliation: ESP

Collect Date: 8/29/2011 3:09:00PM

Entry Point:

Sample Comment: Composite sediment sample. Bill's Creek, below all Doe Run outfalls.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	22100		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	10800		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	63900		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	3330000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	534000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	6530000	09	µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	1.9		%	13,542	Infrared Drying

Sample: AB62186



Customer #: 1106573

Facility ID:
County:

Site: Viburnum NRD Site
Sample Reference ID: 406

Collector: KEN HANNON

Affiliation: ESP

Collect Date: 8/30/2011 10:45:00AM

Entry Point:

Sample Comment: Composite sediment sample. Sweetwater Creek, Doe Run property.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	3390		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	1510		µg/kg	13,576	SW 846 6010B

Sample: AB62186**Customer #:** 1106573**Facility ID:**
County:**Collector:** KEN HANNON**Entry Point:****Sample Comment:** Composite sediment sample. Sweetwater Creek, Doe Run property.**Site:** Viburnum NRD Site
Sample Reference ID: 406**Affiliation:** ESP**Collect Date:** 8/30/2011 10:45:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Copper	17000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	298000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	14500		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	134000		µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	0.7		%	13,542	Infrared Drying

Sample: AB62187**Customer #:** 1106574**Facility ID:**
County:**Collector:** KEN HANNON**Entry Point:****Sample Comment:** Composite sediment sample. Middle Fork Black River, C.R. 65 curve next to stream.**Site:** Viburnum NRD Site
Sample Reference ID: 210**Affiliation:** ESP**Collect Date:** 8/30/2011 3:59:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	4330		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	279	11, 05	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	10700		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	33300		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	9250		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	53800		µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	0.8		%	13,542	Infrared Drying

Sample: AB62188**Customer #:** 1106575**Facility ID:**
County:**Collector:** KEN HANNON**Entry Point:****Sample Comment:** Composite sediment sample. Bee Fork, Doe Run property.**Site:** Viburnum NRD Site
Sample Reference ID:**Affiliation:** ESP**Collect Date:** 8/29/2011 1:35:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	1450	05	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	112	05	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	5380		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	13400		µg/kg	13,576	SW 846 6010B

Sample: AB62188



Customer #: 1106575

Facility ID:
County:

Collector: KEN HANNON

Entry Point:

Sample Comment: Composite sediment sample. Bee Fork, Doe Run property.

Site: Viburnum NRD Site
Sample Reference ID:

Affiliation: ESP

Collect Date: 8/29/2011 1:35:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Nickel	8720		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	15600		µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	0.6		%	13,542	Infrared Drying

Sample: AB62189



Customer #: 1106576

Facility ID:
County:

Collector: KEN HANNON

Entry Point:

Sample Comment: Composite sediment sample. Left Fork Neal's Creek, Cominco property.

Site: Viburnum NRD Site
Sample Reference ID: 413

Affiliation: ESP

Collect Date: 8/31/2011 10:47:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	9070		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	2410		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	26000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	207000	09	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	4940000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	103000000	09	µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	1.8		%	13,542	Infrared Drying

Sample: AB62190



Customer #: 1106577

Facility ID:
County:

Collector: KEN HANNON

Entry Point:

Sample Comment: Composite sediment sample. Indian Creek, mile 3 on Doe Run property.

Site: Viburnum NRD Site
Sample Reference ID: 203

Affiliation: ESP

Collect Date: 8/29/2011 4:45:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	8590		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	9380		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	109000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	404000		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	46100		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	1100000	09	µg/kg	13,576	SW 846 6010B

Sample: AB62190**Customer #: 1106577****Facility ID:**
County:**Collector:** KEN HANNON**Entry Point:****Sample Comment:** Composite sediment sample. Indian Creek, mile 3 on Doe Run property.**Site:** Viburnum NRD Site
Sample Reference ID: 203**Affiliation:** ESP**Collect Date:** 8/29/2011 4:45:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Percent Moisture	Percent Moisture	1.8		%	13,542	Infrared Drying

Sample: AB62191**Customer #: 1106578****Facility ID:**
County:**Collector:** KEN HANNON**Entry Point:****Sample Comment:** Composite sediment sample. Crooked Creek, Seller's property.**Site:** Viburnum NRD Site
Sample Reference ID: 109**Affiliation:** ESP**Collect Date:** 8/31/2011 10:22:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	2550		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	228	11,05	µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Copper	14700		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Lead	33700		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	14300		µg/kg	13,576	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	35100		µg/kg	13,576	SW 846 6010B
Percent Moisture	Percent Moisture	1.6		%	13,542	Infrared Drying

Sample: AB62192**Customer #: 1106579****Facility ID:**
County:**Collector:** KEN HANNON**Entry Point:****Sample Comment:** Composite sediment sample. Mill Rock Creek, Doe Run property.**Site:** Viburnum NRD Site
Sample Reference ID: 102**Affiliation:** ESP**Collect Date:** 8/29/2011 4:20:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	6760		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	875	11	µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Copper	42500		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Lead	160000		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	24700		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	275000		µg/kg	13,577	SW 846 6010B
Percent Moisture	Percent Moisture	2.1		%	13,542	Infrared Drying

Sample: AB62193**Customer #: 1106580****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite sediment sample. Neal's Fork, north of C.R. 66 crossing downstream-most sample.**Site: Viburnum NRD Site**
Sample Reference ID: 314**Affiliation: ESP****Collect Date: 8/31/2011 8:30:00AM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	4060		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	254	11, 05	µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Copper	10700		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Lead	27700		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	20000		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	111000		µg/kg	13,577	SW 846 6010B
Percent Moisture	Percent Moisture	1.3		%	13,542	Infrared Drying

Sample: AB62194**Customer #: 1106581****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite sediment sample. Neal's Creek, Asher property.**Site: Viburnum NRD Site**
Sample Reference ID: 317**Affiliation: ESP****Collect Date: 8/31/2011 11:11:00AM**

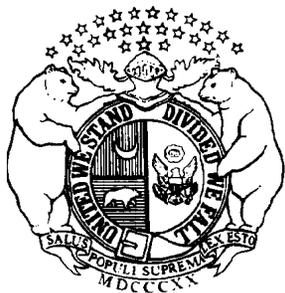
Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	2530		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	841		µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Copper	15400	09	µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Lead	65200	09	µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	41600	09	µg/kg	13,577	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	421000	09	µg/kg	13,577	SW 846 6010B
Percent Moisture	Percent Moisture	1.2		%	13,542	Infrared Drying



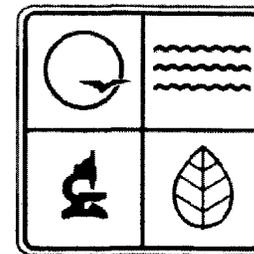
Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality

Qualifier Descriptions

- 01 Improper collection method
- 03 Exceeded holding time
- 05 Estimated value, detected below PQL
- 07 Estimated value, analyte outside calibration range
- 09 Sample was diluted during analysis
- 11 Estimated value, matrix interference
- 13 Estimated value, true result is >= reported value
- 15 No Result - Failed Quality Controls Requirements
- 17 Results in dry weight
- 19 Estimated value
- 21 No result - spectral interference
- 23 Contract Lab specific qualifier - see sample comments
- 25 No Result: Excessive Chlorination
- ND Not detected at reported value
- 02 Improper preservation
- 04 Analyzed by Contract Laboratory
- 06 Estimated value, QC data outside limits
- 08 Analyte present in blank at > 1/2 reported value
- 10 Laboratory error
- 12 Insufficient quantity
- 14 Estimated value, non-homogeneous sample
- 16 Not analyzed - related analyte not detected
- 18 Sample pH is outside the acceptable range
- 20 Not analyzed - Instrument failure
- 22 pH was performed at the Laboratory
- 24 No result - matrix interference
- 26 No Result: Excessive Dechlorination



Missouri Department of Natural Resources
Environmental Services Program



Order ID 111213004

Program, Contact: HWP Frances Klahr

Report Date: 01/03/2012

LDPR/JobCode: FEVIB



Sample: AB63372



Customer #: 1106597

Facility ID:

County:

Collector: KEN HANNON

Entry Point:

Sample Comment: Composite, sediment sample from Crooked Creek, Turnbaugh property, #60 sieve.

Site: Viburnum NRD Site

Sample Reference ID: 106

Affiliation: ESP

Collect Date: 8/30/2011 12:20:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	21900		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	59100		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Copper	68300		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Lead	594000		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	91800		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	409000		µg/kg	14,215	SW 846 6010B
Percent Moisture	Percent Moisture	2.0		%	14,127	Infrared Drying

Sample: AB63373



Customer #: 1106598

Facility ID:

County:

Collector: KEN HANNON

Entry Point:

Sample Comment: Composite, sediment sample from Sweetwater Creek, Doe Run property, at C.R. 758, #60 sieve.

Site: Viburnum NRD Site

Sample Reference ID: 407

Affiliation: ESP

Collect Date: 8/30/2011 11:45:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	1870	05	µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	2110		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Copper	9450		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Lead	174000		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	5300		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	122000		µg/kg	14,215	SW 846 6010B
Percent Moisture	Percent Moisture	0.3		%	14,127	Infrared Drying

Sample: AB63374**Customer #: 1106599****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite, sediment sample from Indian Creek, upstream of mining facility road, #60 sieve.**Site: Viburnum NRD Site**
Sample Reference ID: 202**Affiliation: ESP****Collect Date: 8/29/2011 4:15:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	4610		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	2850		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Copper	41400		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Lead	134000		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	18400	09	µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	324000		µg/kg	14,215	SW 846 6010B
Percent Moisture	Percent Moisture	0.8		%	14,127	Infrared Drying

Sample: AB63375**Customer #: 1106600****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite, sediment from Indian Creek, mile 1, #60 sieve.**Site: Viburnum NRD Site**
Sample Reference ID: 201**Affiliation: ESP****Collect Date: 8/29/2011 3:00:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	14100		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	8730	09	µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Copper	130000		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Lead	893000		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	84100		µg/kg	14,215	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	1410000		µg/kg	14,215	SW 846 6010B
Percent Moisture	Percent Moisture	2.2		%	14,127	Infrared Drying

Sample: AB63376**Customer #: 1106601****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite, sediment sample from Bill's Creek, east bank, #60 sieve.**Site: Viburnum NRD Site**
Sample Reference ID: 302**Affiliation: ESP****Collect Date: 8/29/2011 1:33:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	3600		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	2090		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	7040		µg/kg	14,216	SW 846 6010B

Sample: AB63376**Facility ID:****Site: Viburnum NRD Site****County:****Sample Reference ID: 302****Collector: KEN HANNON****Affiliation: ESP****Collect Date: 8/29/2011 1:33:00PM****Entry Point:****Sample Comment:** Composite, sediment sample from Bill's Creek, east bank, #60 sieve.**Customer #: 1106601**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Lead	307000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	35700		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	490000		µg/kg	14,216	SW 846 6010B
Percent Moisture	Percent Moisture	0.8		%	14,127	Infrared Drying

Sample: AB63377**Facility ID:****Site: Viburnum NRD Site****County:****Sample Reference ID: 215****Collector: KEN HANNON****Affiliation: ESP****Collect Date: 8/31/2011 12:27:00PM****Entry Point:****Sample Comment:** Composite, sediment sample from Neal's Creek, near County Road 79, #60 sieve.**Customer #: 1106602**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	4140		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	1040		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	18200		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Lead	78600		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	54700		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	392000		µg/kg	14,216	SW 846 6010B
Percent Moisture	Percent Moisture	0.9		%	14,127	Infrared Drying

Sample: AB63378**Facility ID:****Site: Viburnum NRD Site****County:****Sample Reference ID: 206****Collector: KEN HANNON****Affiliation: ESP****Collect Date: 8/30/2011 9:45:00AM****Entry Point:****Sample Comment:** Composite, sediment sample from Indian Creek, mile 5, Doe Run property, #60 sieve.**Customer #: 1106603**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	17100		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	9060		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	505000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Lead	757000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	48800		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	542000	09	µg/kg	14,216	SW 846 6010B

Sample: AB63378**Customer #: 1106603****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite, sediment sample from Indian Creek, mile 5, Doe Run property, #60 sieve.**Site: Viburnum NRD Site**
Sample Reference ID: 206**Affiliation: ESP****Collect Date: 8/30/2011 9:45:00AM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Percent Moisture	Percent Moisture	2.5		%	14,127	Infrared Drying

Sample: AB63379**Customer #: 1106604****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite, sediment sample from Crooked Creek, Pryor property, #60 sieve.**Site: Viburnum NRD Site**
Sample Reference ID: 108**Affiliation: ESP****Collect Date: 8/30/2011 4:20:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	28300		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	8900		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	65900		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Lead	577000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	22400		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	164000		µg/kg	14,216	SW 846 6010B
Percent Moisture	Percent Moisture	0.6		%	14,127	Infrared Drying

Sample: AB63380**Customer #: 1106605****Facility ID:**
County:**Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite, sediment sample from Indian Creek, mile 4, Doe Run property, #60 sieve.**Site: Viburnum NRD Site**
Sample Reference ID: 205**Affiliation: ESP****Collect Date: 8/30/2011 8:30:00AM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	11300		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	7520		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	228000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Lead	453000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	36400		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	416000		µg/kg	14,216	SW 846 6010B
Percent Moisture	Percent Moisture	1.6		%	14,127	Infrared Drying

Sample: AB63381**Facility ID:**
County:**Site: Viburnum NRD Site**
Sample Reference ID: 110**Collector: KEN HANNON****Affiliation: ESP****Collect Date: 8/31/2011 2:50:00PM****Entry Point:****Sample Comment:** Composite, sediment sample from Crooked Creek, Doe Run Property, #60 sieve.**Customer #: 1106606**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	127000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	58300		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	141000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Lead	2200000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	26800		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	288000		µg/kg	14,216	SW 846 6010B
Percent Moisture	Percent Moisture	1.0		%	14,127	Infrared Drying

Sample: AB63382**Facility ID:**
County:**Site: Viburnum NRD Site**
Sample Reference ID: 305**Collector: KEN HANNON****Affiliation: ESP****Collect Date: 8/30/2011 4:45:00PM****Entry Point:****Sample Comment:** Composite, sediment sample from Bill's Creek, downstream of BC 003 outfall, #60 sieve.**Customer #: 1106607**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	2970		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	1770		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	22000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Lead	135000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	13700		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	117000		µg/kg	14,216	SW 846 6010B
Percent Moisture	Percent Moisture	0.8		%	14,127	Infrared Drying

Sample: AB63383**Facility ID:**
County:**Site: Viburnum NRD Site**
Sample Reference ID: 204**Collector: KEN HANNON****Affiliation: ESP****Collect Date: 8/29/2011 5:10:00PM****Entry Point:****Sample Comment:** Composite, sediment sample from Indian Creek, Doe Run property, #60 sieve.**Customer #: 1106608**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	6530		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	4010		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	73500		µg/kg	14,216	SW 846 6010B

Sample: AB63383**Customer #: 1106608****Facility ID:****County:****Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite, sediment sample from Indian Creek, Doe Run property, #60 sieve.**Site: Viburnum NRD Site****Sample Reference ID: 204****Affiliation: ESP****Collect Date: 8/29/2011 5:10:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Lead	400000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	26800		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	565000		µg/kg	14,216	SW 846 6010B
Percent Moisture	Percent Moisture	0.8		%	14,127	Infrared Drying

Sample: AB63384**Customer #: 1106609****Facility ID:****County:****Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite, sediment sample from Crooked Creek, Chandler property, #60 sieve.**Site: Viburnum NRD Site****Sample Reference ID: 107****Affiliation: ESP****Collect Date: 8/30/2011 2:20:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	17800	09	µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	76600		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	61700		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Lead	601000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	81300		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	539000		µg/kg	14,216	SW 846 6010B
Percent Moisture	Percent Moisture	1.4		%	14,127	Infrared Drying

Sample: AB63385**Customer #: 1106610****Facility ID:****County:****Collector: KEN HANNON****Entry Point:****Sample Comment:** Composite, sediment sample from Bill's Creek, lowermost (downstream) point, #60 sieve.**Site: Viburnum NRD Site****Sample Reference ID: 301****Affiliation: ESP****Collect Date: 8/29/2011 12:01:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	3520		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	1760		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Copper	9550		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Lead	255000		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	48800		µg/kg	14,216	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	605000		µg/kg	14,216	SW 846 6010B

Sample: AB63385

Customer #: 1106610

Facility ID:
County:
Collector: KEN HANNON
Entry Point:
Sample Comment:

Site: Viburnum NRD Site
Sample Reference ID: 301

Affiliation: ESP

Collect Date: 8/29/2011 12:01:00PM

Composite, sediment sample from Bill's Creek, lowermost (downstream) point, #60 sieve.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Percent Moisture	Percent Moisture	1.3		%	14,127	Infrared Drying

Sample: AB63386

Customer #: 1106611

Facility ID:
County:
Collector: KEN HANNON
Entry Point:
Sample Comment:

Site: Viburnum NRD Site
Sample Reference ID: 412

Affiliation: ESP

Collect Date: 8/31/2011 9:00:00AM

Composite, sediment sample from left fork of Neal's Creek, COMECO property, #60 sieve.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	7300		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	1860		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Copper	27200	06	µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Lead	202000		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	261000		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	1230000		µg/kg	14,217	SW 846 6010B
Percent Moisture	Percent Moisture	1.9		%	14,127	Infrared Drying

Sample: AB63387

Customer #: 1106612

Facility ID:
County:
Collector: KEN HANNON
Entry Point:
Sample Comment:

Site: Viburnum NRD Site
Sample Reference ID: 307

Affiliation: ESP

Collect Date: 8/30/2011 8:50:00AM

Composite, sediment sample from Tom's Creek, at West Fork confluence, #60 sieve.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	<1250	ND	µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	111	05	µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Copper	2830		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Lead	155000		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	3740	09	µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	15600		µg/kg	14,217	SW 846 6010B
Percent Moisture	Percent Moisture	0.1		%	14,127	Infrared Drying

Sample: AB63388**Customer #:** 1106613**Facility ID:**
County:**Collector:** KEN HANNON**Entry Point:****Sample Comment:** Composite, sediment sample from Sweetwater Creek, Doe Run property, #60 sieve.**Site:** Viburnum NRD Site
Sample Reference ID: 409**Affiliation:** ESP**Collect Date:** 8/30/2011 12:59:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	1640	05	µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	2230		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Copper	10700		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Lead	203000		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	5710		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	111000		µg/kg	14,217	SW 846 6010B
Percent Moisture	Percent Moisture	0.4		%	14,127	Infrared Drying

Sample: AB63389**Customer #:** 1106614**Facility ID:**
County:**Collector:** KEN HANNON**Entry Point:****Sample Comment:** Composite, sediment sample from Crooked Creek, low water bridge Cattrell property, #60 sieve.**Site:** Viburnum NRD Site
Sample Reference ID: 104**Affiliation:** ESP**Collect Date:** 8/30/2011 9:30:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	6660		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	4020		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Copper	16300		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Lead	118000		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	12100		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	53100		µg/kg	14,217	SW 846 6010B
Percent Moisture	Percent Moisture	1.1		%	14,127	Infrared Drying

Sample: AB63390**Customer #:** 1106615**Facility ID:**
County:**Collector:** KEN HANNON**Entry Point:****Sample Comment:** Composite, sediment sample from Crooked Creek, Usher property, #60 sieve.**Site:** Viburnum NRD Site
Sample Reference ID: 105**Affiliation:** ESP**Collect Date:** 8/30/2011 10:25:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Arsenic	13800		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Cadmium	15600		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Copper	29400		µg/kg	14,217	SW 846 6010B

Sample: AB63390

Facility ID:
County:

Site: Viburnum NRD Site
Sample Reference ID: 105

Collector: KEN HANNON

Affiliation: ESP

Collect Date: 8/30/2011 10:25:00AM


Customer #: 1106615

Entry Point:

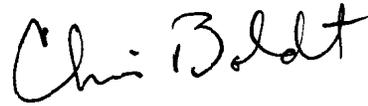
Sample Comment: Composite sediment sample from Crooked Creek, Usher property, #60 sieve.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6010B Metals-Total Recoverable	Lead	255000		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Nickel	24700		µg/kg	14,217	SW 846 6010B
6010B Metals-Total Recoverable	Zinc	136000		µg/kg	14,217	SW 846 6010B
Percent Moisture	Percent Moisture	0.8		%	14,127	Infrared Drying

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

Qualifier Descriptions

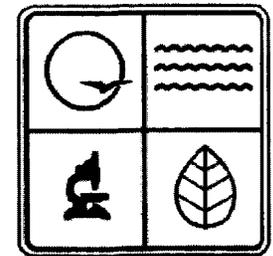
- | | |
|--|---|
| 01 Improper collection method | 02 Improper preservation |
| 03 Exceeded holding time | 04 Analyzed by Contract Laboratory |
| 05 Estimated value, detected below PQL | 06 Estimated value, QC data outside limits |
| 07 Estimated value, analyte outside calibration range | 08 Analyte present in blank at > 1/2 reported value |
| 09 Sample was diluted during analysis | 10 Laboratory error |
| 11 Estimated value, matrix interference | 12 Insufficient quantity |
| 13 Estimated value, true result is >= reported value | 14 Estimated value, non-homogeneous sample |
| 15 No Result - Failed Quality Controls Requirements | 16 Not analyzed - related analyte not detected |
| 17 Results in dry weight | 18 Sample pH is outside the acceptable range |
| 19 Estimated value | 20 Not analyzed - Instrument failure |
| 21 No result - spectral interference | 22 pH was performed at the Laboratory |
| 23 Contract Lab specific qualifier - see sample comments | 24 No result - matrix interference |
| 25 No Result: Excessive Chlorination | 26 No Result: Excessive Dechlorination |
| ND Not detected at reported value | |



Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality



**Missouri Department of Natural Resources
Environmental Services Program**



Order ID 110901132

Program, Contact: HWP Frances Klahr

Report Date: 09/22/2011

LDPR/JobCode: FEVIB



Sample: AB58908

Facility ID:

Site: Viburnum Trend Lead Mining Sites

County: Reynolds

Sample Reference ID: 301

Collector: PAM HACKLER

Affiliation: ESP

Collect Date: 8/29/2011 12:01:00PM

Customer #: 1103341

Entry Point:

Sample Comment: Bill's Creek (demo sample) most downstream point at road crossing, grab.

Precision

UTM-Easting
664303.39E

Northing
4152259.77N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.80	05	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.73		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	0.80	05	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	4.89		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	10.6		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	76.6		µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	0.28		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.58	05	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	4.32		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	8.80		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	52.3		µg/L	12,433	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	67.8		mg/L	12,492	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	42.1		mg/L	12,492	SW 846 6010B
Field pH	Field pH	8.05		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	644 uS/cm				SM 2510
Field Temperature	Field Temperature	26.0 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	343		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	180		mV		Not Applicable

Sample: AB58909**Customer #:** 1103342**Facility ID:****County:** Reynolds**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Bill's Creek, slow running area on east bank, grab.**Precision****Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 302**Affiliation:** ESP**Collect Date:** 8/29/2011 1:33:00PM**UTM-Easting**

664406.16E

Northing

4153003.79N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	1.14		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.48		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	0.67	05	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	22.3		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	20.5		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	140		µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	0.84		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.15		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Lead	19.1		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Nickel	19.0		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Zinc	107		µg/L	12,434	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	69.2		mg/L	12,493	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	43.2		mg/L	12,493	SW 846 6010B
Field pH	Field pH	8.19		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	668 µS/cm				SM 2510
Field Temperature	Field Temperature	26.8 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	351		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	263		mV		Not Applicable

Sample: AB58910**Customer #:** 1103343**Facility ID:****County:** Reynolds**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Bill's Creek, below all Doe Run outfalls, grab.**Precision****Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 303**Affiliation:** ESP**Collect Date:** 8/29/2011 2:51:00PM**UTM-Easting**

664169.59E

Northing

4154422.64N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	1.80		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.49		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	0.94	05	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	106		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	65.0		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	517		µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	1.16		µg/L	12,434	SW 846 6020

Sample: AB58910**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Reynolds**Sample Reference ID:** 303**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/29/2011 2:51:00PM**Customer #:** 1103343**Entry Point:****Sample Comment:** Bill's Creek, below all Doe Run outfalls, grab.**Precision****UTM-Easting**
664169.59E**Northing**
4154422.64N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Cadmium	0.67		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.20		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Lead	115		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Nickel	61.8		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Zinc	449		µg/L	12,434	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	73.5		mg/L	12,493	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	46.0		mg/L	12,493	SW 846 6010B
Field pH	Field pH	8.36		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	689 uS/cm				SM 2510
Field Temperature	Field Temperature	26.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	373		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	229		mV		Not Applicable

Sample: AB58911**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Reynolds**Sample Reference ID:****Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/29/2011 12:00:00AM**Customer #:** 1103344**Entry Point:****Sample Comment:** Blind Duplicate, grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	1.72		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	1.01		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	1.12		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	104		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	62.2		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	488		µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	1.17		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	0.88		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.22		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Lead	116		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Nickel	62.8		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Zinc	460		µg/L	12,434	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	73.4		mg/L	12,493	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	45.9		mg/L	12,493	SW 846 6010B

Sample: AB58911



Customer #: 1103344

Facility ID:
County: Reynolds

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID:

Collector: PAM HACKLER

Affiliation: ESP

Collect Date: 8/29/2011 12:00:00AM

Entry Point:

Sample Comment: Blind Duplicate, grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Hardness as CaCO3	Hardness as CaCO3	372		mg/L		SM 2340-B

Sample: AB58912



Customer #: 1103345

Facility ID:
County: Reynolds

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID: 304

Collector: PAM HACKLER

Affiliation: ESP

Collect Date: 8/29/2011 3:25:00PM

Entry Point:

Sample Comment: Bill's Creek, above last Doe Run outfall - BC - 001, grab.

Precision

UTM-Easting Northing
664108.64E 4154673.01N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.55		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	0.53	05	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	0.67	05	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	5.82		µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Zinc	5.47		µg/L	12,434	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	59.3		mg/L	12,493	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	35.8		mg/L	12,493	SW 846 6010B
Field pH	Field pH	8.08		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	490 uS/cm				SM 2510
Field Temperature	Field Temperature	25.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	295		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	305		mV		Not Applicable

Sample: AB58913**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Reynolds**Sample Reference ID:** 305**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/29/2011 4:35:00PM**Customer #:** 1103346**Entry Point:****Sample Comment:** Bills Creek, just downstream of BC - 003 outfall, grab.**Precision****UTM-Easting****Northing**

663705.95E

4155388.17N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.56		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	1.02		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	0.83	05	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	4.69		µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.78	05	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Lead	7.22		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.66	05	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Zinc	5.33		µg/L	12,434	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	54.6		mg/L	12,493	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	32.4		mg/L	12,493	SW 846 6010B
Field pH	Field pH	7.53		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	458 uS/cm				SM 2510
Field Temperature	Field Temperature	24.0 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	270		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	690		mV		Not Applicable

Sample: AB58914**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Reynolds**Sample Reference ID:** 306**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/29/2011 5:11:00PM**Customer #:** 1103347**Entry Point:****Sample Comment:** Bills Creek, upstream of BC - 003 outfall, grab.**Precision****UTM-Easting****Northing**

663545.04E

4155706.21N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.59		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	4.26		µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,434	SW 846 6020

Sample: AB58914**Customer #:** 1103347**Facility ID:****County:** Reynolds**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Bills Creek, upstream of BC - 003 outfall, grab.**Precision****Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 306**Affiliation:** ESP**Collect Date:** 8/29/2011 5:11:00PM**UTM-Easting**
663545.04E**Northing**
4155706.21N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Zinc	2.99		µg/L	12,434	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	47.4		mg/L	12,493	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	28.8		mg/L	12,493	SW 846 6010B
Field pH	Field pH	7.97		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	399 µS/cm				SM 2510
Field Temperature	Field Temperature	24.2 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	237		mg/L		SM 2340-B

Sample: AB58915**Customer #:** 1103348**Facility ID:****County:** Reynolds**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Tom's Creek at West Fork confluence, grab.**Precision****Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 307**Affiliation:** ESP**Collect Date:** 8/30/2011 8:34:00AM**UTM-Easting**
667002.06E**Northing**
4151358.59N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	4.02		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	1.02		µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.50	05	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Lead	5.14		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.67	05	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Zinc	3.80		µg/L	12,434	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	32.0		mg/L	12,493	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	18.9		mg/L	12,493	SW 846 6010B
Field pH	Field pH	8.17		pH Units		EPA 150.1

Sample: AB58915

Facility ID:
County: Reynolds

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID: 307

Collector: PAM HACKLER

Affiliation: ESP

Collect Date: 8/30/2011 8:34:00AM

Customer #: 1103348

Entry Point:

Sample Comment: Tom's Creek at West Fork confluence, grab.

Precision

UTM-Easting Northing
667002.06E 4151358.59N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Field Specific Conductivity	Field Specific Conductivity	269 uS/cm				SM 2510
Field Temperature	Field Temperature	20.2C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	158		mg/L		SM 2340-B

Sample: AB58916

Facility ID:
County: Reynolds

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID:

Collector: PAM HACKLER

Affiliation: ESP

Collect Date: 8/30/2011 12:00:00AM

Customer #: 1103349

Entry Point:

Sample Comment: Blind Duplicate, grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.56		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	4.10		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	0.57	05	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	5.28		µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Lead	5.37		µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,434	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.07		µg/L	12,434	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	32.0		mg/L	12,493	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	18.9		mg/L	12,493	SW 846 6010B
Hardness as CaCO3	Hardness as CaCO3	158		mg/L		SM 2340-B

Sample: AB58917**Customer #: 1103350****Facility ID:**
County: Reynolds**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID: 308**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/30/2011 9:47:00AM**Entry Point:****Sample Comment:** Tom's Creek at CR 900, gulley, ~3/4 mile upstream of confluence, grab.**UTM-Easting** 665863.68E
Northing 4150922.47N**Precision**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.62		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	0.61	05	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	5.32		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	2.44		µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	31.4		mg/L	12,493	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	18.5		mg/L	12,493	SW 846 6010B
Field pH	Field pH	7.89		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	260 uS/cm				SM 2510
Field Temperature	Field Temperature	22 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	155		mg/L		SM 2340-B

Sample: AB58918**Customer #: 1103351****Facility ID:**
County: Reynolds**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID: 309**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/30/2011 10:45:00AM**Entry Point:****Sample Comment:** Tom's Creek, private drive of CR 909, Bob Jordan Property, grab.**UTM-Easting** 663871.50E
Northing 4150032.83N**Precision**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.54		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	6.34		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020

Sample: AB58918**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Reynolds**Sample Reference ID:** 309**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/30/2011 10:45:00AM**Customer #:** 1103351**Entry Point:****Sample Comment:** Tom's Creek, private drive of CR 909, Bob Jordan Property, grab.**Precision****UTM-Easting****Northing**

663871.50E

4150032.83N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	2.54		µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	35.8		mg/L	12,494	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	21.3		mg/L	12,494	SW 846 6010B
Field pH	Field pH	8.13		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	299 uS/cm				SM 2510
Field Temperature	Field Temperature	20.5 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	177		mg/L		SM 2340-B

Sample: AB58919**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Reynolds**Sample Reference ID:** 310**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/30/2011 11:26:00AM**Customer #:** 1103352**Entry Point:****Sample Comment:** Tom's Creek, west side of Gordon Property, grab.**Precision****UTM-Easting****Northing**

662947.58E

4149824.16N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.59		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	0.55	05	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	3.54		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	2.50		µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	35.4		mg/L	12,494	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	20.9		mg/L	12,494	SW 846 6010B
Field pH	Field pH	8.07		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	287 uS/cm				SM 2510

Sample: AB58919**Customer #:** 1103352**Facility ID:**
County: Reynolds**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Tom's Creek, west side of Gordon Property, grab.
Precision**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 310**Affiliation:** ESP**Collect Date:** 8/30/2011 11:26:00AM**UTM-Easting** 662947.58E
Northing 4149824.16N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Field Temperature	Field Temperature	21.5 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	174		mg/L		SM 2340-B

Sample: AB58920**Customer #:** 1103353**Facility ID:**
County: Reynolds**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Tom's Creek, Carol Jordan property, just downstream of cow fence, grab.
Precision**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 311**Affiliation:** ESP**Collect Date:** 8/30/2011 12:36:00PM**UTM-Easting** 660860.01E
Northing 4149338.66N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.54		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	0.51	05	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	5.47		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.72		µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	25.7		mg/L	12,494	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	14.6		mg/L	12,494	SW 846 6010B
Field pH	Field pH	7.62		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	222 uS/cm				SM 2510
Field Temperature	Field Temperature	24.1 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	124		mg/L		SM 2340-B

Sample: AB58921**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Reynolds**Sample Reference ID:** 312**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/30/2011 1:50:00PM**Customer #:** 1103354**Entry Point:****Sample Comment:** Bill's Creek, Moss property, grab.**Precision****UTM-Easting****Northing**

663055.48E

4156421.85N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.61		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	5.22		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.74	05	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	7.74		µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	49.8		mg/L	12,494	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	30.2		mg/L	12,494	SW 846 6010B
Field pH	Field pH	7.48		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	398 µS/cm				SM 2510
Field Temperature	Field Temperature	24.2 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	249		mg/L		SM 2340-B

Sample: AB58922**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Reynolds**Sample Reference ID:** 313**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/30/2011 2:24:00PM**Customer #:** 1103355**Entry Point:****Sample Comment:** Bill's Creek, Holmes property, grab.**Precision****UTM-Easting****Northing**

662709.61E

4158178.60N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.58		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	4.20		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020

Sample: AB58922**Customer #:** 1103355**Facility ID:**
County: Reynolds**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID: 313**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/30/2011 2:24:00PM**Entry Point:****Sample Comment:** Bill's Creek, Holmes property, grab.**Precision****UTM-Easting** 662709.61E
Northing 4158178.60N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	0.64	05	µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	50.7		mg/L	12,494	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	31.6		mg/L	12,494	SW 846 6010B
Field pH	Field pH	8.07		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	409 uS/cm				SM 2510
Field Temperature	Field Temperature	23.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	257		mg/L		SM 2340-B

Sample: AB58923**Customer #:** 1103356**Facility ID:**
County: Iron**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID: 314**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/31/2011 8:30:00AM**Entry Point:****Sample Comment:** Neal's Creek, most downstream point. Just north of CR 66 crossing, grab.**Precision****UTM-Easting** 675026.45E
Northing 4164042.56N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.55		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	1.61		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	9.72		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.89	05	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	1.39		µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	6.10		µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	44.3		mg/L	12,494	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	26.5		mg/L	12,494	SW 846 6010B
Field pH	Field pH	7.85		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	355 uS/cm				SM 2510

Sample: AB58923**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Iron**Sample Reference ID:** 314**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/31/2011 8:30:00AM**Customer #:** 1103356**Entry Point:****Sample Comment:** Neal's Creek, most downstream point. Just north of CR 66 crossing, grab.**Precision****UTM-Easting****Northing**

675026.45E

4164042.56N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Field Temperature	Field Temperature	22.2 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	220		mg/L		SM 2340-B

Sample: AB58924**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Iron**Sample Reference ID:****Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/31/2011 12:00:00AM**Customer #:** 1103357**Entry Point:****Sample Comment:** Duplicate, grab.**Precision**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	1.38		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	6.40		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	1.36		µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	5.48		µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	43.1		mg/L	12,494	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	26.3		mg/L	12,494	SW 846 6010B
Hardness as CaCO3	Hardness as CaCO3	216		mg/L		SM 2340-B

Sample: AB58925**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Iron**Sample Reference ID:** 315**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/31/2011 9:48:00AM**Customer #:** 1103358**Entry Point:****Sample Comment:** Neal's Creek, south end of Barton property, grab.**Precision****UTM-Easting****Northing**

673851.07E

4166283.31N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
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Sample: AB58925**Customer #:** 1103358**Facility ID:****County:** Iron**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Neal's Creek, south end of Barton property, grab.**Precision****Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 315**Affiliation:** ESP**Collect Date:** 8/31/2011 9:48:00AM**UTM-Easting****Northing**

673851.07E

4166283.31N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	0.64	05	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	2.05		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	10.6		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	1.90		µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	6.95		µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	47.0		mg/L	12,494	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	28.8		mg/L	12,494	SW 846 6010B
Field pH	Field pH	8.03		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	378 µS/cm				SM 2510
Field Temperature	Field Temperature	22.5 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	236		mg/L		SM 2340-B

Sample: AB58926**Customer #:** 1103359**Facility ID:****County:** Iron**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Neal's Creek, at corner of CR 74 and CR 79, just upstream of confluence of Henderson Creek, grab.**Precision****Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 316**Affiliation:** ESP**Collect Date:** 8/31/2011 10:37:00AM**UTM-Easting****Northing**

672895.20E

4167690.51N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.64		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Copper	0.64	05	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Nickel	2.31		µg/L	12,351	SW 846 6020
6020 Metals-Dissolved	Zinc	9.21		µg/L	12,351	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,435	SW 846 6020

Sample: AB58926**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Iron**Sample Reference ID:** 316**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/31/2011 10:37:00AM**Customer #:** 1103359**Entry Point:****Sample Comment:** Neal's Creek, at corner of CR 74 and CR 79, just upstream of confluence of Henderson Creek, grab.**Precision****UTM-Easting****Northing**

672895.20E

4167690.51N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Copper	0.58	05	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Nickel	2.47		µg/L	12,435	SW 846 6020
6020 Metals-Total Recoverable	Zinc	6.65		µg/L	12,435	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	48.3		mg/L	12,494	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	30.7		mg/L	12,494	SW 846 6010B
Field pH	Field pH	8.22		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	376 uS/cm				SM 2510
Field Temperature	Field Temperature	22.7 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	247		mg/L		SM 2340-B

Sample: AB58927**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:** Iron**Sample Reference ID:** 317**Collector:** PAM HACKLER**Affiliation:** ESP**Collect Date:** 8/31/2011 11:11:00AM**Customer #:** 1103360**Entry Point:****Sample Comment:** Neal's Creek, Vernon Asher property, grab.**Precision****UTM-Easting****Northing**

671987.24E

4167699.58N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.52	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.59		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	0.90	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	3.77		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	14.8		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.55	05	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	2.60		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Zinc	6.78		µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	47.7		mg/L	12,495	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	31.5		mg/L	12,495	SW 846 6010B
Field pH	Field pH	8.32		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	399 uS/cm				SM 2510

Sample: AB58927**Customer #:** 1103360**Facility ID:****County:** Iron**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Neal's Creek, Vernon Asher property, grab.**Precision****Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 317**Affiliation:** ESP**Collect Date:** 8/31/2011 11:11:00AM**UTM-Easting****Northing**

671987.24E

4167699.58N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Field Temperature	Field Temperature	22.1 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	249		mg/L		SM 2340-B

Sample: AB58928**Customer #:** 1106870**Facility ID:****County:** Iron**Collector:** PAM HACKLER**Entry Point:****Sample Comment:** Neal's Creek, USA property, grab.**Precision****Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:** 318**Affiliation:** ESP**Collect Date:** 8/31/2011 12:27:00PM**UTM-Easting****Northing**

669449.28E

4168617.42N

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.54	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.55		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	0.80	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	3.64		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	8.05		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.70	05	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	3.64		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Zinc	5.10		µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	43.5		mg/L	12,495	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	32.1		mg/L	12,495	SW 846 6010B
Field pH	Field pH	8.50		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	383 uS/cm				SM 2510
Field Temperature	Field Temperature	24.1 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	241		mg/L		SM 2340-B

Sample: AB58929



Facility ID:
County: Iron

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID: 319

Collector: PAM HACKLER

Affiliation: ESP

Collect Date: 8/31/2011 1:15:00PM

Customer #: 1106871

Entry Point:

Sample Comment: Neal's Creek near headwaters, Dodson property, grab.

Precision

UTM-Easting 667105.66E
Northing 4168874.52N

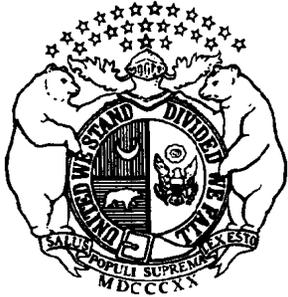
Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.60	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.54		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	1.05		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	0.63	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	4.37		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.10		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	1.53		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.50	05	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.78		µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	41.4		mg/L	12,495	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	33.1		mg/L	12,495	SW 846 6010B
Field pH	Field pH	8.65		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	385 uS/cm				SM 2510
Field Temperature	Field Temperature	27.2 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	240		mg/L		SM 2340-B

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

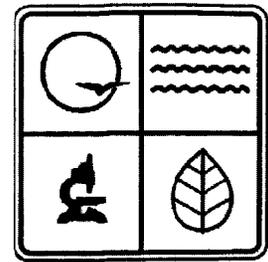
Qualifier Descriptions

- 01 Improper collection method
- 02 Improper preservation
- 03 Exceeded holding time
- 04 Analyzed by Contract Laboratory
- 05 Estimated value, detected below PQL
- 06 Estimated value, QC data outside limits
- 07 Estimated value, analyte outside calibration range
- 08 Analyte present in blank at > 1/2 reported value
- 09 Sample was diluted during analysis
- 10 Laboratory error
- 11 Estimated value, matrix interference
- 12 Insufficient quantity
- 13 Estimated value, true result is >= reported value
- 14 Estimated value, non-homogeneous sample
- 15 No Result - Failed Quality Controls Requirements
- 16 Not analyzed - related analyte not detected
- 17 Results in dry weight
- 18 Sample pH is outside the acceptable range
- 19 Estimated value
- 20 Not analyzed - Instrument failure
- 21 No result - spectral interference
- 22 pH was performed at the Laboratory
- 23 Contract Lab specific qualifier - see sample comments
- 24 No result - matrix interference
- 25 No Result: Excessive Chlorination
- 26 No Result: Excessive Dechlorination
- ND Not detected at reported value

Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality



**Missouri Department of Natural Resources
Environmental Services Program**



Order ID 110901130

Program, Contact: HWP Frances Klahr

Report Date: 09/22/2011

LDPR/JobCode: FEVIB



Sample: AB58877



Customer #: 1106401

Facility ID:
County: Washington

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID:

Collector: SEAN COUNIHAN

Affiliation: ESP

Collect Date: 8/29/2011 3:45:00PM

Entry Point:

Sample Comment: Grab. Indian Creek, Mile 1 from Confluence. Goes with sediment sample 201.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	2.74		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.64		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	2.77		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	13.9		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	16.5		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	130		µg/L	12,347	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	1.94		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	0.57		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	5.16		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	17.2		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	16.5		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	110		µg/L	12,431	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	60.1		mg/L	12,489	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	40.7		mg/L	12,489	SW 846 6010B
Field pH	Field pH	8.21		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	597 uS/cm				SM 2510
Field Temperature	Field Temperature	25.6 C				EPA 170.1
Hardness as CaCO ₃	Hardness as CaCO ₃	318		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	118		mV		Not Applicable

Sample: AB58878**Customer #: 1106402****Facility ID:**
County: Washington**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** SEAN COUNIHAN**Affiliation:** ESP**Collect Date:** 8/29/2011 4:15:00PM**Entry Point:****Sample Comment:** Grab. Indian Creek, Mile 2, just upstream of road crossing past mining facility road. Goes with sediment sample 202.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.70	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.37		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	1.82		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	0.84	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	3.17		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	43.4		µg/L	12,347	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	0.37		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.77		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	1.10		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	2.92		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	34.0		µg/L	12,431	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	60.8		mg/L	12,489	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	40.1		mg/L	12,489	SW 846 6010B
Field pH	Field pH	8.09		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	591 µS/cm				SM 2510
Field Temperature	Field Temperature	25.8 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	317		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	64		mV		Not Applicable

Sample: AB58879**Customer #: 1106403****Facility ID:**
County: Washington**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** SEAN COUNIHAN**Affiliation:** ESP**Collect Date:** 8/29/2011 4:45:00PM**Entry Point:****Sample Comment:** Grab, Mile 3 Indian Creek, off Doe Run haul road where crosses creek, downstream. Goes with sediment sample 203.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.74	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.21		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	1.62		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	0.64	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	3.58		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	45.8		µg/L	12,347	SW 846 6020

Sample: AB58879**Customer #: 1106403****Facility ID:****County:** Washington**Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Grab, Mile 3 Indian Creek, off Doe Run haul road where crosses creek, downstream. Goes with sediment sample 203.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/29/2011 4:45:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	0.35		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.84		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	2.41		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	3.46		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	41.1		µg/L	12,431	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	62.6		mg/L	12,489	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	41.3		mg/L	12,489	SW 846 6010B
Field pH	Field pH	8.03		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	602 uS/cm				SM 2510
Field Temperature	Field Temperature	25.4 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	326		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	54		mV		Not Applicable

Sample: AB58880**Customer #: 1106404****Facility ID:****County:** Iron**Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Grab. Indian Creek, Mile 3, off Doe Run haul road where it crosses stream upstream. Goes with sediment sample 204.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/29/2011 5:10:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.68	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.54		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	1.85		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	0.76	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	3.40		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	55.3		µg/L	12,347	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	0.45		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.91		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	1.73		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	3.02		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	44.5		µg/L	12,431	SW 846 6020

Sample: AB58880**Customer #: 1106404****Facility ID:**
County: Iron**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** SEAN COUNIHAN**Affiliation:** ESP**Collect Date:** 8/29/2011 5:10:00PM**Entry Point:****Sample Comment:** Grab. Indian Creek, Mile 3, off Doe Run haul road where it crosses stream upstream. Goes with sediment sample 204.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
CMNK 6010B Total Recoverable	Calcium	64.4		mg/L	12,489	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	42.2		mg/L	12,489	SW 846 6010B
Field pH	Field pH	7.89		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	637 uS/cm				SM 2510
Field Temperature	Field Temperature	24.2 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	335		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	53		mV		Not Applicable

Sample: AB58881**Customer #: 1106405****Facility ID:**
County: Iron**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** SEAN COUNIHAN**Affiliation:** ESP**Collect Date:** 8/29/2011 12:00:00AM**Entry Point:****Sample Comment:** Grab. Blind Duplicate.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.77	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.38		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	1.78		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	1.09		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	2.65		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	38.3		µg/L	12,347	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	0.42		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	2.81		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	6.64		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	2.90		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	44.4		µg/L	12,431	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	65.3		mg/L	12,489	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	42.9		mg/L	12,489	SW 846 6010B
Hardness as CaCO3	Hardness as CaCO3	340		mg/L		SM 2340-B

Sample: AB58882**Facility ID:****Site: Viburnum Trend Lead Mining Sites****County: Iron****Sample Reference ID:****Collector: SEAN COUNIHAN****Affiliation: ESP****Collect Date: 8/30/2011 8:40:00AM****Customer #: 1106406****Entry Point:****Sample Comment:** Grab. Upstream from Iron Co Rd/Frank Bay Road. Indian Creek Mile 4. Goes with sediment sample 205.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.51	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.11	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	1.26		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	0.88	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	8.46		µg/L	12,347	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.68		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	0.83	05	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	1.21		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	6.79		µg/L	12,431	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	71.9		mg/L	12,489	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	45.6		mg/L	12,489	SW 846 6010B
Field pH	Field pH	8.11		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	647 uS/cm				SM 2510
Field Temperature	Field Temperature	20.0 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	367		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	35		mV		Not Applicable

Sample: AB58883**Facility ID:****Site: Viburnum Trend Lead Mining Sites****County: Iron****Sample Reference ID:****Collector: SEAN COUNIHAN****Affiliation: ESP****Collect Date: 8/30/2011 9:45:00AM****Customer #: 1106407****Entry Point:****Sample Comment:** Grab. Indian Creek Mile 5. Upstream from tailings mound road entrance. Goes with sediment sample 206.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.59	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.13	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	2.80		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	0.54	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	1.24		µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	7.70		µg/L	12,347	SW 846 6020

Sample: AB58883**Customer #: 1106407****Facility ID:**
County: Iron**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** SEAN COUNIHAN**Affiliation:** ESP**Collect Date:** 8/30/2011 9:45:00AM**Entry Point:****Sample Comment:** Grab. Indian Creek Mile 5. Upstream from tailings mound road entrance. Goes with sediment sample 205.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	5.11		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	4.97		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	2.17		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	11.4		µg/L	12,431	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	75.3		mg/L	12,489	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	50.1		mg/L	12,489	SW 846 6010B
Field pH	Field pH	8.29		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	701 uS/cm				SM 2510
Field Temperature	Field Temperature	19.3 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	394		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	24		mV		Not Applicable

Sample: AB58884**Customer #: 1106408****Facility ID:**
County: Iron**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** SEAN COUNIHAN**Affiliation:** ESP**Collect Date:** 8/30/2011 11:19:00AM**Entry Point:****Sample Comment:** Grab. Goes with sediment sample 207. Indian Creek mile 6. From Forest Service road "Fargo" & CR 82 & Hwy 32.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	0.56	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	5.96		µg/L	12,347	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.72	05	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	1.48		µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	3.18		µg/L	12,431	SW 846 6020

Sample: AB58884**Customer #: 1106408****Facility ID:****County:** Iron**Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Grab. Goes with sediment sample 207. Indian Creek mile 6. From Forest Service road "Fargo" & CR 82 & Hwy 32.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 11:19:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
CMNK 6010B Total Recoverable	Calcium	49.3		mg/L	12,489	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	30.1		mg/L	12,489	SW 846 6010B
Field pH	Field pH	8.42		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	426 uS/cm				SM 2510
Field Temperature	Field Temperature	22.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	247		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	12		mV		Not Applicable

Sample: AB58885**Customer #: 1106409****Facility ID:****County:****Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Grab. Blind Duplicate.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 12:00:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	<0.50	ND	µg/L	12,347	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	2.56		µg/L	12,431	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	50.0		mg/L	12,490	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	30.7		mg/L	12,490	SW 846 6010B
Hardness as CaCO3	Hardness as CaCO3	251		mg/L		SM 2340-B

Sample: AB58886**Customer #: 1106410****Facility ID:****County:** Iron**Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Grab. Indian Creek, Mile 7. Forest Service Road across from Church on CR82. Goes with sediment 208.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 12:48:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Nickel	0.55	05	µg/L	12,347	SW 846 6020
6020 Metals-Dissolved	Zinc	5.29		µg/L	12,347	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,431	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.03		µg/L	12,431	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	45.1		mg/L	12,490	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	26.8		mg/L	12,490	SW 846 6010B
Field pH	Field pH	8.16		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	403 uS/cm				SM 2510
Field Temperature	Field Temperature	22.7 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	223		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	22		mV		Not Applicable

Sample: AB58887**Customer #: 1106411****Facility ID:****County:** Iron**Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Grab. Middle Fork Black River, Mile 1. Nearest confluence-Miller Property. Goes with sediment 209.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 3:17:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	4.94		µg/L	12,348	SW 846 6020

Sample: AB58887**Customer #: 1106411****Facility ID:****County:** Iron**Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Grab. Middle Fork Black River, Mile 1. Nearest confluence-Miller Property. Goes with sediment 209.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 3:17:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	0.86	05	µg/L	12,432	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	35.3		mg/L	12,490	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	20.4		mg/L	12,490	SW 846 6010B
Field pH	Field pH	8.17		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	334 µS/cm				SM 2510
Field Temperature	Field Temperature	25.0 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	172		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	17		mV		Not Applicable

Sample: AB58888**Customer #: 1106412****Facility ID:****County:****Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Grab. Middle Fork Black River, Mile 2. Off CR65 at curve nearest to stream. Gehringer Property. Goes with sediment sample 210.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 3:59:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	0.75	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	0.60	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	6.18		µg/L	12,348	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.11		µg/L	12,432	SW 846 6020

Sample: AB58888**Customer #: 1106412****Facility ID:****County:****Collector: SEAN COUNIHAN****Entry Point:****Sample Comment:**

Grab. Middle Fork Black River, Mile 2. Off CR65 at curve nearest to stream. Gehringer Property. Goes with sediment sample 210.

Site: Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation: ESP****Collect Date: 8/30/2011 3:59:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
CMNK 6010B Total Recoverable	Calcium	36.2		mg/L	12,490	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	20.4		mg/L	12,490	SW 846 6010B
Field pH	Field pH	7.92		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	333 uS/cm				SM 2510
Field Temperature	Field Temperature	24.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	174		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	22		mV		Not Applicable

Sample: AB58889**Customer #: 1106413****Facility ID:****County:****Collector: SEAN COUNIHAN****Entry Point:****Sample Comment:**

Sample # 1106413 Fork Clack River Mile 2 off Hwy 49-Went through farm property. Bell property. Goes with Sediment Sample 211, Grab.

Site: Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation: ESP****Collect Date: 8/30/2011 4:50:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	0.72	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	5.30		µg/L	12,348	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	2.53		µg/L	12,432	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	36.1		mg/L	12,490	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	20.8		mg/L	12,490	SW 846 6010B
Field pH	Field pH	7.59		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	344 uS/cm				SM 2510
Field Temperature	Field Temperature	24.5 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	176		mg/L		SM 2340-B

Sample: AB58889**Customer #: 1106413****Facility ID:**
County:**Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Sample # 1106413 Fork Clack River Mile 2 off Hwy 49-Went through farm property. Bell property. Goes with Sediment Sample 211, Grab.**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Affiliation:** ESP**Collect Date:** 8/30/2011 4:50:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Oxidation Reduction Potential	Oxidation Reduction Potential	109		mV		Not Applicable

Sample: AB58890**Customer #: 1106414****Facility ID:**
County:**Collector:** SEAN COUNIHAN**Entry Point:****Sample Comment:** Sample # 1106414 Middle Fork Black River Mile 3 CR72 N=Benz Property. Goes with Sediment Sample 212, Grab.**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Affiliation:** ESP**Collect Date:** 8/31/2011 8:25:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	0.55	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	0.52	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	6.63		µg/L	12,348	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.66	05	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.59	05	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	4.64		µg/L	12,432	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	36.8		mg/L	12,490	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	21.6		mg/L	12,490	SW 846 6010B
Field pH	Field pH	8.11		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	345 uS/cm				SM 2510
Field Temperature	Field Temperature	20.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	181		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	53		mV		Not Applicable

Sample: AB58891**Customer #: 1106415****Facility ID:****County:****Collector: SEAN COUNIHAN****Entry Point:****Sample Comment:**

Sample # 1106415 Middle Fork Black River Mile 4. Goes with Sediment 213. Forest Service Property Access off CR72 downstream of Benz Property, Grab.

Site: Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation: ESP****Collect Date: 8/31/2011 9:00:00AM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	0.60	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	0.66	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	11.8		µg/L	12,348	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.53	05	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	9.60		µg/L	12,432	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	37.2		mg/L	12,490	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	22.2		mg/L	12,490	SW 846 6010B
Field pH	Field pH	7.96		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	345 uS/cm				SM 2510
Field Temperature	Field Temperature	19.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	184		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	61		mV		Not Applicable

Sample: AB58892**Customer #: 1106416****Facility ID:****County:****Collector: SEAN COUNIHAN****Entry Point:****Sample Comment:**

Sample # 1106416 Middle Fork Black River Mile 5 off CR72 Forest Service road stream crossing. Goes with Sediment Sample 214, Grab.

Site: Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation: ESP****Collect Date: 8/31/2011 9:55:00AM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	5.29		µg/L	12,348	SW 846 6020

Sample: AB58892**Customer #: 1106416****Facility ID:****County:****Collector: SEAN COUNIHAN****Entry Point:****Sample Comment:**

Sample # 1106416 Middle Fork Black River Mile 5 off CR72 Forest Service road stream crossing. Goes with Sediment Sample 214, Grab.

Site: Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation: ESP****Collect Date: 8/31/2011 9:55:00AM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	2.29		µg/L	12,432	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	30.6		mg/L	12,490	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	18.1		mg/L	12,490	SW 846 6010B
Field pH	Field pH	7.80		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	284 uS/cm				SM 2510
Field Temperature	Field Temperature	20.8 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	151		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	13		mV		Not Applicable

Sample: AB58893**Customer #: 1106417****Facility ID:****County: Iron****Collector: SEAN COUNIHAN****Entry Point:****Sample Comment:**

Sample # 1106417 Neals Creek. Forest Service Property off CR79 at Ozark Trail Stream crossing. Goes with Sediment 215, Grab.

Site: Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation: ESP****Collect Date: 8/31/2011 12:27:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	0.86	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	3.78		µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	9.46		µg/L	12,348	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.73	05	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	3.94		µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	7.78		µg/L	12,432	SW 846 6020

Sample: AB58893



Customer #: 1106417

Facility ID:

County: Iron

Collector: SEAN COUNIHAN

Entry Point:

Sample Comment:

Sample # 1106417 Neals Creek. Forest Service Property off CR79 at Ozark Trail Stream crossing. Goes with Sediment 215, Grab.

Site: Viburnum Trend Lead Mining Sites

Sample Reference ID:

Affiliation: ESP

Collect Date: 8/31/2011 12:27:00PM

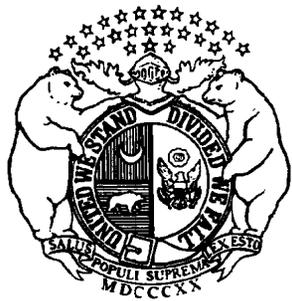
Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
CMNK 6010B Total Recoverable	Calcium	45.6		mg/L	12,491	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	31.2		mg/L	12,491	SW 846 6010B
Field pH	Field pH	8.41		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	437 uS/cm				SM 2510
Field Temperature	Field Temperature	23.1 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	242		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	45		mV		Not Applicable

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

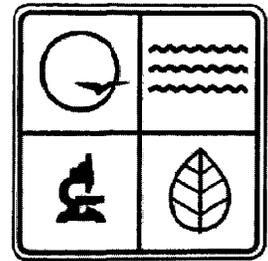
Qualifier Descriptions

- 01 Improper collection method
- 02 Improper preservation
- 03 Exceeded holding time
- 04 Analyzed by Contract Laboratory
- 05 Estimated value, detected below PQL
- 06 Estimated value, QC data outside limits
- 07 Estimated value, analyte outside calibration range
- 08 Analyte present in blank at > 1/2 reported value
- 09 Sample was diluted during analysis
- 10 Laboratory error
- 11 Estimated value, matrix interference
- 12 Insufficient quantity
- 13 Estimated value, true result is >= reported value
- 14 Estimated value, non-homogeneous sample
- 15 No Result - Failed Quality Controls Requirements
- 16 Not analyzed - related analyte not detected
- 17 Results in dry weight
- 18 Sample pH is outside the acceptable range
- 19 Estimated value
- 20 Not analyzed - Instrument failure
- 21 No result - spectral interference
- 22 pH was performed at the Laboratory
- 23 Contract Lab specific qualifier - see sample comments
- 24 No result - matrix interference
- 25 No Result: Excessive Chlorination
- 26 No Result: Excessive Dechlorination
- ND Not detected at reported value

Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality



**Missouri Department of Natural Resources
Environmental Services Program**



Order ID 110901131

Program, Contact: HWP Frances Klahr

Report Date: 09/22/2011

LDPR/JobCode: FEVIB



Sample: AB58894



Customer #: 1106501

Facility ID:
County: Reynolds

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID:

Collector: BEN FRISSELL

Affiliation: ESP

Collect Date: 8/29/2011 1:26:00PM

Entry Point:

Sample Comment: Bee Fork, collected before outfall of Doe Run by Route TT, Grab.

UTM-Easting 667463.90E
Northing 4145796.47N

Precision
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.96		µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	0.72	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	0.66	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	7.99		µg/L	12,348	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.06		µg/L	12,432	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	29.4		mg/L	12,491	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	17.5		mg/L	12,491	SW 846 6010B
Field pH	Field pH	7.40		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	267		µS/cm		SM 2510
Field Temperature	Field Temperature	25.6		C		EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	145		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	67		mV		Not Applicable

Sample: AB58895**Customer #: 1106502****Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Bee Fork, Sutton property by creek crossing in road, Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/29/2011 3:32:00PMUTM-Easting
663036.74ENorthing
4145776.15NPrecision
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	1.07		µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	0.80	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	6.88		µg/L	12,348	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.50	05	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.50		µg/L	12,432	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	13.7		mg/L	12,491	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	7.82		mg/L	12,491	SW 846 6010B
Field pH	Field pH	7.05		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	128.6 uS/cm				SM 2510
Field Temperature	Field Temperature	25.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	66.4		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	51		mV		Not Applicable

Sample: AB58896**Customer #: 1106503****Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Bee Fork, Leplant property, Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/29/2011 4:19:00PMUTM-Easting
662916.25ENorthing
4145789.68NPrecision
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Cadmium	5.16		µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Nickel	0.54	05	µg/L	12,348	SW 846 6020
6020 Metals-Dissolved	Zinc	5.35		µg/L	12,348	SW 846 6020

Sample: AB58896**Customer #: 1106503****Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Bee Fork, Leplant property, Grab.**Site:** Vibumum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/29/2011 4:19:00PM**UTM-Easting**
662916.25E**Northing**
4145789.68N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,432	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.64		µg/L	12,432	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	13.9		mg/L	12,491	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	7.99		mg/L	12,491	SW 846 6010B
Field pH	Field pH	6.75		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	131.9 µS/cm				SM 2510
Field Temperature	Field Temperature	25.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	67.6		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	51		mV		Not Applicable

Sample: AB58897**Customer #: 1106504****Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Bee Fork Leplant property Dup, Grab.**Site:** Vibumum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/29/2011 4:19:00PM**UTM-Easting**
662916.25E**Northing**
4145789.68N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	2.63		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	0.59	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Zinc	6.78		µg/L	12,349	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.56	05	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	4.01		µg/L	12,433	SW 846 6020

Sample: AB58897**Customer #: 1106504****Facility ID:**
County: Reynolds**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** BEN FRISSELL**Affiliation:** ESP**Collect Date:** 8/29/2011 4:19:00PM**Entry Point:****Sample Comment:** Bee Fork Leplant property Dup, Grab.**UTM-Easting** 662916.25E
Northing 4145789.68N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
CMNK 6010B Total Recoverable	Calcium	13.7		mg/L	12,491	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	8.05		mg/L	12,491	SW 846 6010B
Field pH	Field pH	6.75		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	131.9 uS/cm				SM 2510
Field Temperature	Field Temperature	25.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	67.4		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	51		mV		Not Applicable

Sample: AB58898**Customer #: 1106505****Facility ID:**
County: Reynolds**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** BEN FRISSELL**Affiliation:** ESP**Collect Date:** 8/30/2011 9:04:00AM**Entry Point:****Sample Comment:** Bee Fork, Hill Property, Grab.**UTM-Easting** 663533.82E
Northing 4145860.60N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.88		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	0.69	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	0.64	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Zinc	5.19		µg/L	12,349	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.56	05	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	1.10		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	17.4		µg/L	12,433	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	12.7		mg/L	12,491	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	7.26		mg/L	12,491	SW 846 6010B
Field pH	Field pH	7.76		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	113 uS/cm				SM 2510
Field Temperature	Field Temperature	20.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	61.6		mg/L		SM 2340-B

Sample: AB58898**Customer #:** 1106505**Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Bee Fork, Hill Property, Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 9:04:00AM**UTM-Easting**
663533.82E**Northing**
4145860.60N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Oxidation Reduction Potential	Oxidation Reduction Potential	82		mV		Not Applicable

Sample: AB58899**Customer #:** 1106506**Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Sweetwater, Doe Run Property @ CR 760 and 758, Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 10:44:00AM**UTM-Easting**
666028.48E**Northing**
4131887.01N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	1.22		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	0.58	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	0.65	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Zinc	9.83		µg/L	12,349	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	0.91	05	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.55	05	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	5.39		µg/L	12,433	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	16.6		mg/L	12,491	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	9.93		mg/L	12,491	SW 846 6010B
Field pH	Field pH	7.38		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	158.6 µS/cm				SM 2510
Field Temperature	Field Temperature	24 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	82.3		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	70		mV		Not Applicable

Sample: AB58900**Customer #: 1106507****Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Sweetwater, Doe Run Property @ CR 758 Above ARL, Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 11:41:00AM**UTM-Easting**
664919.42E**Northing**
4133332.46N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	1.98		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	0.64	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	1.12		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Zinc	12.4		µg/L	12,349	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	1.57		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	1.04		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	9.83		µg/L	12,433	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	12.5		mg/L	12,491	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	7.54		mg/L	12,491	SW 846 6010B
Field pH	Field pH	7.09		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	121.1 uS/cm				SM 2510
Field Temperature	Field Temperature	25.7 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	62.3		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	43		mV		Not Applicable

Sample: AB58901**Customer #: 1106508****Facility ID:****County:****Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Sweetwater, Doe Run Property @ CR 758 Above ARL(DUP), Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 11:41:00AM**UTM-Easting**
664919.42E**Northing**
4133332.46N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.74		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	0.92	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Zinc	11.0		µg/L	12,349	SW 846 6020

Sample: AB58901**Customer #:** 1106508**Facility ID:**
County:**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Sweetwater, Doe Run Property @ CR 758 Above ARL(DUP), Grab.**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Affiliation:** ESP**Collect Date:** 8/30/2011 11:41:00AM**UTM-Easting**
664919.42E**Northing**
413332.46N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	1.41		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.74	05	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	7.42		µg/L	12,433	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	12.7		mg/L	12,492	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	7.76		mg/L	12,492	SW 846 6010B
Field pH	Field pH	7.09		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	121.1 uS/cm				SM 2510
Field Temperature	Field Temperature	25.7 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	63.7		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	43		mV		Nct Applicable

Sample: AB58902**Customer #:** 1106509**Facility ID:**
County: Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Sweetwater, Doe Run property @ private road crossing, Grab.**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Affiliation:** ESP**Collect Date:** 8/30/2011 12:58:00PM**UTM-Easting**
664717.70E**Northing**
4133524.86N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	1.20		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	0.53	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	0.86	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	1.18		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Zinc	19.1		µg/L	12,349	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	0.21		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.10		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	13.4		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	1.09		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	14.2		µg/L	12,433	SW 846 6020

Sample: AB58902**Customer #: 1106509****Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Sweetwater, Doe Run property @ private road crossing, Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 12:58:00PM**UTM-Easting**
664717.70E**Northing**
4133524.86N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
CMNK 6010B Total Recoverable	Calcium	13.5		mg/L	12,492	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	7.87		mg/L	12,492	SW 846 6010B
Field pH	Field pH	7.12		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	129.4 uS/cm				SM 2510
Field Temperature	Field Temperature	27.3 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	66.1		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	42		mV		Not Applicable

Sample: AB58903**Customer #: 1106510****Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Sweetwater, Doe Run property river access road, Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 1:50:00PM**UTM-Easting**
663572.51E**Northing**
4134079.56N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	1.53		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	0.51	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Zinc	4.39		µg/L	12,349	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	0.79	05	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	1.41		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	13.2		µg/L	12,433	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	13.0		mg/L	12,492	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	7.57		mg/L	12,492	SW 846 6010B
Field pH	Field pH	7.42		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	118 uS/cm				SM 2510
Field Temperature	Field Temperature	25.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	63.6		mg/L		SM 2340-B

Sample: AB58903**Customer #: 1106510****Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Sweetwater, Doe Run property river access road, Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 1:50:00PM**UTM-Easting**
663572.51E**Northing**
4134079.56N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Oxidation Reduction Potential	Oxidation Reduction Potential	21		mV		Not Applicable

Sample: AB58904**Customer #: 1106511****Facility ID:****County:** Reynolds**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:** Sweetwater, Doe Run property @ CR759, Grab.**Site:** Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/30/2011 6:38:00PM**UTM-Easting**
663119.96E**Northing**
4134634.35N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	1.16		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	<0.50	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Zinc	5.69		µg/L	12,349	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.22		µg/L	12,433	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	12.4		mg/L	12,492	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	7.33		mg/L	12,492	SW 846 6010B
Field pH	Field pH	7.68		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	108.5 uS/cm				SM 2510
Field Temperature	Field Temperature	25.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	61.1		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	21		mV		Not Applicable

Sample: AB58905**Customer #: 1106512****Facility ID:**
County: Iron**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** BEN FRISSELL**Affiliation:** ESP**Collect Date:** 8/31/2011 8:58:00AM**Entry Point:****Sample Comment:** Left Fork Neal's Creek, Asher property, Grab.**UTM-Easting**
668488.98E**Northing**
4168134.15N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	0.91		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	0.58	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	10.2		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Zinc	21.6		µg/L	12,349	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Nickel	10.2		µg/L	12,433	SW 846 6020
6020 Metals-Total Recoverable	Zinc	20.8		µg/L	12,433	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	40.5		mg/L	12,492	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	33.8		mg/L	12,492	SW 846 6010B
Field pH	Field pH	7.95		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	424 uS/cm				SM 2510
Field Temperature	Field Temperature	23.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	240		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	72		mV		Not Applicable

Sample: AB58906**Customer #: 1106513****Facility ID:**
County: Iron**Site:** Viburnum Trend Lead Mining Sites
Sample Reference ID:**Collector:** BEN FRISSELL**Affiliation:** ESP**Collect Date:** 8/31/2011 10:46:00AM**Entry Point:****Sample Comment:** Left Fork Neal's Creek, Cominco property @ Decant Ditch, Grab.**UTM-Easting**
667238.36E**Northing**
418656.07N**Precision**
1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	1.78		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Cadmium	4.47		µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Copper	0.52	05	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Mercury	<0.1	ND	µg/L	12,349	SW 846 6020
6020 Metals-Dissolved	Nickel	5870	09	µg/L	12,349	SW 846 6020

Sample: AB58906**Customer #:** 1106513**Facility ID:****County:** Iron**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:**

Left Fork Neal's Creek, Cominco property @ Decant Ditch, Grab.

Site: Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/31/2011 10:46:00AM**UTM-Easting**

667238.36E

Northing

416656.07N

Precision

1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Zinc	31200	09	µg/L	12,349	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	1.74		µg/L	12,438	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	2.64		µg/L	12,438	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.61	05	µg/L	12,438	SW 846 6020
6020 Metals-Total Recoverable	Lead	2.35		µg/L	12,438	SW 846 6020
6020 Metals-Total Recoverable	Nickel	6830	09	µg/L	12,438	SW 846 6020
6020 Metals-Total Recoverable	Zinc	48400	09	µg/L	12,438	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	260		mg/L	12,492	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	215		mg/L	12,492	SW 846 6010B
Field pH	Field pH	7.49		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	2.07 µS/cm				SM 2510
Field Temperature	Field Temperature	23.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	1,535		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	108		mV		Not Applicable

Sample: AB58907**Customer #:** 1106514**Facility ID:****County:** Iron**Collector:** BEN FRISSELL**Entry Point:****Sample Comment:**

(DUP) Left Fork Neal's Creek, Cominco property @ Decant ditch, Grab.

Site: Viburnum Trend Lead Mining Sites**Sample Reference ID:****Affiliation:** ESP**Collect Date:** 8/31/2011 10:46:00AM**UTM-Easting**

667238.36E

Northing

416656.07N

Precision

1m

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	1.75		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Cadmium	3.47		µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Copper	0.60	05	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Mercury	<0.1	ND	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Nickel	6000	09	µg/L	12,350	SW 846 6020
6020 Metals-Dissolved	Zinc	32300	09	µg/L	12,350	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	1.66		µg/L	12,438	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	2.57		µg/L	12,438	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.68	05	µg/L	12,438	SW 846 6020
6020 Metals-Total Recoverable	Lead	1.92		µg/L	12,438	SW 846 6020

Sample: AB58907



Customer #: 1106514

Facility ID:
County: Iron

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID:

Collector: BEN FRISSELL

Affiliation: ESP

Collect Date: 8/31/2011 10:46:00AM

Entry Point:

Sample Comment: (DUP) Left Fork Neal's Creek, Cominco property @ Decant ditch, Grab.

UTM-Easting 667238.36E
Northing 416656.07N

Precision
1m

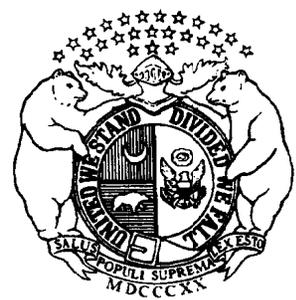
Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Nickel	6630	09	µg/L	12,438	SW 846 6020
6020 Metals-Total Recoverable	Zinc	45200	09	µg/L	12,438	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	249		mg/L	12,492	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	203		mg/L	12,492	SW 846 6010B
Field pH	Field pH	7.49		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	2.07 uS/cm				SM 2510
Field Temperature	Field Temperature	23.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	1,458		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	108		mV		Not Applicable

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

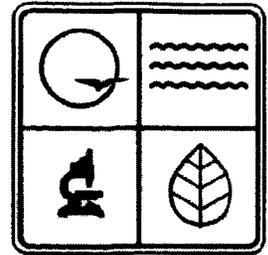
Qualifier Descriptions

- 01 Improper collection method
- 02 Improper preservation
- 03 Exceeded holding time
- 04 Analyzed by Contract Laboratory
- 05 Estimated value, detected below PQL
- 06 Estimated value, QC data outside limits
- 07 Estimated value, analyte outside calibration range
- 08 Analyte present in blank at > 1/2 reported value
- 09 Sample was diluted during analysis
- 10 Laboratory error
- 11 Estimated value, matrix interference
- 12 Insufficient quantity
- 13 Estimated value, true result is >= reported value
- 14 Estimated value, non-homogeneous sample
- 15 No Result - Failed Quality Controls Requirements
- 16 Not analyzed - related analyte not detected
- 17 Results in dry weight
- 18 Sample pH is outside the acceptable range
- 19 Estimated value
- 20 Not analyzed - Instrument failure
- 21 No result - spectral interference
- 22 pH was performed at the Laboratory
- 23 Contract Lab specific qualifier - see sample comments
- 24 No result - matrix interference
- 25 No Result: Excessive Chlorination
- 26 No Result: Excessive Dechlorination
- ND Not detected at reported value

Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality



Missouri Department of Natural Resources
Environmental Services Program



Order ID 110901133

Program, Contact: HWP Frances Klahr

Report Date: 09/22/2011

LDPR/JobCode: FEVIB



Sample: AB58930

Facility ID:
County:

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID: 101

Collector: KENNETH HANNON

Affiliation: ESP

Collect Date: 8/29/2011 2:50:00PM

Entry Point:

Sample Comment: 1106551, Mill Rock Creek, Carter property, Grab.



Customer #: 1106551

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.57	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	0.65	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	0.58	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	3.48		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	0.76	05	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Zinc	0.90	05	µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	48.7		mg/L	12,495	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	35.9		mg/L	12,495	SW 846 6010B
Field pH	Field pH	8.49		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	453 uS/cm				SM 2510
Field Temperature	Field Temperature	24.3 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	269		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	100		mV		Not Applicable

Sample: AB58931**Customer #: 1106552****Facility ID:****County:****Collector: KENNETH HANNON****Entry Point:****Sample Comment:** 1106552, Mill Rock Creek, Doe Run property, Grab.**Site: Viburnum Trend Lead Mining Sites****Sample Reference ID: 102****Affiliation: ESP****Collect Date: 8/29/2011 4:20:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	0.51	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	0.66	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	0.54	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	3.32		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	1.16		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	11.8		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	0.84	05	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Zinc	3.48		µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	51.7		mg/L	12,495	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	34.6		mg/L	12,495	SW 846 6010B
Field pH	Field pH	8.20		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	442 uS/cm				SM 2510
Field Temperature	Field Temperature	24.8 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	272		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	65		mV		Not Applicable

Sample: AB58932**Customer #: 1106553****Facility ID:****County:****Collector: KENNETH HANNON****Entry Point:****Sample Comment:** 1106553, Mill Rock Creek, Doe Run property near Forest Service Land, Grab.**Site: Viburnum Trend Lead Mining Sites****Sample Reference ID: 103****Affiliation: ESP****Collect Date: 8/29/2011 5:30:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	0.52	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	3.98		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,436	SW 846 6020

Sample: AB58932**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:****Sample Reference ID:** 103**Collector:** KENNETH HANNON**Affiliation:** ESP**Collect Date:** 8/29/2011 5:30:00PM**Customer #:** 1106553**Entry Point:****Sample Comment:** 1106553, Mill Rock Creek, Doe Run property near Forest Service Land, Grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.06		µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	51.1		mg/L	12,495	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	35.0		mg/L	12,495	SW 846 6010B
Field pH	Field pH	8.34		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	474 uS/cm				SM 2510
Field Temperature	Field Temperature	21.8 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	272		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	62		mV		Not Applicable

Sample: AB58933**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:****Sample Reference ID:** 104**Collector:** KENNETH HANNON**Affiliation:** ESP**Collect Date:** 8/30/2011 9:30:00AM**Customer #:** 1106554**Entry Point:****Sample Comment:** 1106554, Crooked Creek at low water bridge Cottrell property, Grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	2.50		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	1.44		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	2.46		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	2.30		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	6.74		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	1.78		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	1.92		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	2.41		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	1.96		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	2.23		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Zinc	5.66		µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	77.5		mg/L	12,495	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	46.3		mg/L	12,495	SW 846 6010B

Sample: AB58933**Customer #: 1106554****Facility ID:****County:****Collector: KENNETH HANNON****Entry Point:****Sample Comment:** 1106554, Crooked Creek at low water bridge Cottrell property, Grab.**Site: Viburnum Trend Lead Mining Sites****Sample Reference ID: 104****Affiliation: ESP****Collect Date: 8/30/2011 9:30:00AM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Field pH	Field pH	7.96		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	1036 uS/cm				SM 2510
Field Temperature	Field Temperature	21.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	384		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	62		mV		Not Applicable

Sample: AB58934**Customer #: 1106555****Facility ID:****County:****Collector: KENNETH HANNON****Entry Point:****Sample Comment:** 1106555, Crooked Creek, Usher property, Grab.**Site: Viburnum Trend Lead Mining Sites****Sample Reference ID: 105****Affiliation: ESP****Collect Date: 8/30/2011 10:25:00AM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	3.10		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	2.50		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	2.66		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	0.97	05	µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	3.72		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	10.1		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	2.14		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	2.73		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	2.38		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	2.64		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	3.33		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Zinc	8.04		µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	78.4		mg/L	12,495	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	47.4		mg/L	12,495	SW 846 6010B
Field pH	Field pH	7.86		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	1047 uS/cm				SM 2510
Field Temperature	Field Temperature	20.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	391		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	54		mV		Not Applicable

Sample: AB58935



Customer #: 1106556

Facility ID:

County:

Collector: KENNETH HANNON

Entry Point:

Sample Comment: 1106556, Blind Duplicate, Grab.

Site: Viburnum Trend Lead Mining Sites

Sample Reference ID:

Affiliation: ESP

Collect Date: 8/30/2011 12:00:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	3.06		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	2.57		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	2.30		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	1.03		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	3.50		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	8.16		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	2.26		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	2.85		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	2.51		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	3.63		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	3.42		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Zinc	9.24		µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	79.2		mg/L	12,496	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	47.7		mg/L	12,496	SW 846 6010B
Hardness as CaCO3	Hardness as CaCO3	394		mg/L		SM 2340-B

Sample: AB58936



Customer #: 1106557

Facility ID:

County:

Collector: KENNETH HANNON

Entry Point:

Sample Comment: 1106557, Crooked Creek, Turnbaugh property, Grab.

Site: Viburnum Trend Lead Mining Sites

Sample Reference ID: 106

Affiliation: ESP

Collect Date: 8/30/2011 12:20:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	4.95		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Cadmium	2.65		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Copper	2.95		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Lead	1.30		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Nickel	8.49		µg/L	12,352	SW 846 6020
6020 Metals-Dissolved	Zinc	9.13		µg/L	12,352	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	3.66		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	2.50		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Copper	2.82		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Lead	1.91		µg/L	12,436	SW 846 6020
6020 Metals-Total Recoverable	Nickel	8.47		µg/L	12,436	SW 846 6020

Sample: AB58936**Customer #: 1106557****Facility ID:****County:****Collector: KENNETH HANNON****Entry Point:****Sample Comment:** 1106557, Crooked Creek, Turnbaugh property, Grab.**Site: Viburnum Trend Lead Mining Sites****Sample Reference ID: 106****Affiliation: ESP****Collect Date: 8/30/2011 12:20:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Zinc	6.33		µg/L	12,436	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	82.3		mg/L	12,496	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	49.9		mg/L	12,496	SW 846 6010B
Field pH	Field pH	8.43		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	1103 uS/cm				SM 2510
Field Temperature	Field Temperature	22.5 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	411		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	49		mV		Not Applicable

Sample: AB58937**Customer #: 1106558****Facility ID:****County:****Collector: KENNETH HANNON****Entry Point:****Sample Comment:** 1106558, Crooked Creek, Chandler property upstream of fence, Grab.**Site: Viburnum Trend Lead Mining Sites****Sample Reference ID: 107****Affiliation: ESP****Collect Date: 8/30/2011 2:20:00PM**

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	5.92		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Cadmium	2.33		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Copper	3.47		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Lead	3.05		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Nickel	14.0		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Zinc	11.9		µg/L	12,353	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	4.45		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	2.46		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Copper	3.76		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Lead	6.06		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Nickel	14.6		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Zinc	9.73		µg/L	12,437	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	84.6		mg/L	12,496	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	51.4		mg/L	12,496	SW 846 6010B
Field pH	Field pH	8.47		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	1104 uS/cm				SM 2510
Field Temperature	Field Temperature	23.4 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	423		mg/L		SM 2340-B

Sample: AB58937**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:****Sample Reference ID:** 107**Collector:** KENNETH HANNON**Affiliation:** ESP**Collect Date:** 8/30/2011 2:20:00PM**Customer #:** 1106558**Entry Point:****Sample Comment:** 1106558, Crooked Creek, Chandler property upstream of fence, Grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Oxidation Reduction Potential	Oxidation Reduction Potential	59		mV		Not Applicable

Sample: AB58938**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:****Sample Reference ID:** 108**Collector:** KENNETH HANNON**Affiliation:** ESP**Collect Date:** 8/30/2011 4:20:00PM**Customer #:** 1106559**Entry Point:****Sample Comment:** 1106559, Crooked Creek, Pryor property, Grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	3.39		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Cadmium	2.29		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Copper	4.03		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Lead	33.9		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Nickel	48.3		µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Zinc	54.4		µg/L	12,353	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	3.20		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	1.66		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Copper	15.0		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Lead	94.7		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Nickel	54.3		µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Zinc	63.7		µg/L	12,437	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	95.0		mg/L	12,496	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	58.5		mg/L	12,496	SW 846 6010B
Field pH	Field pH	8.12		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	1061 uS/cm				SM 2510
Field Temperature	Field Temperature	22.6 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	478		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	54		mV		Not Applicable

Sample: AB58939



Customer #: 1106560

Facility ID:
County:

Collector: KENNETH HANNON

Entry Point:

Sample Comment: 1106560, Mill Rock Creek, Seller's property, Grab.

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID: 109

Affiliation: ESP

Collect Date: 8/31/2011 10:22:00AM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	<0.5	ND	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Cadmium	<0.1	ND	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Copper	0.62	05	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Lead	<0.5	ND	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Nickel	<0.5	ND	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Zinc	3.20		µg/L	12,353	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	<0.50	ND	µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	<0.10	ND	µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Copper	0.52	05	µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Lead	0.53	05	µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Nickel	<0.50	ND	µg/L	12,437	SW 846 6020
6020 Metals-Total Recoverable	Zinc	1.56		µg/L	12,437	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	46.4		mg/L	12,496	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	36.7		mg/L	12,496	SW 846 6010B
Field pH	Field pH	8.17		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	471 uS/cm				SM 2510
Field Temperature	Field Temperature	21.9 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	267		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	182		mV		Not Applicable

Sample: AB58940



Customer #: 1106561

Facility ID:
County:

Collector: KENNETH HANNON

Entry Point:

Sample Comment: 1106561, Crooked Creek, Doe Run property north of highway 32, Grab.

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID: 110

Affiliation: ESP

Collect Date: 8/31/2011 2:50:00PM

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	235	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Cadmium	34.2	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Copper	129	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Lead	143	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Nickel	19.9	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Zinc	53.6	09	µg/L	12,353	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	217	09	µg/L	12,440	SW 846 6020

Sample: AB58940**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:****Sample Reference ID:** 110**Collector:** KENNETH HANNON**Affiliation:** ESP**Collect Date:** 8/31/2011 2:50:00PM**Customer #:** 1106561**Entry Point:****Sample Comment:** 1106561, Crooked Creek, Doe Run property north of highway 32, Grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Total Recoverable	Cadmium	45.1	09	µg/L	12,440	SW 846 6020
6020 Metals-Total Recoverable	Copper	138	09	µg/L	12,440	SW 846 6020
6020 Metals-Total Recoverable	Lead	306	09	µg/L	12,440	SW 846 6020
6020 Metals-Total Recoverable	Nickel	20.2	09	µg/L	12,440	SW 846 6020
6020 Metals-Total Recoverable	Zinc	52.0	09	µg/L	12,440	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	77.2		mg/L	12,496	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	33.0		mg/L	12,496	SW 846 6010B
Field pH	Field pH	8.35		pH Units		EPA 150.1
Field Specific Conductivity	Field Specific Conductivity	19.93 mS/cm				SM 2510
Field Temperature	Field Temperature	26.5 C				EPA 170.1
Hardness as CaCO3	Hardness as CaCO3	329		mg/L		SM 2340-B
Oxidation Reduction Potential	Oxidation Reduction Potential	74		mV		Not Applicable

Sample: AB58941**Facility ID:****Site:** Viburnum Trend Lead Mining Sites**County:****Sample Reference ID:****Collector:** KENNETH HANNON**Affiliation:** ESP**Collect Date:** 8/31/2011 12:00:00AM**Customer #:** 1106562**Entry Point:****Sample Comment:** 1106562, Blind Duplicate, Grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
6020 Metals-Dissolved	Arsenic	226	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Cadmium	33.2	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Copper	127	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Lead	141	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Nickel	19.5	09	µg/L	12,353	SW 846 6020
6020 Metals-Dissolved	Zinc	48.0	09	µg/L	12,353	SW 846 6020
6020 Metals-Total Recoverable	Arsenic	220	09	µg/L	12,440	SW 846 6020
6020 Metals-Total Recoverable	Cadmium	45.6	09	µg/L	12,440	SW 846 6020
6020 Metals-Total Recoverable	Copper	144	09	µg/L	12,440	SW 846 6020
6020 Metals-Total Recoverable	Lead	342	09	µg/L	12,440	SW 846 6020
6020 Metals-Total Recoverable	Nickel	20.4	09	µg/L	12,440	SW 846 6020
6020 Metals-Total Recoverable	Zinc	52.7	09	µg/L	12,440	SW 846 6020
CMNK 6010B Total Recoverable	Calcium	76.0		mg/L	12,496	SW 846 6010B
CMNK 6010B Total Recoverable	Magnesium	32.6		mg/L	12,496	SW 846 6010B

Sample: AB58941



Customer #: 1106562

Facility ID:
County:

Site: Viburnum Trend Lead Mining Sites
Sample Reference ID:

Collector: KENNETH HANNON

Affiliation: ESP

Collect Date: 8/31/2011 12:00:00AM

Entry Point:

Sample Comment: 1106562, Blind Duplicate, Grab.

Test	Parameter	Result	Qualifier	Units	QC Batch ID	Method
Hardness as CaCO3	Hardness as CaCO3	324		mg/L		SM 2340-B

The analysis of this sample was performed in accordance with procedures approved or recognized by the U.S Environmental Protection Agency.

Chris Boldt, Laboratory Manager
Environmental Services Program
Division of Environmental Quality

Qualifier Descriptions

- 01 Improper collection method
- 02 Improper preservation
- 03 Exceeded holding time
- 04 Analyzed by Contract Laboratory
- 05 Estimated value, detected below PQL
- 06 Estimated value, QC data outside limits
- 07 Estimated value, analyte outside calibration range
- 08 Analyte present in blank at > 1/2 reported value
- 09 Sample was diluted during analysis
- 10 Laboratory error
- 11 Estimated value, matrix interference
- 12 Insufficient quantity
- 13 Estimated value, true result is >= reported value
- 14 Estimated value, non-homogeneous sample
- 15 No Result - Failed Quality Controls Requirements
- 16 Not analyzed - related analyte not detected
- 17 Results in dry weight
- 18 Sample pH is outside the acceptable range
- 19 Estimated value
- 20 Not analyzed - Instrument failure
- 21 No result - spectral interference
- 22 pH was performed at the Laboratory
- 23 Contract Lab specific qualifier - see sample comments
- 24 No result - matrix interference
- 25 No Result: Excessive Chlorination
- 26 No Result: Excessive Dechlorination
- ND Not detected at reported value



Stream Name: Mill Rock Creek 14:50

Date Sampled: 8/29/11

Team Number: 1 Team Members: Ken Hannon, Aaron Clare, Ramon Hochly

Others Present (i.e., PRP affiliates): Doe Run Integral- Jerry Palushock, Jane Sexton

Surface Water Sample #: 101 Sediment Sample #: 101 Sample # 1106551

Location Information:	
Point of Access: <u>Mill Road</u>	
Sediment - Easting: <u>662759.63 m</u>	Northing: <u>4180268.40 m</u>
Surface Water - Easting: <u>"</u>	Northing: <u>"</u>
Surface Water Measurements:	
Time of sampling: <u>14:50</u>	
pH: <u>8.49</u>	ORP: <u>101</u>
Specific Conductivity: <u>453</u>	Water Temperature: <u>24.3 °C</u>
Comments:	
<u>Doe Run stated they had permission to be on the property</u>	

Surface Water Sample #: 102 Sediment Sample #: 102 Sample # 1006552

Location Information:	
Point of Access: <u>Mill Road</u>	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: <u>16:20</u>	
pH: <u>8.20</u>	ORP: <u>65</u>
Specific Conductivity: <u>442</u>	Water Temperature: <u>24.8 °C</u>
Comments:	
<u>Doe Run property-</u>	

Surface Water Sample #: 103 Sediment Sample #: 103 Sample # 1106553

Location Information:	
Point of Access: <u>1040 Mill Road</u>	
Sediment - Easting: <u>663986.81</u>	Northing: <u>4179697.71</u>
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: <u>17:30</u>	
pH: <u>8.34</u>	ORP: <u>62</u>
Specific Conductivity: <u>474</u>	Water Temperature: <u>21.8 °C</u>
Comments:	
<u>DOE Run property</u>	



Stream Name: Crooked Creek

Date Sampled: 8/30/11

Team Number: 1 Team Members: Ken Hannon, Aaron Clare, Ramona Buckstep

Others Present (i.e., PRP affiliates): Jane Sexton

Surface Water Sample #: 104 Sediment Sample #: 104 Sample # 1106554

Location Information:	
Point of Access: <u>E. of low water bridge (Cottrell property)</u>	
Sediment - Easting: <u>4658955.88</u>	Northing: <u>4173355.7</u>
Surface Water - Easting: <u>"</u>	Northing: <u>"</u>
Surface Water Measurements:	
Time of sampling: <u>9:30</u>	
pH: <u>7.96</u>	ORP: <u>62</u>
Specific Conductivity: <u>1036</u>	Water Temperature: <u>21.9 °C</u>
Comments:	
<u>Low water bridge. Cottrell property</u>	
<u>DOE Run stated they had permission to be on the property</u>	

Surface Water Sample #: 105 Sediment Sample #: 105 Sample # 1106555

Location Information:	
Point of Access: <u>Usher property</u>	<u>1106556 Dup</u>
Sediment - Easting: <u>660249.74</u>	Northing: <u>4174938.51</u>
Surface Water - Easting: <u>"</u>	Northing: <u>"</u>
Surface Water Measurements:	
Time of sampling: <u>10:25</u>	
pH: <u>7.86</u>	ORP: <u>54</u>
Specific Conductivity: <u>1047</u>	Water Temperature: <u>20.9 °C</u>
Comments:	
<u>DOE Run stated stated they had permission to be on the property</u>	

Surface Water Sample #: 106 Sediment Sample #: 106 Sample # 1106557

Location Information:	
Point of Access: <u>Furnbaugh property</u>	
Sediment - Easting: <u>661152.64</u>	Northing: <u>4174686.24</u>
Surface Water - Easting: <u>"</u>	Northing: <u>"</u>
Surface Water Measurements:	
Time of sampling: <u>12:20</u>	
pH: <u>8.43</u>	ORP: <u>49</u>
Specific Conductivity: <u>1103</u>	Water Temperature: <u>22.5 °C</u>
Comments:	
<u>DOE Run stated they had permission to be on the property</u>	

* Would like copy of results



Stream Name: Crooked Creek

Date Sampled: 8/30/11

Team Number: 1 Team Members: Ken Hannon, Arxon Clare, Ramona Hucksley

Others Present (i.e., PRP affiliates): Jane Saxton

Surface Water Sample #: 107 Sediment Sample #: 107 Sample # 1106558

Location Information:
 Point of Access: Chandler Property
 Sediment - Easting: 662215.10 Northing: 4173743.78
 Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:
 Time of sampling: 14:20
 pH: 8.49 ORP: 59
 Specific Conductivity: 1104 Water Temperature: 23.4°C

Comments:
DOE stated Run stated they had permission to be on the property

Surface Water Sample #: 108 Sediment Sample #: 108 Sample # 1106559

Location Information:
 Point of Access: Pryor
 Sediment - Easting: 664174.62 Northing: 4170820.74
 Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:
 Time of sampling: 16:22
 pH: 8.12 ORP: 54 # would like copy of results
 Specific Conductivity: 1061 Water Temperature: 22.6°C

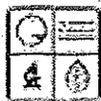
Comments:
DOE Run state they had permission to be on the property

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:
 Point of Access: _____
 Sediment - Easting: _____ Northing: _____
 Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:
 Time of sampling: _____
 pH: _____ ORP: _____
 Specific Conductivity: _____ Water Temperature: _____ °C

Comments:



Stream Name: Mill Rock Creek

Date Sampled: 8/31/11

Team Number: 1 Team Members: Ken Hannan, Aaron Clark, Ramona Harkley

Others Present (i.e., PRP affiliates): Jane Sexton

Surface Water Sample #: 109 Sediment Sample #: 109

Sample #
1106560

Location Information:

Point of Access: Sellers Property ** Would like results*

Sediment - Easting: 661682.82 Northing: 4180707.36

Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: 10:22

pH: 8.17

ORP: 182

Specific Conductivity: 471

Water Temperature: 21.9 °C

Comments: Losing stream - Doe Run stated they had permission to be on the property

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:

Point of Access: _____

Sediment - Easting: _____ Northing: _____

Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: _____

pH: _____

ORP: _____

Specific Conductivity: _____

Water Temperature: _____ °C

Comments: _____

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:

Point of Access: _____

Sediment - Easting: _____ Northing: _____

Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: _____

pH: _____

ORP: _____

Specific Conductivity: _____

Water Temperature: _____ °C

Comments: _____



Stream Name: Crooked Creek

Date Sampled: 8/31/11

Team Number: 1 Team Members: Ken Hannon, Aaron Clark, Ramona Huckstep

Others Present (i.e., PRP affiliates): Jane Sexton

Surface Water Sample #: 110 Sediment Sample #: 110 Sample # ~~6561~~ 1106561
1106562

Location Information:

Point of Access: Doe Run
Sediment - Easting: 664094.48 Northing: 4169172.69
Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: 14:50
pH: 8.35 ORP: 74
Specific Conductivity: ~~19.93~~ 19.93 ^{MS not us} Water Temperature: 26.5°C

Duplicate

Comments: Doe Run Property - Doe Run Buick Resource keeping upstream
Silt deposits on rock - no aquatic life seen

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:
Point of Access: _____
Sediment - Easting: _____ Northing: _____
Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:
Time of sampling: _____
pH: _____ ORP: _____
Specific Conductivity: _____ Water Temperature: _____ °C

Comments: _____

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:
Point of Access: _____
Sediment - Easting: _____ Northing: _____
Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:
Time of sampling: _____
pH: _____ ORP: _____
Specific Conductivity: _____ Water Temperature: _____ °C

Comments: _____



Stream Name: Indian Creek

GPS File: Indian Creek 201

Date Sampled: 8-29-2011

Team Number: #2 Team Members: Shawn Councilman, Amy Wright, Dave Watchshouser

Others Present (i.e., PRP affiliates): Vince Wisdom, Justin Province, Suzi Fitzgerald
Joe Run (Integral)

Surface Water Sample #: 201 Sediment Sample #: 201

Location Information:		WS# <u>1106401</u>
Point of Access: <u>@ rd., upstream ~ 30m</u>		
Sediment - Easting: <u>669812.80m E</u>	Northing: <u>4181439.78m N</u>	
Surface Water - Easting: _____	Northing: _____	
Surface Water Measurements:		
Time of sampling: <u>81525</u>		
pH: <u>8.21</u>	ORP: <u>118</u>	
Specific Conductivity: <u>597</u>	Water Temperature: <u>25.6°C</u>	
Comments: <u>See minnows - sediment sample took 815 scoops</u>		

Surface Water Sample #: 202 Sediment Sample #: 202 WS# 1106402

Location Information:		
Point of Access: <u>upstream of bridge crossing</u>		
Sediment - Easting: <u>669422.85m E</u>	Northing: <u>4179598.73m N</u>	
Surface Water - Easting: _____	Northing: _____	
Surface Water Measurements:		
Time of sampling: <u>1610</u>		
pH: <u>8.07</u>	ORP: <u>64 mv</u>	
Specific Conductivity: <u>591 µs</u>	Water Temperature: <u>25.8°C</u>	
Comments: <u>Lots of algae, minnows + white worms</u>		

Surface Water Sample #: 203 Sediment Sample #: 203 WS# 1106403

Location Information:		
Point of Access: <u>downstream of access</u>		
Sediment - Easting: <u>668650.26m E</u>	Northing: <u>4179023.30m N</u>	
Surface Water - Easting: _____	Northing: _____	
Surface Water Measurements:		
Time of sampling: <u>1615</u>		
pH: <u>8.03</u>	ORP: <u>54 mvolts</u>	
Specific Conductivity: <u>602 µs</u>	Water Temperature: <u>25.4°C</u>	
Comments: <u>Lots of fish</u>		



Stream Name: Indian Creek

Date Sampled: 8-29-2011

Team Number: # 2 Team Members: Amy Wight, Shawn Couriker, Dave W.

Others Present (i.e., PRP affiliates): Vince, Justin, Suel

Surface Water Sample #: 204 Sediment Sample #: 204 WS-# 1106404 + 1106405 ^{dup}

Location Information:	
Point of Access: <u>upstream of access</u>	
Sediment - Easting: <u>668694, 69m E</u>	Northing: <u>4178834, 88m N</u>
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: <u>1710</u>	
pH: <u>7.89</u>	ORP: <u>53 mV</u>
Specific Conductivity: <u>637µs</u>	Water Temperature: <u>24.2 °C</u>
Comments: <u>*Duplicate taken</u>	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments: _____	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments: _____	



Stream Name: Indian Creek

GPS File: Indian Creek 201

Date Sampled: 8-30-2011

Team Number: #2 Team Members: Amy Wight, Sean Coulter, Dave W.

Others Present (i.e., PRP affiliates): Jerry Palushock, Suzi Fitzgerald, Vince Wiseman

Surface Water Sample #: 205

Sediment Sample #: 205

Lab
WS # 1106406

Location Information:

Point of Access: upstream of bridge

Sediment - Easting: 667742.36m E

Northing: 4176620.17m N

Surface Water - Easting: _____

Northing: "

Surface Water Measurements:

Time of sampling: 0843

pH: 8.11

ORP: 35mv

Specific Conductivity: 645µs

Water Temperature: 20.0 °C

Comments: Turned over cobbles + found v. few macroinverts: a few snails, 1 water penny. Did not see fish. No algae. Saw 1 crayfish ~30m downstream of sample location

Surface Water Sample #: 206

Sediment Sample #: 206

Lab
WS # 1106407

Location Information:

Point of Access: through fertilings area

Sediment - Easting: 667806.06m E

Northing: 4175283.22m N

Surface Water - Easting: _____

Northing: "

Surface Water Measurements:

Time of sampling: 0945

pH: 8.79

ORP: 24 mv

Specific Conductivity: 701µs

Water Temperature: 19.3 °C

Comments: Saw 1 crayfish near site; also darter fish, water penny several; algae film on rocks

Vince - Not present

Surface Water Sample #: 207

Sediment Sample #: 207

Lab W.S. # 1106408 + 1106409 ^{dup}

Location Information:

Point of Access: dike

Sediment - Easting: 667591.54m E

Northing: 4173518.30m N

Surface Water - Easting: _____

Northing: "

Surface Water Measurements:

Time of sampling: 1120

pH: 8.42

ORP: 12 mv

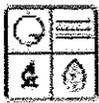
Specific Conductivity: 426µs

Water Temperature: 22.9 °C

Comments: crayfish, fish, lots of snails; did not see any macro inverts by turning over ~20 cobbles

Vince - not present

DOL Run property



Stream Name: Indian Creek

Date Sampled: 8-30-2011

Team Number: #2 Team Members: Amy Wight, Shawn Conner, Dave W

Others Present (i.e., PRP affiliates): Integral: Suzi Fitzgerald + Jerry Palushock; Doe Run-Vince Wisdom

Surface Water Sample #: 208 Sediment Sample #: 208 Lab WS # 1106410

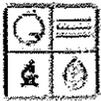
Location Information:	
Point of Access: <u>Drove down difficult access rd → hiked for >10min.</u>	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: <u>1248</u>	
pH: <u>8.16</u>	ORP: <u>22 mv</u>
Specific Conductivity: <u>403 µs</u>	Water Temperature: <u>22.7 °C</u>
Comments: <u>crayfish, fish, lots of snails, water penny, stonefly, caddisfly cases</u> <u>USFS land</u>	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments: _____	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments: _____	



Stream Name: Mid. fr. of Black River

GPS File: Indian Creek 201

Date Sampled: 8-30-2011

Team Number: #2 Team Members: Amy Wright, Shawn Courihan, Dave W

Others Present (i.e., PRP affiliates): Suzi Fitzgerald, Jerry Palushock, Vince Wisdom

Surface Water Sample #: 209 Sediment Sample #: 209

Lab ws# 1106411

Location Information:

Point of Access: Johnnie Miller property; found break in fencing

Sediment - Easting: 679740.15 m E Northing: 4164708.072 m N

Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: 1517

pH: 8.17

ORP: 17 mV

Specific Conductivity: 334 μ S

Water Temperature: 25.0 °C

Comments: darters, mayfly, caddisfly cases; algal film on rocks
water pennies

Surface Water Sample #: 210 Sediment Sample #: 210

Lab ws# 1106412

Location Information:

Point of Access: Parked @ County rd. Accessed @ Gehring's property

Sediment - Easting: 679252.71 m E Northing: 4165539.06 m N

Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: 1600

pH: 7.92

ORP: 22 mV

Specific Conductivity: 333

Water Temperature: 24.6 °C

Comments: lots of minnows (darters & dace), water penny, mayfly, caddisfly cases
sample location has lots of fines; algal film on rocks
Doe Run not present

Surface Water Sample #: 211 Sediment Sample #: 211

Lab ws# 1106413

Location Information:

Point of Access: Parked @ Bell property → Climbed over several fences

Sediment - Easting: 678721.83 m E Northing: 4165690.58 m N

Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: 1650

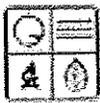
pH: 7.59

ORP: 109 mV

Specific Conductivity: 344 μ S

Water Temperature: 24.5 °C

Comments: Adjacent to cow pasture. Minnows, water penny, caddisfly cases, snails
Doe Run not present



Stream Name: Middle Fk. Black R.

Date Sampled: 8-31-2011

Team Number: #2 Team Members: Amy Wright, Shawn Cour, Ken, Dave W.

Others Present (i.e., PRP affiliates): Suzi Fitzgerald, Jerry Palushock, Justin Province

Surface Water Sample #: 212 Sediment Sample #: 212 Lab ws # 1106414

Location Information:

Point of Access: Ben's property directly off creek (no fences to climb)

Sediment - Easting: 676184.15m E Northing: 4168371.82m N

Surface Water - Easting: " Northing: "

Surface Water Measurements:

Time of sampling: 0825

pH: 8.11 ORP: 53 mv

Specific Conductivity: 345 μ S Water Temperature: 20.9 °C

Comments: caddisfly cases, snails, crayfish

Doe Run not present

Surface Water Sample #: 213 Sediment Sample #: 213 Lab ws # 1106415

Location Information:

Point of Access: off county rd.

Sediment - Easting: 6760433.92m E Northing: 4169478.26m N

Surface Water - Easting: " Northing: "

Surface Water Measurements:

Time of sampling: 0900

pH: 7.96 ORP: 61 mv

Specific Conductivity: 345 μ S Water Temperature: 19.6 °C

Comments: Land owner directly upstream burns off hillside for logging. snails, mayfly, crayfish, tadpoles, minnows
lots of. lots of

Doe Run present, could not split, NOT enough sample. Lots of gravel at samp loc.

Surface Water Sample #: 214 Sediment Sample #: 214 Lab ws # 1106416

Location Information:

Point of Access: At County rd -> walked across woods till we found USES access rd.

Sediment - Easting: 677108.16m E Northing: 4172145.08m

Surface Water - Easting: " Northing: "

Surface Water Measurements:

Time of sampling: 0955

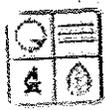
pH: 7.8 ORP: 13 mv

Specific Conductivity: 284 μ S Water Temperature: 20.8 °C

Comments: minnows, caddisfly cases, mayfly

Doe Run present

walked across rd to stream



Stream Name: Neals Creek GPS File: 1A Dec 201

Date Sampled: 8-31-2011

Team Number: #2 Team Members: Amy Wright, Shaun Courtham, Dave W,

Others Present (i.e., PRP affiliates): Suzi Fitzgerald, Jerry Palushock, Justin Province (Doe Run)

Surface Water Sample #: 215 Sediment Sample #: 215 Lab ws # 1106417

Location Information:

Point of Access: Ozark Trail leads directly to trail. Access trail off county rd.
Sediment - Easting: 670188.89m E Northing: 416842.04m N
Surface Water - Easting: " Northing: "

Surface Water Measurements:

Time of sampling: 1229
pH: 8.41 ORP: 45 mv
Specific Conductivity: 437 μ S Water Temperature: 23.1 °C

Comments: Rocks in backwater areas have layer of silt; some algae on edges of stream, chubs, reddish case. Splits provided for both Doe Run + Conine.

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:

Point of Access: _____
Sediment - Easting: _____ Northing: _____
Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: _____
pH: _____ ORP: _____
Specific Conductivity: _____ Water Temperature: _____ °C

Comments:

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:

Point of Access: _____
Sediment - Easting: _____ Northing: _____
Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: _____
pH: _____ ORP: _____
Specific Conductivity: _____ Water Temperature: _____ °C

Comments:



Stream Name: Bills Creek - 301

Date Sampled: 8/29/11

Team Number: 5 Team Members: Pat Hackler, Dave Mosby, Andy Beckers

Others Present (i.e., PRP affiliates): Integr. II, Doe Run

Surface Water Sample #: 110341 Sediment Sample #: 301

Location Information:	
Point of Access: <u>Doe Run Parcel - pt. 301</u>	
Sediment - Easting: <u>664303.39M</u>	Northing: <u>4152259.77M</u>
Surface Water - Easting: <u>664303.39M</u>	Northing: <u>4152259.77M</u>
Surface Water Measurements:	
Time of sampling: <u>12:01</u>	
pH: <u>8.05</u>	ORP: <u>180 mV</u>
Specific Conductivity: <u>644 μS</u>	Water Temperature: <u>26.0 °C</u>
Comments: <u>Accompanied by Doe Run and Integril associates. Doe Run split sample.</u>	

Surface Water Sample #: 110342 Sediment Sample #: 302

Location Information:	
Point of Access: <u>Vernon Hill</u>	
Sediment - Easting: <u>664406.16m</u>	Northing: <u>4153003.79m/1</u>
Surface Water - Easting: <u>664406.16m</u>	Northing: <u>4153003.79m</u>
Surface Water Measurements:	
Time of sampling: <u>1333</u>	
pH: <u>8.19</u>	ORP: <u>263 mV</u>
Specific Conductivity: <u>668 μS</u>	Water Temperature: <u>26.8 °C</u>
Comments: <u>DNR Dup collected Doe Run split of both DNR samples</u>	

Surface Water Sample #: 110343 Sediment Sample #: 503

Location Information:	
Point of Access: <u>Doe Run</u>	
Sediment - Easting: <u>664169.59</u>	Northing: <u>4154022.64</u>
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: <u>1451</u>	
pH: <u>8.36</u>	ORP: <u>229 mV</u>
Specific Conductivity: <u>659 μS</u>	Water Temperature: <u>26.6 °C</u>
Comments: <u>Real Run split. Water dup - sample # 110344</u>	



Stream Name: Bills Creek

Date Sampled: 8/24/11

Team Number: 3 Team Members: Andy Rockers, Pam Harker, Dave Mosby

Others Present (i.e., PRP affiliates): Doc Run, Integral

Surface Water Sample #: 1103345 Sediment Sample #: 304

Location Information:

Point of Access: Doc Run

Sediment - Easting: 664108.64 Northing: 4154673.01

Surface Water - Easting: 664108.64 Northing: 4154673.01

Surface Water Measurements:

Time of sampling: 1525

pH: 8.08 ORP: 305 mV

Specific Conductivity: 490 μ S Water Temperature: 25.6 °C

Comments:

Doc Run split sed

Surface Water Sample #: 1103346 Sediment Sample #: 305

Location Information:

Point of Access: Barton / Shoreline

Sediment - Easting: 663705.95 Northing: 4155388.17

Surface Water - Easting: 663705.95 Northing: 4155388.17

Surface Water Measurements:

Time of sampling: 1635

pH: 7.53 ORP: 690 mV

Specific Conductivity: 458 μ S Water Temperature: 24.0 °C

Comments:

Doc Run Split Sed

Surface Water Sample #: 1103347 Sediment Sample #: 306

Location Information:

Point of Access: Barton / Derrick

Sediment - Easting: 663545.04 Northing: 4155706.21

Surface Water - Easting: 663545.04 Northing: 4155706.21

Surface Water Measurements:

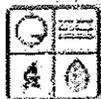
Time of sampling: 1711

pH: 7.99 ORP: not functioning

Specific Conductivity: 399 μ S Water Temperature: 24.2 °C

Comments:

Doc Run split Sed



Stream Name: Toms Creek

Date Sampled: 9/30/11

Team Number: 3 Team Members: 11

Others Present (i.e., PRP affiliates): DR & Integri

Surface Water Sample #: 1103348 Sediment Sample #: 507

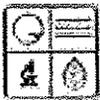
Location Information:	
Point of Access: <u>Doc Run - Confluence with Black River</u>	
Sediment - Easting: <u>667000.06</u>	Northing: <u>4157358.59</u>
Surface Water - Easting: <u>667000.06</u>	Northing: <u>4157358.59</u>
Surface Water Measurements:	
Time of sampling: <u>0834</u>	
pH: <u>8.17</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>269</u>	Water Temperature: <u>20.2</u> °C
Comments: <u>Doc Run affiliates late, collected w/last. Sediment duplicate. Water duplicate → 1103349</u>	

Surface Water Sample #: 1103350 Sediment Sample #: 508

Location Information:	
Point of Access: <u>Toms Creek - USFS through DR Property</u>	
Sediment - Easting: <u>665888.08</u>	Northing: <u>4150920.47</u>
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: <u>0947</u>	
pH: <u>7.89</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>260 µmS</u>	Water Temperature: _____ °C
Comments: <u>No split/no dup</u>	

Surface Water Sample #: 1103351 Sediment Sample #: 509

Location Information:	
Point of Access: <u>Toms Creek - Bob. Section</u>	
Sediment - Easting: <u>665871.5</u>	Northing: <u>4150432.83</u>
Surface Water - Easting: <u>665871.5</u>	Northing: <u>4150432.83</u>
Surface Water Measurements:	
Time of sampling: <u>1045</u>	
pH: <u>8.13</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>299 µmS</u>	Water Temperature: <u>20.5</u> °C
Comments: <u>No DR accompanying</u>	



Stream Name: Toms Creek

Date Sampled: 8/30/11

Team Number: 3 Team Members: 11

Others Present (i.e., PRP affiliates): DR + Integrii

Surface Water Sample #: 1103352 Sediment Sample #: 310

Location Information:	
Point of Access: <u>Toms Creek - B. Jordan</u>	
Sediment - Easting: <u>662947.58 m</u>	Northing: <u>4149824.16 m</u>
Surface Water - Easting: <u>662947.58</u>	Northing: <u>4149824.16 m</u>
Surface Water Measurements:	
Time of sampling: <u>1137</u>	
pH: <u>8.07</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>287 uS</u>	Water Temperature: <u>21.5 °C</u>
Comments: <u>DR Split</u>	

Surface Water Sample #: 1103353 Sediment Sample #: 311

Location Information:	
Point of Access: <u>Co. Jordan</u>	
Sediment - Easting: <u>660860.01</u>	Northing: <u>4149338.60</u>
Surface Water - Easting: <u>660860.01</u>	Northing: <u>4149338.60</u>
Surface Water Measurements:	
Time of sampling: <u>1236</u>	
pH: <u>7.62</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>222 uS</u>	Water Temperature: <u>21.9 °C</u>
Comments: <u>DR Split</u>	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments: _____	



Stream Name: Bills Creek

Date Sampled: 8/3/01

Team Number: 3 Team Members: "

Others Present (i.e., PRP affiliates): NR, T. D. Grail

Surface Water Sample #: 1103354 Sediment Sample #: 312

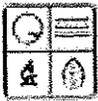
Location Information:	
Point of Access: <u>Moss</u>	
Sediment - Easting: <u>663055.48</u>	Northing: <u>4156421.85</u>
Surface Water - Easting: <u>663055.48</u>	Northing: <u>4156421.85</u>
Surface Water Measurements:	
Time of sampling: <u>1350</u>	
pH: <u>7.48</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>398.45</u>	Water Temperature: <u>24.2 °C</u>
Comments: <u>DR no access, no split.</u>	

Surface Water Sample #: 1103355 Sediment Sample #: 313

Location Information:	
Point of Access: <u>Holmes</u>	
Sediment - Easting: <u>662709.61</u>	Northing: <u>4158178.60</u>
Surface Water - Easting: <u>662709.61</u>	Northing: <u>4158178.60</u>
Surface Water Measurements:	
Time of sampling: <u>1425</u>	
pH: <u>8.07</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>409.45</u>	Water Temperature: <u>28.9 °C</u>
Comments: <u>DR split sample</u>	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments:	



Stream Name: Neals Creek

Date Sampled: 8/1/11

Team Number: 3 Team Members: Andy Racker, Pam Harbler

Others Present (i.e., PRP affiliates): DR, Intel, USR

Surface Water Sample #: 1103356 Sediment Sample #: 314

Location Information:	
Point of Access: <u>Sarvis</u>	
Sediment - Easting: <u>675026.45</u>	Northing: <u>4164042.56</u>
Surface Water - Easting: <u>675026.45</u>	Northing: <u>4164042.56</u>
Surface Water Measurements:	
Time of sampling: <u>0830</u>	
pH: <u>7.85</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>355 uS</u>	Water Temperature: <u>22.2 °C</u>
Comments: <u>Water dup. 1103357</u>	

Surface Water Sample #: 1103358 Sediment Sample #: 315

Location Information:	
Point of Access: <u>Baton</u>	
Sediment - Easting: <u>673851.07</u>	Northing: <u>4166283.31</u>
Surface Water - Easting: <u>673851.07</u>	Northing: <u>4166283.31</u>
Surface Water Measurements:	
Time of sampling: <u>0948</u>	
pH: <u>8.03</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>378 uS</u>	Water Temperature: <u>22.5 °C</u>
Comments: <u>USR split. DR no access</u>	

Surface Water Sample #: 1103359 Sediment Sample #: 316

Location Information:	
Point of Access: <u>Baton Truss</u>	
Sediment - Easting: <u>672895.2</u>	Northing: <u>4167690.51</u>
Surface Water - Easting: <u>672895.2</u>	Northing: <u>4167690.51</u>
Surface Water Measurements:	
Time of sampling: <u>1037</u>	
pH: <u>8.26</u>	ORP: <u>N/A</u>
Specific Conductivity: <u>376 uS</u>	Water Temperature: <u>22.7 °C</u>
Comments: <u>No Sed - Dead Rock, Water only</u>	



Stream Name: Neals Creek

Date Sampled: 8/31/11

Team Number: 3 Team Members: 4

Others Present (i.e., PRP affiliates): DR, Integrity, USR

Surface Water Sample #: 1103360 Sediment Sample #: 317

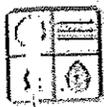
Location Information:	
Point of Access: <u>Vernon Huber</u>	
Sediment - Easting: <u>671987.24</u>	Northing: <u>4167699.58</u>
Surface Water - Easting: <u>671987.24</u>	Northing: <u>4167699.58</u>
Surface Water Measurements:	
Time of sampling: <u>1111</u>	ORP: <u>N/A</u>
pH: <u>8.32</u>	
Specific Conductivity: <u>369 us</u>	Water Temperature: <u>22.1 °C</u>
Comments:	
<u>No split sed. Very little Available</u>	

Surface Water Sample #: 1106870 Sediment Sample #: 318

Location Information:	
Point of Access: <u>USFS</u>	
Sediment - Easting: <u>669449.28</u>	Northing: <u>4168617.42</u>
Surface Water - Easting: <u>669449.28</u>	Northing: <u>4168617.42</u>
Surface Water Measurements:	
Time of sampling: <u>1227</u>	ORP: <u>N/A</u>
pH: <u>8.5</u>	
Specific Conductivity: <u>383 us</u>	Water Temperature: <u>24.1 °C</u>
Comments:	
<u>Water Only. No Sed. bedrock</u>	

Surface Water Sample #: 1106871 Sediment Sample #: 319

Location Information:	
Point of Access: <u>Dotson</u>	
Sediment - Easting: <u>667105.66</u>	Northing: <u>4168874.52</u>
Surface Water - Easting: <u>667105.66</u>	Northing: <u>4168874.52</u>
Surface Water Measurements:	
Time of sampling: <u>1315</u>	ORP: <u>N/A</u>
pH: <u>8.65</u>	
Specific Conductivity: <u>385 us</u>	Water Temperature: <u>27.2 °C</u>
Comments:	
<u>Water Only. No Sed. bedrock</u>	



Stream Name: Bee Fork
 Date Sampled: 8/29/11
 Team Number: 4 Team Members: BEN FRISSEL, PAUL EMBREE, SUSHMITA SHARMA
 Others Present (i.e., PRP affiliates): INTEGRAL, DOE RUN

Surface Water Sample #: 1106501 Sediment Sample #: 401 (taken at 1345-1355)

Location Information:

Point of Access: Doe Run Property of TT
 Sediment - Easting: 667463.90 Northing: 4145796.47
 Surface Water - Easting: 667463.90 Northing: 414579.47

Surface Water Measurements:

Time of sampling: 1326
 pH: 7.40 ORP: 67 mV
 Specific Conductivity: 267 Water Temperature: 25.6 °C

Comments: 23 scoops for sediment sample

Surface Water Sample #: 1106502 Sediment Sample #: 402 (taken @ 1537-1543)

Location Information:

Point of Access: Sutton side
 Sediment - Easting: 663036.74 Northing: 414577.15
 Surface Water - Easting: 663036.74 Northing: 414577.15

Surface Water Measurements:

Time of sampling: 1532
 pH: 7.40 ORP: 51 mV
 Specific Conductivity: 128.6 μS Water Temperature: 25.6 °C

Comments: 21 scoops for sediment sample

Surface Water Sample #: 1106503 @ 1619 Sediment Sample #: 403 @ 1621-1627

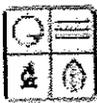
Location Information:

Point of Access: Sutton property (upstream)
 Sediment - Easting: 662916.25 Northing: 4145782.68
 Surface Water - Easting: 662916.25 Northing: 4145782.68

Surface Water Measurements:

Time of sampling: 1619
 pH: 6.75 ORP: 51 mV
 Specific Conductivity: 131.9 μS Water Temperature: 25.9 °C

Comments: 21 scoops for sediment sample



Stream Name: Bee Fork

Date Sampled: 8/29/2011

Team Number: 4 Team Members: Ben Friesch, Paul Embree, Sushmita Sharma

Others Present (i.e., PRP affiliates): Joe Kern, Intrepid

Surface Water Sample #: 110 ^{@1619} ~~504~~ Sediment Sample #: 404 @1621-1627

Location Information:

Point of Access: Sutton Property Upstream

Sediment - Easting: _____ Northing: _____

Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: 1619

pH: _____ ORP: _____

Specific Conductivity: _____ Water Temperature: _____ °C

Comments: Sup of 403.

~~Surface Water Sample #: _____ Sediment Sample #: _____~~

~~**Location Information:**~~

~~Point of Access: _____~~

~~Sediment - Easting: _____ Northing: _____~~

~~Surface Water - Easting: _____ Northing: _____~~

~~**Surface Water Measurements:**~~

~~Time of sampling: _____~~

~~pH: _____ ORP: _____~~

~~Specific Conductivity: _____ Water Temperature: _____ °C~~

~~Comments: _____~~

~~Surface Water Sample #: _____ Sediment Sample #: _____~~

~~**Location Information:**~~

~~Point of Access: _____~~

~~Sediment - Easting: _____ Northing: _____~~

~~Surface Water - Easting: _____ Northing: _____~~

~~**Surface Water Measurements:**~~

~~Time of sampling: _____~~

~~pH: _____ ORP: _____~~

~~Specific Conductivity: _____ Water Temperature: _____ °C~~

~~Comments: _____~~



Stream Name: Bee Fork Creek

Date Sampled: 8/30/11

Team Number: 4 Team Members: Ben Fivissel, Paul Embree, Sushmita Shanna

Others Present (i.e., PRP affiliates): DOE Run, Intergal

Surface Water Sample #: 110505 Sediment Sample #: 405

Location Information:	
Point of Access: <u>Bees Hills Property</u>	
Sediment - Easting: <u>663533.82</u>	Northing: <u>4145860.60</u>
Surface Water - Easting: <u>663533.82</u>	Northing: <u>4145860.60</u>
Surface Water Measurements:	
Time of sampling: <u>0904</u>	
pH: <u>7.76</u>	ORP: <u>82 mV</u>
Specific Conductivity: <u>113 μS</u>	Water Temperature: <u>20.6 °C</u>
Comments:	
<u>15 scoops taken for sediment samples 0905 - 0910</u>	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments:	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments:	



Stream Name: Sweetwater Creek
 Date Sampled: 8/30/11
 Team Number: 4 Team Members: Ben Finney, Paul Embree, Susanna Shanna
 Others Present (i.e., PRP affiliates): Soe Rem, Integral

Surface Water Sample #: 110506 Sediment Sample #: 406

Location Information:

Point of Access: Rd 6760, Soe Rem Property
 Sediment - Easting: 666028.48 Northing: 4131887.01
 Surface Water - Easting: 666028.48 Northing: 4131887.01

Surface Water Measurements:

Time of sampling: 1044
 pH: 7.38 ORP: 70 mV
 Specific Conductivity: 158.6 uS Water Temperature: 24.0 °C

Comments: 24 scoops 1045 - 1054

Surface Water Sample #: 110507 Sediment Sample #: 407

Location Information:

Point of Access: Soe Rem Property CR 758 Above AR1
 Sediment - Easting: 664919.42 Northing: 4133332.46
 Surface Water - Easting: 664919.42 Northing: 4133332.46

Surface Water Measurements:

Time of sampling: 1141
 pH: 7.09 ORP: 43 mV
 Specific Conductivity: 121.1 uS Water Temperature: 25.7 °C

Comments: 24 scoops 1145 - 1159

Surface Water Sample #: 110508 Sediment Sample #: 408

Location Information:

Point of Access: Soe Rem Property CR 758 Above AR1
 Sediment - Easting: _____ Northing: _____
 Surface Water - Easting: _____ Northing: _____

Surface Water Measurements:

Time of sampling: 1141
 pH: _____ ORP: _____
 Specific Conductivity: _____ Water Temperature: _____ °C

Comments: Dup of 407, 24 scoops (1145 - 1159)



Stream Name: Sweetwater Crk

Date Sampled: 8/30/11

Team Number: 4 Team Members: Ben F, Paul E., Sushmita S.

Others Present (i.e., PRP affiliates): Soe Ken, Integral

Surface Water Sample #: 110509 Sediment Sample #: 409

Location Information:	
Point of Access: <u>Soe Ken Property (Private road)</u>	
Sediment - Easting: <u>664717.70</u>	Northing: <u>4133524.86</u>
Surface Water - Easting: <u>664717.70</u>	Northing: <u>4133524.86</u>
Surface Water Measurements:	
Time of sampling: <u>1258</u>	
pH: <u>7.12</u>	ORP: <u>42mV</u>
Specific Conductivity: <u>129.4 uS</u>	Water Temperature: <u>27.3 °C</u>
Comments: <u>24 scoops taken 1259-1310.</u>	

Surface Water Sample #: 1106510 Sediment Sample #: 410

Location Information:	
Point of Access: <u>Soe Ken Property Private Property Road</u>	
Sediment - Easting: <u>663572.51</u>	Northing: <u>4134079.56</u>
Surface Water - Easting: <u>663572.51</u>	Northing: <u>4134079.56</u>
Surface Water Measurements:	
Time of sampling: <u>1350</u>	
pH: <u>7.42</u>	ORP: <u>21mV</u>
Specific Conductivity: <u>118 uS</u>	Water Temperature: <u>25.6 °C</u>
Comments: <u>24 scoops 1351-1400</u>	

Surface Water Sample #: 1106511 Sediment Sample #: 411

Location Information:	
Point of Access: <u>Soe Ken Property Col Rd 759</u>	
Sediment - Easting: <u>663119.96</u>	Northing: <u>4134634.35</u>
Surface Water - Easting: <u>663119.96</u>	Northing: <u>4134634.35</u>
Surface Water Measurements:	
Time of sampling: <u>1438</u>	
pH: <u>7.68</u>	ORP: <u>17mV</u>
Specific Conductivity: <u>108.5</u>	Water Temperature: <u>25.6 °C</u>
Comments: <u>12 scoops 1440-1446</u>	



Stream Name: Sweetwater Creek

Date Sampled: 8/30/11

Team Number: 4 Team Members: Ben F, Paul E, Sushmita S.

Others Present (i.e., PRP affiliates): Doc Ren (Samantha), Integral (Jane)

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments:	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments:	

Surface Water Sample #: _____ Sediment Sample #: _____

Location Information:	
Point of Access: _____	
Sediment - Easting: _____	Northing: _____
Surface Water - Easting: _____	Northing: _____
Surface Water Measurements:	
Time of sampling: _____	
pH: _____	ORP: _____
Specific Conductivity: _____	Water Temperature: _____ °C
Comments:	



Stream Name: _____

Date Sampled: 0/31/11

Team Number: 4 Team Members: Ben Fissell, Paul Embree, Michael Corbin

Others Present (i.e., PRP affiliates): _____

1106512

Surface Water Sample #: 412 Sediment Sample #: 412

Location Information:	
Point of Access: <u>Asher Property Upstream</u>	
Sediment - Easting: <u>668488.98</u>	Northing: <u>4168134.15</u>
Surface Water - Easting: <u>668488.98</u>	Northing: <u>4168134.15</u>
Surface Water Measurements:	
Time of sampling: <u>8:58 am</u>	
pH: <u>7.95</u>	ORP: <u>72 mV</u>
Specific Conductivity: <u>424</u>	Water Temperature: <u>23.6 °C</u>
Comments:	
<u>21 scoops for sediment samples</u>	

Surface Water Sample #: 1106513 Sediment Sample #: 413

Location Information:	
Point of Access: <u>Cominco Property @ Pecant Ditch</u>	
Sediment - Easting: <u>667238.36 m</u>	Northing: <u>4166556.07 m</u>
Surface Water - Easting: <u>667238.36 m</u>	Northing: <u>4166556.07 m</u>
Surface Water Measurements:	
Time of sampling: <u>1046</u>	
pH: <u>7.49</u>	ORP: <u>108</u>
Specific Conductivity: <u>2.07</u>	Water Temperature: <u>23.9 °C</u>
Comments:	
<u>15 scoops for sediment samples</u>	

Surface Water Sample #: 1106514 Sediment Sample #: 414

Location Information:	
Point of Access: <u>667238.36 Cominco Property @ Pecant Ditch</u>	
Sediment - Easting: <u>667238.36 m</u>	Northing: <u>4166556.07 m</u>
Surface Water - Easting: <u>667238.36 m</u>	Northing: <u>4166556.07 m</u>
Surface Water Measurements:	
Time of sampling: <u>1046</u>	
pH: <u>7.49</u>	ORP: <u>108</u>
Specific Conductivity: <u>2.07</u>	Water Temperature: <u>23.9 °C</u>
Comments:	
<u>Dup of 413. 15 scoops for sediment samples.</u>	

Viburnum NRD
FEVIB

Date: 8/29/11
Arrival Time: 1048
Depart Time: 1900

Participants: Aron Clark
Ranna Huckstep
P Jane Sexton - Integral Consult.
Amy Sanders - Doe Run
~~Jeff Paulus~~ Paulus back
Jesly

Calibrations!

ORP	Read = 197	pH	Act 4.0	Read 4.08
	Act: 200		7.0	7.02
		Cond.	1413	1459

Mill Rock Creek - 101 location Carter
property

pH - 8.49
Temp - 24.3
Cond - 453
ORP - 101

Time: 1450 hrs.
ID# 1106551
- Clear colorless water
- 17 scoops

102 Location - Mill Rock Creek - Doe Run
Property

pH = 8.20
Temp = 24.8
Cond = 442
ORP = 65

Time: 1620 hrs
ID# 1106552
- Clear colorless odorless 160
- 15 scoops

(CH)

8/29/11

Loc. 103 - Mill Rock Cr. Doe Run
property near Forest Service
border

pH: 8.34 Time: 1730
Temp: 21.8 ID# 1106553
Cond: 474 - Clear, colorless odorless H₂O
ORP: 62 - 20 scoops

Day 2 - 8/30/11 site time: 0904
left site: 1715

Calibrations: Perm# 160381

pH	Act.	Read	Cond	Act	Read
	7.0	7.09		1413	1457
ORP	10.0	10.07			

Cond. # ORP 52 - Martin
Act = 200 Road ~~200~~ wrong solution
208

Loc 104 - Crooked Creek e. in H₂O

Bridge on Cattrell property

pH = 7.96 - upstream of Road near fence
Temp = 21.9 - some disturbances upstream
Cond = 1036 while looking for a test site
ORP = 62 Time: 0930
Scoops = 20 ID# 1106554

Loc. 104 (cont) - clear colorless odorless water

Loc. 105 - Usher property, Evoked Creek

pH = 7.86 Time: 1025
Temp = 20.9 ID# 1106555
Cond = 1047 ID 6556 Dup
ORP = 54 mV * replicate sample collected
- 14 scoops
- clear colorless, odorless water.

Loc 106 - Turnbaugh property, on
Crooked Creek.

pH = 8.43
Temp = 22.5 Time: 1220
Cond = 1103 ID# 1106557
ORP = 49 - clear, colorless, odorless water
Scoops = 23 Not enough sample to
split

Loc 107 - Chandler property upstream of
road & fence.

pH = 8.47 Scoops = 25
Temp = 23.4 Time: 1420
Cond = 1104 - clear colorless, odorless water
ORP = 59 ID# 1106558

Loc. 108 - Crooked Creek - Pryor Property

pH = 8.12

Temp = 22.6

Time: 1620

Cond = 1061

ID# 1106559

ORP = 54

- Clear colorless, odorless H₂O

Scoops = 9 - Site was approached from upstream. Crew waited

approximately 15 min. for stream to clear before sampling.

Day 3 - 8/31/11

Arrival Time: 0745

Depart Time: 1400

Calibrations:

Act	Read
pH = 7.0	7.07
10.0	10.01
Cond = 1413	1585 Recal 1457 <u>(MS)</u>
ORP = 206	203

Loc. 109 - Mill Rock Creek
~~Crooked Creek~~ - Sellers property

pH = 8.17

Time: 10:22

Temp = 21.9

ID# 1106560

Cond = 471

- Clear colorless, odorless H₂O

ORP = 182

Scoops = 26

Loc 109 - Stream was a flowing stream.

First 1/4 mile was essentially dry.

Loc 110 - Crooked Creek - Doe Run Prop.

pH = 8.35

Temp = 26.5

Time: 1450

* Cond = 1993 ms

ID# 1106561

ORP = 74

1106562 Dup.

Scoops = 19

- Clear colorless, odorless H₂O
salty deposits on rocks, sticks

* mill: not used

- Conductivity meter was re-calibrated due to the high conductivity. Recal read 1457 at 1413 standard

Viburnum Trnd

8/29/11
Water quality meters were calibrated
on Friday 8/26/11

Bump test

PH 7 = 7.07

PH 10 = 10.02

Cond 1413 μ S = 1409 μ S

ORP 200 mV = 201 mV

Arrive @ 1200 team sampling on hills

Team 2 - Dane W. Amy W. Sean C.

Indian Creek Confluence @ 1500

mile 1 just up stream from old road.

Sediment # 201 Doe Run Prop

Water Sample Washington Co

Temp 25.6 $^{\circ}$ C 15 Scoops

Cond = 597 μ S Sediment Sample

PH = 8.21

ORP = 118 mV

Sample collected @ 1545

Sample # 1106401

Indian Creek

Mile 2 just up Stream from
Road crossing past Mining facility Road

Sediment # 202 Doe Run Prop

Water Sample

Temp = 25.8 $^{\circ}$ C Sediment Sample
9 Scoops

Cond = 591 μ S

PH = 8.09

ORP = 64 mV

Sample # 1106402

Sample collected @ 1615

Indian Creek

Mile 3 off Doe Run Haul Road
where crosses creek down stream

Sediment 203 Doe Run Prop.

Surface Water Sediment Sample

Temp = 25.4 $^{\circ}$ C 12 Scoops

Cond = 602 μ S

PH = 8.03

ORP = 54 mV

Sample collected at 1645

Sample # 1106403

Sediment 204 Doe Run

up Stream from Haul Road Crossing

Temp = 24.2 $^{\circ}$ C

Cond = 637 μ S 9 Scoops

PH = 7.89

ORP = 53 mV

Sample collected @ 1710
 Sample # ~~1106403~~ 1106404
 Blind Duplicate collected
 Sample # ~~406404~~ 1106405

8/30 Ubarann Sampling

0700 Water quality instruments sampled
 pH @ 7 = 7.07
 pH 10 = 10.05
 Cond @ 1413 = 1401
 ORP @ 200mv = 211

Start @ 0830 Mile 4 Doe Run Prop
 Sediment 205 collected at up stream
 From Iron Co. RD / Frank Bay Road
 Surface water collected @ 0840
 Temp = 20.0°C Sediment Sample
 Cond = 447µs 9 scoops
 pH = 8.11
 ORP = 35mv
 Sample # 1106406

Sediment 206 collected at Mile 5
 tailings stream entrance up stream
 Surface water collected 0945 Doe Run Prop
 Temp 19.3°C Sediment Sample
 Cond 701µs 15 scoops
 pH = 8.29
 ORP = 24mv
 Sample # 1106407

Sediment 207 collected Mile 6
 From Fwy 8 service Road "Fargo" area
 CR 82 + Hwy 32
 Surface water collected at 1119
 Temp = 22.9°C Doe Run Prop
 Cond = 426µs Sediment Sample
 pH = 8.12 9 scoops
 ORP = 12mv
 Sample # 1106408

Blind Duplicate collected
 Surface water Sample # 1106409

Vibronum Sampling 8/30/11

Indian Creek
Mile 7 Collected at upstream of
furthest upstream Forest Service Road
across from Church on CR 82
Surface Water collected at 1248

Temp = 22.7°C

Cond = 403 μ S

pH = 8.11

ORP = 22 mV

Water Sample # 1106410

Forest Service property
Sediment 208

Indian Creek completed
Last mile (Headwaters) could not be
accessed

West Fork Black River

1st Location Johnnie Miller Property
Southern end of property - near Confluence
Surface Water collected @ 1517

Temp 25.0°C

Cond = 334 μ S

pH = 8.17

ORP = 17 mV

Sediment Sample

12 SCOOPS

Doe Run ~~has~~ access

Sediment # 209

Water sample number 1106411

West Fork Black
Mile 2

Sediment 210

Gehring property

off CR 65 at curve nearest to Stream
Surface Water collected 1559

Temp = 24.6°C

Cond = 333 μ S

pH = 7.92

ORP = 22 mV

Sample # for water 1106412

Sediment Sample

Six SCOOPS

Doe Run NO Access

Sediment 211 Mile 2 W. Fork Black
Telle Property of Hwy 49 near CR 65
No direct Stream access - went through front
gate then through Farm Roads, several
barbed fences to climb

Surface Water collected at 1456

Temp = 24.5

Cond = 344 μ S

pH = 7.59

ORP = 109 mV

Doe Run No Access

Sediment Sample
9 SCOOPS

Surface Water Sample # 1106413

44
8/31/11 Viburnum Sampling
Water quality water bump list

0630

pH @ 7 = 7.10

pH @ 10 = 10.08

Cond @ 1413us = 1433us

ORP @ 200mv = 200mv

Arrive 0815 Middle Fork Black River

Sediment 212 Thomas Benz property

CR 72

Surface water collected @ 0825

Temp = 20.9°C

Cond = 345us 12 sediment scoops

pH = 8.11 no Doe Run Access

ORP = 53mv

Surface Water Sample # 1106414

Sediment 213 Forest Service property

CR 72

Surface water collected @ 0900 Doe Run has access

Temp = 19.6°C

Cond = 345us 15 sediment scoops

pH = 7.96 not much recovered smaller

ORP = 61mv than zinc some - not enough

to split.

Middle Fork Black River

Sediment 214

Had to hike in from CR 72 to Forest Service Road (not apparent from CR 72)

once found Road is clear (not Driveway from Road)

Sample taken just upstream from Road Crossing

Surface water collected @ 0955

Temp = 20.8°C

Cond = 284us

Sediment 9 Scoops

pH = 7.80

Doe Run Access

ORP = 13mv

Sample # 1106416

Middle Fork of Black River

Arrive at headwaters of stream 1115

Stream bed dry (Location Hwy 32)

Forest Service Property - unknown what

currently feeds stream - No Sample collected -

44

Neals Creek

Met up w/ Pam Hacklers Team

CR 79 Ozark Trail Access

Drove to stream

Sediment 215 Forest Service Paper

Surface water collected @ 1227

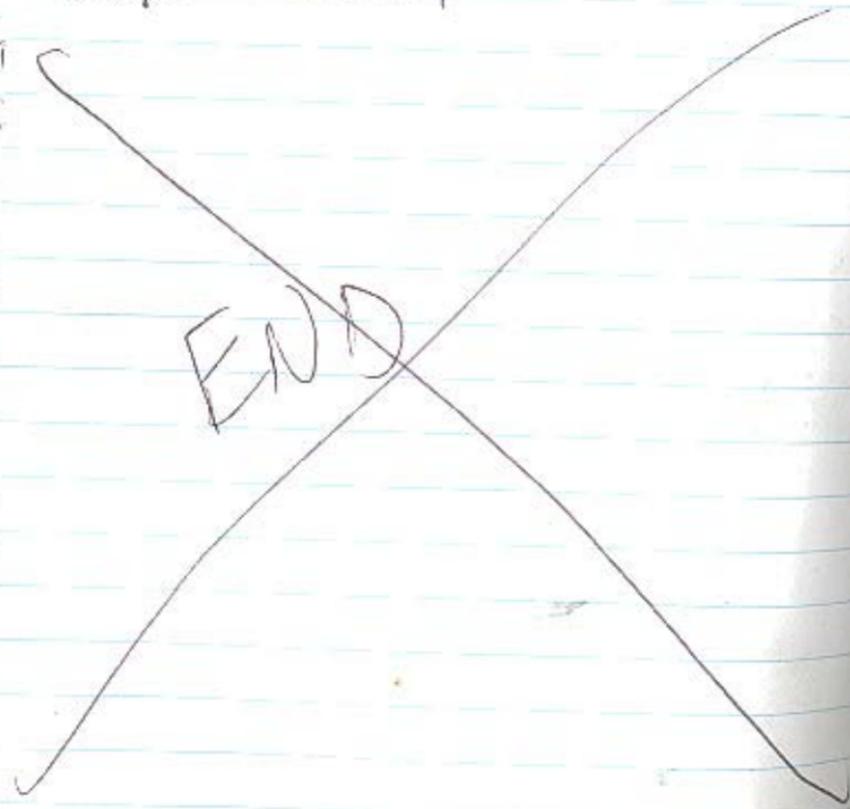
Temp = 23.1°C

Cond = 437 μ S

pH = 8.41

ORP = 45 mV

Sample # 1106417

Duck split
wrs will come back

 END

Viburnum Trend 0700
 Pam Hackler's Notes
 8/29/2011

ExTech - ExStik II #160331

Cal'd to 1413 μ S

7.09 in 7.0 pH Standard
 4.08 in 4.0 pH Standard
 10.07 in 10.0 pH Standard

ExTech - ExStik #130193
 197 mV in 200 mV standard.

Andy Rackers - HWP
 Dave Mosby - USFWS

Bills Creek
 Lowermost (downstream) point
 26.0 °C
 180 mV
 8.05 pH
 644 μ S
 1201 hours

4152259.77 m N

664303.39 m E

Tag 1103341

Sediment #301

Sample taken as Demo

with all ESP/HWP/DNR/

Do Run & consultants

22 SCOOPS

Maggie Crocker - Do Run

Matthew Behum - Integral

Bills Creek

#302

slow running area on E. bank

26.8 °C

668 μ S

263 mV

8.19 pH

1333 hours

Took Sediment duplicate

1358 hours

11 scoops

Tag 1103342

4153003.79 m N

664406.16 m E

Bills Creek

#303

below all Doe Run outfalls
on this creek

26.6 °C

229 mV

8.36 pH

689 μ S

1451 hours

Tag (D) 1103343

& Duplicate (DD) 1103344

4154422.64 mN

664169.59 mE

Sed sample 1509 h. 19 scoops

Bills Creek

#304

above last Doe Run
outfall on Bills creek. BC-001

25.6 °C

305 mV

490 μ S

8.08 pH

1525 hours

Tag 1103345

#304 cord.

14 Scoops

1532 hours

4154673.01 mN

664108.64 mE

#305

Bills Creek

just downstream of

BC 003 outfall

690 mV

24.0 °C

7.53 pH

1635 h. (H₂O)458 μ S

4155388.17 mN

663705.95 mE

15 Scoops

1645 h. (sed)

H₂O tag # 1103346

#306

Upstream of outfall BC-003
Bills Creek

24.2 °C

399 μ S

7.97 pH

ORP pen flashing a pH
number, not functioning.1711 h. (H₂O)

9 scoops

1727 h. (sed)

4155706.21 N

663545.04 mE

H₂O Tag 1103347

1900

8/30/2011

0630

Viburnum Trend - Day 2
Same Team, Same meters

7.12 in 7.00 standard.

4.11 in 4.00 Standard.

10.14 in 10.00 Standard.

1348 in 1413 μ S Std.Tom's Creek at west fork
confluence

#307

20.2 °C

269 μ S

8.17 pH

Waited on contractors for 30 min.

0834 h. (H₂O)

Tag # 1103348

& duplicate Tag # 1103349

4151358.59 mN

667002.06 mE

Split Sediment samples

12 scoops

0850 h (sed)

Contractors arrived 0850

#308

Tom's Creek
 at CR 900 at gully
 (no contractor split)
 about 3/4 mi upstream
 of confluence.

1/4 mi from road.

22.0°C

7.89 pH

260 μ S

0947 h (H₂O)

4150922.47 mN

665863.68 mE

0955 h (sed)

H₂O Tag# 1103350

9 Scoops

#309

Tom's Creek
 private drive of CR 909
 20.5°C

Bob Jordan Property

299 μ S

8.13 pH

1045 h (H₂O)

4150032.83 mN

663871.50 mE

Tag 1103351

no split

#310

Toms Creek

West side of Gordon property

21.5°C

8.07 pH

287 μS 1126 h (h₂O)

Sed h. 1137

4149824.16 mN

6602947.58 mE

Tag # 1103352

Split w/ contractors
Sediment

#311

Tom's creek

Carol Vordam property

Spit sediment w/ contractors

Just downstream of cow-fence

24.1°C

222 μS

7.62 pH

1236 hours

4149338.66 mN

660860.01 mE

1241 h. Sed

Throughout entire event,
contractors have been decanting
liquid to fit sediment in to
8 oz jars.

Tag # 1103353

312
 Moss Property
 Bill's Creek
 24.2°C
 7.48 pH
 398 μ S
 No contractors
 they don't have access
 4156421.85 meters N
 663055.48 meters E
 8 scoops
 1350 h. H₂O
 1353 h. Sed.
 Tag 1103354

313
 Holmes property
 Bill's Creek
 23.9°C
 409 μ S
 8.07 pH
 1424 h. H₂O
 15 scoops
 1444 h. Sed
 Split w/ contractors
 4158178.60 m N
 662709.61 m E
 Tag 1103355

Upstream Bill's creek
 Traveled down forest road
 Stream not flowing
 4160882.32 N
 662825.45 E

8/31/2011
Viburnum Trend - Day 3

Pam Hackler
Andy Raekers
Kevin Pulley - Biologist - URS
314-956-1883

7.11 in 7.0 Standard
4.13 in 4.0 Standard
ExStik II #160331
10.09 in 10.0 Standard
1420 in 1413_u Standard

NEALS Creek

#314
most downstream point
just North of road crossing
CR. 66

22.2 °C
355 μ S
7.85 pH
0830 h.

Tag # 1103356
& Duplicate 1103357
Doe Run & Integral & URS
entered property
Did not split, not enough Sediment
4164042.56 N
675026.45 E
Jarvis property
Doe Run/Integral didn't have access

#315
CR 74
Barton property, South end.
22.5 °C
8.03 pH
378 μ S
0948 h
Tag 1103358
15 scoops
4166283.31 N
673851.07 E
Doe/Int. NO access, did not enter
Split with URS

#316

Roy Barton Trust

Corner of 74 & 79

All bedrock, no
sediment sample taken376 μS

22.1 °C

8.22 pH

10:37 h

at confluence of
Henderson creek

4167690.51 N

672895.20 E

Tag# 1103359

- further upstream -
still fairly bedrock-y

#317

Neals Creek

8.32 pH

Vernon Asher

22.1 °C

399 μS

111 hours

Very small sediment
sample - didn't/couldn't
split

Tag # 1103360

4167699.58 m N

671987.24 m E

All had access

#318

Neals Creek

Bedrock - USA property
Water sample only383 μS

24.1 °C

8.50 pH

1227 h

Tag # 1106870

4168617.42 N

669449.28 E

Dodson property
just upstream of
red tube-gate

27.2 °C

SLOW flow, very small stream

8.65 pH

385 μ S

1315 h

no sed.

Tag # 1106871

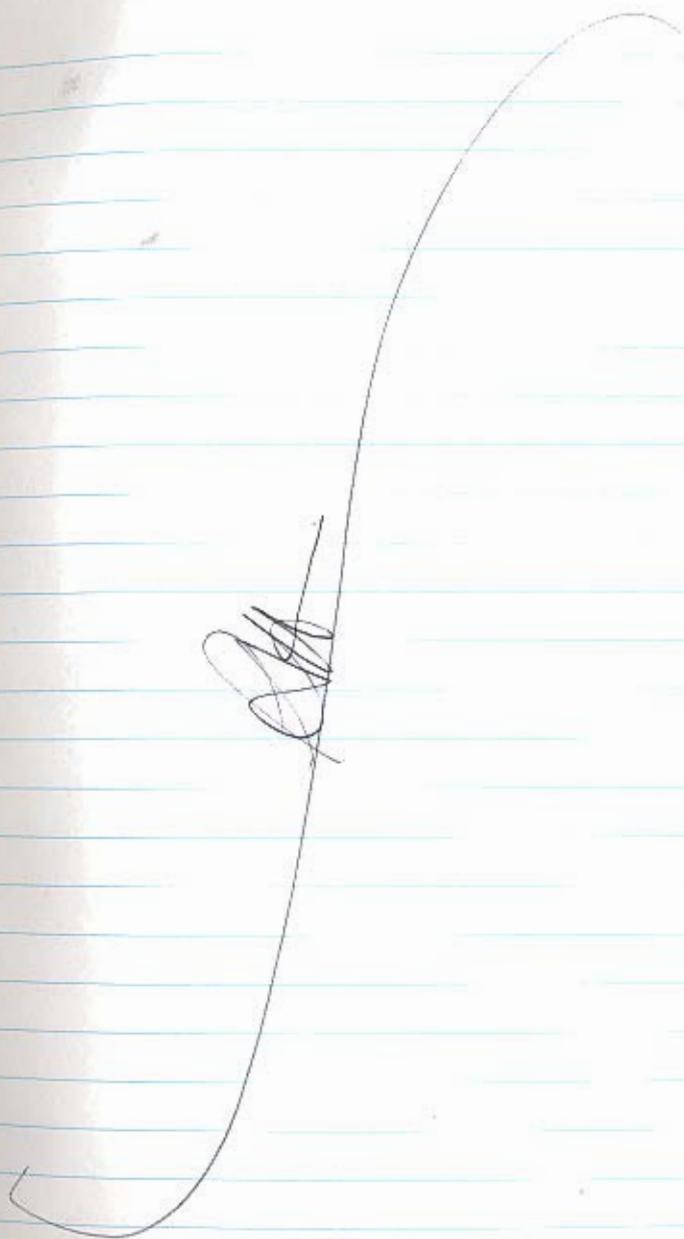
319

No sediment sample.

4168874.52 N

667105.66 E

Followed Neals creek to
headwaters, no other
spots suitable to sample:
very low flow and bedrock



VIBURNUM SAMPLING EVENT 8/29/11

TEAM # 4

FEWIB, Sunny; 86°F

8/29/11 REYNOLDS COUNTY

BEC FORK SAMPLE, FRISSELL, EMBREE, SUSHMITA
CALCHECK 1314 SHARMA

ORP: 187 mV (STANDARD 200 mV)

PH 6.98 (STANDARD 7)

9.90 (STANDARD 10)

4.01

CON: 1413 us (STANDARD 1413 us)

DOE RUN

SAMPLE # H₂O 1106501 @ 1326

TEMP °C ORP mV PH CON us

25.6 67 7.40 267

SEDIMENT SAMPLE 23 SCOOPS # 401

TAGGED @ 1345 - 1355

GPS: E 667463.90 N: 4145796.47

SUTTON PROPERTY

SAMPLE # H₂O 1106502 @ 1532

TEMP °C ORP mV PH CON us

25.6 51 7.05 128.6

SEDIMENT SAMPLE 21 SCOOPS # 402

TAGGED @ 1537 - 1543

GPS: E 663036.74 N: 4145776.15

BEE FURN CONT 8/29/11
TEAM # 4

IC PLANT PROPERTY

SAMPLE # H₂O 1106503 @ 1619

TEMP °C	ORP mV	pH	CON US
25.9	51	6.75	131.9

SEDIMENT SAMPLE 403/21 Scoops 1621-1627

DEP TAKEN SEDIMENT 404 / H₂O 1106504 @ 1619

GPS E 662916.25 N 4145789.68

- DID NOT SAMPLE AFTER PUT ON IC PLANT
- UNABLE TO GET TO BEE FURN ON Hill PROPERTY

TEAM # 4

8/30/11 FR. SSEL, CUMBERG, SHARMA
CAI CHECK 0615, SUNNY 80 °F (60 MINUTE HOTTER)

ORP 208 mV (STANDARD 200 mV)

CON - 1413 us (STANDARD 1413 us)

pH 7.02 (STANDARD 7)

4.05 (STANDARD 4)

9.98 (STANDARD 10)

BEE FURN

Hill PROPERTY

SAMPLE H₂O # 1106505 @ 0944

TEMP °C	ORP mV	pH	CON us
20.6	82	7.76	113

TEAM # 4 (FR. SSEL, CUMBERG, SHARMA) 23
75 °F Sunny

BEE FURN CONT 8/30/11

SEDIMENT SAMPLE # 405 15 Scoops 0905-0910
GPS E 663533.82 N 4145860.60

SWEETWATER SAMPLING

DOE RUN PROPERTY @ CR 760:758

SAMPLE H₂O # 1106506 @ 1044

TEMP °C	ORP mV	pH	CON us
24.0	70	7.38	158.6

SEDIMENT SAMPLE 406/24 Scoops 1045-1054

GPS E 666028.48 N 4131887.01

DOE RUN PROPERTY @ CR 758 ABOVE ARI

SAMPLE H₂O # 1106507 @ 1141

TEMP °C	ORP mV	pH	CON us
25.7	43	7.09	121.6

SEDIMENT SAMPLE 407/24 Scoops 1145-1159

DEP 408/24 Scoops

SAMPLE H₂O # DEP 1106508 @ 1141

DEP TAKEN BY COLLECTING TWO SAMPLE BUCKETS (24 SCOOPS EACH) FROM THE SAME LOCATION. SAMPLE WAS THEN DIVIDED BETWEEN DOE & DOE RUN. THIS WAS

DEP'S MATH TO GET DEP.

GPS E 664919.42 N 4133332.46

BS

SWEET WATER CONT 8/30/11

PRIVATE ROAD CROSSING DOE RUN PROPERTY
SAMPLE H₂O # 1106509 @ 1258

TEMP °C	ORP mV	pH	CON US
27.3	42	7.12	129.4

SEDIMENT SAMPLE 409 24 SCUPS
1259-1310

GPS E 664717.70 N 4133524.86

DOE RUN PROPERTY, RIVER ACCESS RD

SAMPLE H₂O # 1106500 @ 1350

TEMP °C	ORP mV	pH	CON US
25.6	21	7.42	118

SEDIMENT SAMPLE 410 24 SCUPS/1351-1400

GPS E ~~664717~~ 663572.51 N 4134079.56

DOE RUN PROPERTY @ CR 759

SAMPLE H₂O # 1106511 @ 1438

TEMP °C	ORP mV	pH	CON US
25.6	17	7.68	108.5

SEDIMENT SAMPLE 411 12 SCUPS/1440-1446

GPS E 663119.96 N 4134634.35

BF

8/30/11

DRY ! UNABLE TO SAMPLE 1.2 MILE ABOVE
CR 759 ; SAMPLE 411. TRYING CR
758 WOULD NOT GET US TO LOCATION.
NO MORE SAMPLING WILL BE DONE ON
SWEET WATER.

- NEED - COOLER/ICE - GET AT 1:05
- DRINKS - GPS/CAMPA
- BUCKETS - DO CAI CHECK

BF

8/31/11 TEAM #1 (FRISSELL, EMBREE, CORBIN)

CAI CHECK 90° F SUNNY (12pm)

0615

ORP 204 mV (STANDARD 200 mV)

pH 7 (STAN 7)

4.07 (STAN 4)

9.93 (STAN 10)

CON 1419 (STAN 1413-15)

LEFT TEAM NEALS

TEAM #4, FRISSELL, EMBREE, CORBIN

ASHER PROPERTY

SAMPLE H₂O # 1106512 @ 0858

TEMP °C	ORP mV	pH	CON US
23.6	72	7.95	424

8/31/11 LEFT FERR MOUNT CONT
 AFTER CONT SCDIMON SAMPLE 412
 21 SCOOPS 0900-0911
 GPS E 668488.98 N 4168134.15

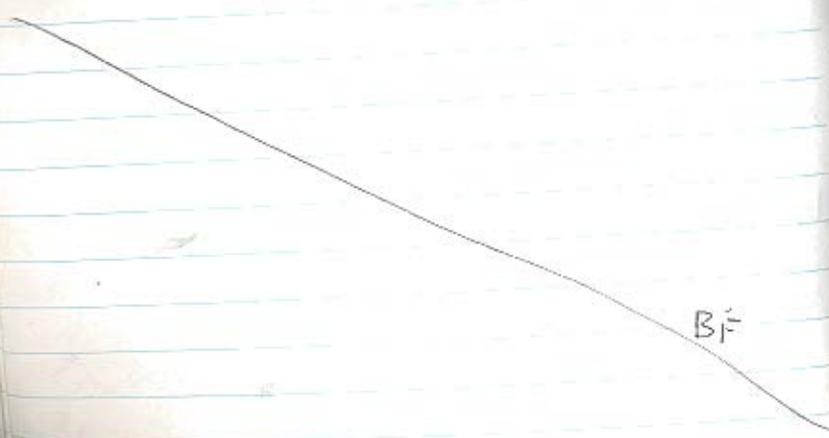
COMINCO PROPERTY @ PECAN DITCH
 SAMPLE # H₂O 1106513 @ 1046
 DUP 1106514 @ 1046

Temp °C	ORP mV	pH	COND S
23.9	108	7.49	2.07

SCDIMON SAMPLE 413 15 SCOOPS 1047-1103
 DUP 414 15 SCOOPS

GPS E 667238.36 N 4166556.07

WHICH DITCH CAME IN WAS VERY ORANGE
 WAS DRY ABOVE THAT POINT (UPSTREAM)



Bif



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
 Tape sealed and initialed _____
 Shipped _____
 X Hand Delivered _____
 Total No. Of Containers: 4
 Carrier: _____
 By: _____

Collector's Name: Ken Hannon
 (Please Print)

LAB USE ONLY!

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one)
 MDC DHSS Other: _____

Laboratory ID: 110929003
 Location: B21

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106563 (Sample A)	Date: 8/31/11	✓ Total metals (Pb, Zn, Cd, Ni, As, Cu).	<u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> <u>Soil</u> Organic Sludge Other:	Soz CG	None	1
For Lab Use Only AB60983	Time: 1046							
1106564 (Sample B)	Date: 8/31/11	Total metals (Pb, Zn, Cd, Ni, As, Cu).	<u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> <u>Soil</u> Organic Sludge Other:	Soz CG	None	1
For Lab Use Only AB60984	Time: 1046							
1106565 (Sample C)	Date: 8/30/11	Total metals (Pb, Zn, Cd, Ni, As, Cu).	<u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> <u>Soil</u> Organic Sludge Other:	Soz CG	None	1
For Lab Use Only AB60985	Time: 1025							
1106566 (Sample D)	Date: 8/29/11	Total metals (Pb, Zn, Cd, Ni, As, Cu).	<u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> <u>Soil</u> Organic Sludge Other:	Soz CG	None	1
For Lab Use Only AB60986	Time: 1201							

Relinquished By: <u>Ken Hannon</u>	Received By: <u>[Signature]</u>	Date: <u>9/29/11</u>	Time: <u>0947</u>
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVID	Job Code: None		Sample Reference ID: 413
Facility ID:	Site/Study Name: NRD Viburnum		County: Reynolds		
Sample Comment (where and how the sample was collected): Grab <u>Composite</u> Modified Other: Sediment ^{sample} grab from left fork Neals Creek Loc. 413, 1106563.					
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	EPE (meters)
					PDOP
Sample Event Type: (circle one)					Sample Type: (circle one)
Bypass/SSO					Air <u>Soil</u>
Complaint					Container Spill
Emergency Response					Discharge Storm Water
Inspection					Groundwater Surface Water
<u>Investigation</u>					Organic Wipes
Monitoring					Sediment
Special Project					Sludge
					Drinking Water Supply

Sample B		LDPR: FEVID	Job Code: None		Sample Reference ID: 414
Facility ID:	Site/Study Name: NRD Viburnum		County: Reynolds		
Sample Comment (where and how the sample was collected): Grab <u>Composite</u> Modified Other: Sediment ^{sample} grab from left fork Neals Creek, 414, 1106564.					
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	EPE (meters)
					PDOP
Sample Event Type: (circle one)					Sample Type: (circle one)
Bypass/SSO					Air <u>Soil</u>
Complaint					Container Spill
Emergency Response					Discharge Storm Water
Inspection					Groundwater Surface Water
<u>Investigation</u>					Organic Wipes
Monitoring					Sediment
Special Project					Sludge
					Drinking Water Supply

Sample C		LDPR: FEVID	Job Code: None		Sample Reference ID: 105
Facility ID:	Site/Study Name: NRD Viburnum		County:		
Sample Comment (where and how the sample was collected): Grab <u>Composite</u> Modified Other: Sediment sample from Cooked Creek, 105, 1106565.					
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	EPE (meters)
					PDOP
Sample Event Type: (circle one)					Sample Type: (circle one)
Bypass/SSO					Air <u>Soil</u>
Complaint					Container Spill
Emergency Response					Discharge Storm Water
Inspection					Groundwater Surface Water
<u>Investigation</u>					Organic Wipes
Monitoring					Sediment
Special Project					Sludge
					Drinking Water Supply

Sample D		LDPR: FEVID	Job Code: None		Sample Reference ID: 301
Facility ID:	Site/Study Name: NRD Viburnum		County:		
Sample Comment (where and how the sample was collected): Grab <u>Composite</u> Modified Other: Sediment sample from Bills Creek, 301, 1106566.					
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	EPE (meters)
					PDOP
Sample Event Type: (circle one)					Sample Type: (circle one)
Bypass/SSO					Air <u>Soil</u>
Complaint					Container Spill
Emergency Response					Discharge Storm Water
Inspection					Groundwater Surface Water
<u>Investigation</u>					Organic Wipes
Monitoring					Sediment
Special Project					Sludge
					Drinking Water Supply

Remarks:
M 72.6°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed _____
Shipped _____
Hand Delivered _____
Total No. Of Containers: 2
Carrier: _____
By: _____

Collector's Name: Ken Hannon
(Please Print)
Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other:

LAB USE ONLY!
Laboratory ID: 110929003
Location: B21

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106567 (Sample A) For Lab Use Only AB60987	Date: 8/30/11 Time: 1248	Total metals (Pb, Zn, Cd, Ni, As, Cu).	(circle one) None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	8oz CG	None	1
1106568 (Sample B) For Lab Use Only AB60988	Date: 8/30/11 Time: 1645	Total metals (Pb, Zn, Cd, Ni, As, Cu).	(circle one) None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	8oz CG	None	1
(Sample C) For Lab Use Only	Date: Time:		None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:			
(Sample D) For Lab Use Only	Date: Time:		None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:			

Relinquished By: <u>Ken Hannon</u>	Received By: <u>[Signature]</u>	Date: <u>9/29/11</u>	Time: <u>0947</u>
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code: None		Sample Reference ID: 208	
Facility ID:		Site/Study Name: NRD Viburnum		County:		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
Sample Comment (where and how the sample was collected):		Grab <u>Composite</u> Modified Other:				Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	<i>(circle one)</i> EPE (meters) PDOP		

Sediment sample from Indian Creek. Loc # 208, 1106567

Sample B		LDPR: FEV.B	Job Code: None		Sample Reference ID: 309	
Facility ID:		Site/Study Name: NRD Viburnum		County:		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
Sample Comment (where and how the sample was collected):		Grab <u>Composite</u> Modified Other:				Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	<i>(circle one)</i> EPE (meters) PDOP		

Sediment sample from Tom's Creek Loc # 309, 1106568.

Sample C		LDPR:	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name:		County:		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected):		Grab Composite Modified Other:				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	<i>(circle one)</i> EPE (meters) PDOP		

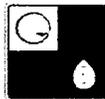
Sample D		LDPR:	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name:		County:		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected):		Grab Composite Modified Other:				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	<i>(circle one)</i> EPE (meters) PDOP		

Remarks:

at 22.6°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed _____ Total No. Of Containers: _____
Shipped _____ Carrier: _____
X Hand Delivered _____ By: _____

Collector's Name: Kenneth Hannon

(Please Print)
Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one)
MDC DHSS Other:

LAB USE ONLY!

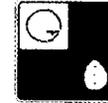
Laboratory ID: 111024004
Location: A12

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106569 (Sample A)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	<u>None</u> Cl ₂ UV	D.O. Flow pH Cond.	Water <u>Soil</u> Organic	8oz CG	None	1
For Lab Use Only AB62182	Time: 0955		Ozone Other:	Temp. Other:	Sludge Other:			
1106570 (Sample B)	Date: —	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	<u>None</u> Cl ₂ UV	D.O. Flow pH Cond.	Water <u>Soil</u> Organic	8oz CG	None	1
For Lab Use Only AB62183	Time: —		Ozone Other:	Temp. Other:	Sludge Other:			
1106571 (Sample C)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	<u>None</u> Cl ₂ UV	D.O. Flow pH Cond.	Water <u>Soil</u> Organic	8oz CG	None	1
For Lab Use Only AB62184	Time: 1450		Ozone Other:	Temp. Other:	Sludge Other:			
1106572 (Sample D)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	<u>None</u> Cl ₂ UV	D.O. Flow pH Cond.	Water <u>Soil</u> Organic	8oz CG	None	1
For Lab Use Only AB62185	Time: 1509		Ozone Other:	Temp. Other:	Sludge Other:			

Relinquished By: Kenneth Hannon	Received By: <i>Dally</i>	Date: 10/24/11	Time: 1542
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR: FEVIB	Job Code: None	Sample Reference ID: 308
Facility ID:	Site/Study Name: Viburnum NRD Site	County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
Sample Comment (where and how the sample was collected): Sediment sample from Tom's Creek along C.R. 900.		Grab <u>Composite</u> Modified Other:	Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP

Sample B	LDPR: FEVIB	Job Code: None	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum NRD Site	County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
Sample Comment (where and how the sample was collected): Blind Replicate.		Grab <u>Composite</u> Modified Other:	Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP

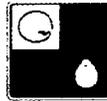
Sample C	LDPR: FEVIB	Job Code: None	Sample Reference ID: 161
Facility ID:	Site/Study Name: Viburnum NRD Site	County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
Sample Comment (where and how the sample was collected): Sediment sample Mill Rock Creek, Carter property.		Grab <u>Composite</u> Modified Other:	Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP

Sample D	LDPR: FEVIB	Job Code: None	Sample Reference ID: 303
Facility ID:	Site/Study Name: Viburnum NRD Site	County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
Sample Comment (where and how the sample was collected): Sediment sample Bill's Creek, below all Dvc Run outfalls.		Grab <u>Composite</u> Modified Other:	Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP

Remarks:
22.7^{0c}



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
 Total No. Of Containers: _____
 Tape sealed and initialed _____
 Shipped _____
 Carrier: _____
 By: _____
 Hand Delivered

Collector's Name: Kenneth Hannon

(Please Print)
 Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one) MDC DHSS Other:

LAB USE ONLY!

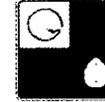
Laboratory ID: 111024004
 Location: A12

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106573 (Sample A)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	None Cl ₂ UV	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	8oz CG	None	1
For Lab Use Only AB62186	Time: 1045		Ozone Other:					
1106574 (Sample B)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	None Cl ₂ UV	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	8oz CG	None	1
For Lab Use Only AB62187	Time: 1559		Ozone Other:					
1106575 (Sample C)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	None Cl ₂ UV	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	8oz CG	None	1
For Lab Use Only AB62188	Time: 1335		Ozone Other:					
1106576 (Sample D)	Date: 8/31/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	None Cl ₂ UV	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	8oz CG	None	1
For Lab Use Only AB62189	Time: 1047		Ozone Other:					

Relinquished By: Kenneth Hannon	Received By: [Signature]	Date: 10/24/11	Time: 1542
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEVIB	Job Code:	None	Sample Reference ID:	406
Facility ID:	Site/Study Name:		Viburnum NRD Site	County:	Sample Event Type: (circle one)	Sample Type: (circle one)
Sample Comment (where and how the sample was collected):				Grab <u>Composite</u> Modified Other:	Bypass/SSO	Air <u>Soil</u>
Sediment sample Sweetwater Creek, Doc Run property.					Complaint	Container Spill
					Emergency Response	Discharge Storm Water
					Inspection	Groundwater Surface Water
					<u>Investigation</u>	Organic Wipes
					Monitoring	Sediment
					Special Project	Sludge
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	EPE (meters)	Drinking Water Supply
					PDOP	

Sample B	LDPR:	FEVIB	Job Code:	None	Sample Reference ID:	210
Facility ID:	Site/Study Name:		Viburnum NRD Site	County:	Sample Event Type: (circle one)	Sample Type: (circle one)
Sample Comment (where and how the sample was collected):				Grab <u>Composite</u> Modified Other:	Bypass/SSO	Air <u>Soil</u>
Sediment sample Middle Fork Black River, C.R. 65 curve next to stream.					Complaint	Container Spill
					Emergency Response	Discharge Storm Water
					Inspection	Groundwater Surface Water
					<u>Investigation</u>	Organic Wipes
					Monitoring	Sediment
					Special Project	Sludge
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	EPE (meters)	Drinking Water Supply
					PDOP	

Sample C	LDPR:	FEVIB	Job Code:	None	Sample Reference ID:	407 (4)
Facility ID:	Site/Study Name:		Viburnum NRD Site	County:	Sample Event Type: (circle one)	Sample Type: (circle one)
Sample Comment (where and how the sample was collected):				Grab <u>Composite</u> Modified Other:	Bypass/SSO	Air <u>Soil</u>
Sediment sample Bee Fork, Doc Run property.					Complaint	Container Spill
					Emergency Response	Discharge Storm Water
					Inspection	Groundwater Surface Water
					<u>Investigation</u>	Organic Wipes
					Monitoring	Sediment
					Special Project	Sludge
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	EPE (meters)	Drinking Water Supply
					PDOP	

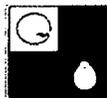
Sample D	LDPR:	FEVIB	Job Code:	None	Sample Reference ID:	413
Facility ID:	Site/Study Name:		Viburnum NRD Site	County:	Sample Event Type: (circle one)	Sample Type: (circle one)
Sample Comment (where and how the sample was collected):				Grab <u>Composite</u> Modified Other:	Bypass/SSO	Air <u>Soil</u>
Sediment sample Left Fork Neal's Creek, Cominco property.					Complaint	Container Spill
					Emergency Response	Discharge Storm Water
					Inspection	Groundwater Surface Water
					<u>Investigation</u>	Organic Wipes
					Monitoring	Sediment
					Special Project	Sludge
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	EPE (meters)	Drinking Water Supply
					PDOP	

Remarks:

22.7°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
 Total No. Of Containers: _____
 Tape sealed and initialed _____
 Shipped _____
 Carrier: _____
 X Hand Delivered By: _____

Collector's Name: Kenneth Hannon

(Please Print)
 Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one) MDC DHSS Other:

LAB USE ONLY!

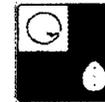
Laboratory ID: 111024004
 Location: A12

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106577 (Sample A)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	(circle one) <u>None</u> Cl ₂ UV	D.O. Flow pH Cond.	Water <u>Soil</u> Organic	8oz CG	None	1
For Lab Use Only AB62190	Time: 1645		Ozone Other:	Temp. Other:	Sludge Other:			
1106578 (Sample B)	Date: 8/31/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	(circle one) <u>None</u> Cl ₂ UV	D.O. Flow pH Cond.	Water <u>Soil</u> Organic	8oz CG	None	1
For Lab Use Only AB62191	Time: 1022		Ozone Other:	Temp. Other:	Sludge Other:			
1106579 (Sample C)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	(circle one) <u>None</u> Cl ₂ UV	D.O. Flow pH Cond.	Water <u>Soil</u> Organic	8oz CG	None	1
For Lab Use Only AB62192	Time: 1620		Ozone Other:	Temp. Other:	Sludge Other:			
1106580 (Sample D)	Date: 8/31/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	(circle one) <u>None</u> Cl ₂ UV	D.O. Flow pH Cond.	Water <u>Soil</u> Organic	8oz CG	None	1
For Lab Use Only AB62193	Time: 0830		Ozone Other:	Temp. Other:	Sludge Other:			

Relinquished By: Kenneth Hannon	Received By: <i>Dick Rife</i>	Date: 10/24/11	Time: 1542
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code: None	Sample Reference ID: 203
Facility ID:		Site/Study Name: Viburnum NRD Site		County:
Sample Comment (where and how the sample was collected): Grab Composite Modified Other: Sediment ^{sample} grab Indran Creek, mile 3 on Doe Run property				Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP
				Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply

Sample B		LDPR: FEVIB	Job Code: None	Sample Reference ID: 109 107
Facility ID:		Site/Study Name: Viburnum NRD Site		County:
Sample Comment (where and how the sample was collected): Grab Composite Modified Other: Sediment sample Cracked Mill Rock ^{CR} Creek, Seller's property.				Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP
				Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply

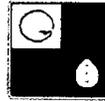
Sample C		LDPR: FEVIB	Job Code: None	Sample Reference ID: 102
Facility ID:		Site/Study Name: Viburnum NRD Site		County:
Sample Comment (where and how the sample was collected): Grab Composite Modified Other: Sediment Sample Mill Rock Creek, Doe Run property.				Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP
				Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply

Sample D		LDPR: FEVIB	Job Code: None	Sample Reference ID: 314
Facility ID:		Site/Study Name: Viburnum NRD Site		County:
Sample Comment (where and how the sample was collected): Grab Composite Modified Other: Sediment sample Neal's fork, north of C.R. 66 crossing downstream - most sample				Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP
				Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply

Remarks:
22.7°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
 Tape sealed and initialed _____
 Shipped _____
 X Hand Delivered _____
 Total No. Of Containers: 1
 Carrier: _____
 By: _____

Collector's Name: Kenneth Hannon
 (Please Print)
 Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one) MDC DHSS Other:

LAB USE ONLY!

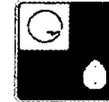
Laboratory ID: 111024004
 Location: A12

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
11065B1 (Sample A)	Date: 8/21/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	(circle one) None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	8oz CG	None	1
For Lab Use Only AB62194	Time: 1111							
(Sample B)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:			
For Lab Use Only	Time:							
(Sample C)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:			
For Lab Use Only	Time:							
(Sample D)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn).	None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:			
For Lab Use Only	Time:							

Relinquished By: <u>Kenneth Hannon</u>	Received By: <u>Dave R...</u>	Date: <u>10/24/11</u>	Time: <u>1542</u>
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR: FEVIB	Job Code: None	Sample Reference ID: 317
Facility ID:	Site/Study Name: Viburnum NRD Site	County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
Sample Comment (where and how the sample was collected): Grab Composite Modified Other: Sediment sample Neal's Creek, Asher property.			Sample Type: (circle one) Air <u>Soil</u> Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP

Sample B	LDPR: FEVIB	Job Code: None	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum NRD Site	County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Grab Composite Modified Other:			Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP

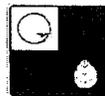
Sample C	LDPR: FEVIB	Job Code: None	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum NRD Site	County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Grab Composite Modified Other:			Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP

Sample D	LDPR: FEVIB	Job Code: None	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum NRD Site	County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Grab Composite Modified Other:			Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one) EPE (meters) PDOP

Remarks:
22.7°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Tape sealed and initialed

Shipped

Hand Delivered

Description of Delivery

Total No. Of Containers: 4

Carrier: _____

By: _____

Collector's Name:

(Please Print)

Kenneth Hannon

Affiliation:

KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
MDC DHSS Other:

(circle one)

LAB USE ONLY!

Laboratory ID:

111213004

Location:

B25

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106597 (Sample A)	Date: <u>8/30/11</u>	Total Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
For Lab Use Only	Time: <u>1220</u>							
<u>ABG3372</u>								
1106598 (Sample B)	Date: <u>8/30/11</u>	Total Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
For Lab Use Only	Time: <u>1145</u>							
<u>ABG3373</u>								
1106599 (Sample C)	Date: <u>8/29/11</u>	Total Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
For Lab Use Only	Time: <u>1615</u>							
<u>ABG3374</u>								
1106600 (Sample D)	Date: <u>8/29/11</u>	Total Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
For Lab Use Only	Time: <u>1500</u>							
<u>ABG3375</u>								

Relinquished By:

Kenneth Hannon

Received By:

Dick [Signature]

Date:

12/13/11

Time:

1224

Relinquished By:

Received By:

Date:

Time:

Relinquished By:

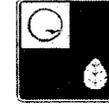
Received By:

Date:

Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code: None	Sample Reference ID: 106
Facility ID:	Site/Study Name: Viburnum NRD Site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment Sample from Crooked Creek, Turnbaugh property, #60 Grab <u>Composite</u> Modified Other: #60 #60 sieve.				Sample Type: (circle one)
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample B		LDPR: FEVIB	Job Code: None	Sample Reference ID: 407
Facility ID:	Site/Study Name: Viburnum NRD Site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment Sample from Sweetwater Creek, Doe Run property at C.R. 75B, Grab <u>Composite</u> Modified Other: #60 sieve.				Sample Type: (circle one)
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample C		LDPR: FEVIB	Job Code: None	Sample Reference ID: 202
Facility ID:	Site/Study Name: Viburnum NRD Site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Indian Creek, upstream of Mining Facility Road, #60 Grab <u>Composite</u> Modified Other: sieve.				Sample Type: (circle one)
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample D		LDPR: FEVIB	Job Code: None	Sample Reference ID: 201
Facility ID:	Site/Study Name: Viburnum NRD Site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Indian Creek, mile 1, #60 sieve.				Sample Type: (circle one)
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Remarks:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery

Tape sealed and initialed

Total No. Of Containers: 4

Shipped

Carrier: _____

Hand Delivered

By: _____

Collector's Name: Kenneth Hannon
(Please Print)
Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESR MoDOT
(circle one)
MDC DHSS Other:

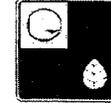
LAB USE ONLY!
Laboratory ID: 11L213004
Location: B25

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
<u>1106601</u> (Sample A)	Date: <u>8/29/11</u>	<u>Total Metals</u> (As, Cu, Cd, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
<u>AB63376</u>	Time: <u>1333</u>							
<u>1106602</u> (Sample B)	Date: <u>8/31/11</u>	<u>Total Metals</u> (As, Cu, Cd, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
<u>AB63377</u>	Time: <u>1227</u>							
<u>1106603</u> (Sample C)	Date: <u>8/30/11</u>	<u>Total Metals</u> (As, Cu, Cd, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
<u>AB63378</u>	Time: <u>0945</u>							
<u>1106604</u> (Sample D)	Date: <u>8/30/11</u>	<u>Total Metals</u> (As, Cu, Cd, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
<u>AB63379</u>	Time: <u>1620</u>							

Relinquished By: <u>Kenneth Hannon</u>	Received By: <u>Dul R. J.</u>	Date: <u>12/13/11</u>	Time: <u>1224</u>
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEV13	Job Code: None	Sample Reference ID: 302
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Bill's Creek, east bank, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO
GPS Coordinates (UTM Zone 15 NAD83 Only)				Complaint
X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Emergency Response
			PDOP	Inspection
				<u>Investigation</u>
				Monitoring
				Special Project
				Air
				Soil
				Container
				Spill
				Discharge
				Storm Water
				Groundwater
				Surface Water
				Organic
				Wipes
				<u>Sediment</u>
				Sludge
				Drinking Water Supply

Sample B		LDPR: FEV13	Job Code: None	Sample Reference ID: 215
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Neal's Creek, near CR. 79, #60 sieve				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO
GPS Coordinates (UTM Zone 15 NAD83 Only)				Complaint
X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Emergency Response
			PDOP	Inspection
				<u>Investigation</u>
				Monitoring
				Special Project
				Air
				Soil
				Container
				Spill
				Discharge
				Storm Water
				Groundwater
				Surface Water
				Organic
				Wipes
				<u>Sediment</u>
				Sludge
				Drinking Water Supply

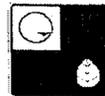
Sample C		LDPR: FEV13	Job Code: None	Sample Reference ID: 206
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Indian Creek, mile 5, Doe Run property, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO
GPS Coordinates (UTM Zone 15 NAD83 Only)				Complaint
X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Emergency Response
			PDOP	Inspection
				<u>Investigation</u>
				Monitoring
				Special Project
				Air
				Soil
				Container
				Spill
				Discharge
				Storm Water
				Groundwater
				Surface Water
				Organic
				Wipes
				<u>Sediment</u>
				Sludge
				Drinking Water Supply

Sample D		LDPR: FEV13	Job Code: None	Sample Reference ID: 108
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Crooked Creek, Pryor property, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO
GPS Coordinates (UTM Zone 15 NAD83 Only)				Complaint
X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Emergency Response
			PDOP	Inspection
				<u>Investigation</u>
				Monitoring
				Special Project
				Air
				Soil
				Container
				Spill
				Discharge
				Storm Water
				Groundwater
				Surface Water
				Organic
				Wipes
				<u>Sediment</u>
				Sludge
				Drinking Water Supply

Remarks:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed _____
Shipped _____
 Hand Delivered _____
Total No. Of Containers: 4
Carrier: _____
By: _____

Collector's Name: Kenneth Hannon
(Please Print)
Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one)
MDC DHSS Other:

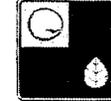
LAB USE ONLY!
Laboratory ID: 111213004
Location: B25

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
<u>1106605</u> (Sample A)	Date: <u>8/30/11</u>	<u>Total Metals</u> (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
<u>AB63380</u>	For Lab Use Only Time: <u>0830</u>							
<u>1106606</u> (Sample B)	Date: <u>8/31/11</u>	<u>Total Metals</u> (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
<u>AB63381</u>	For Lab Use Only Time: <u>1450</u>							
<u>1106607</u> (Sample C)	Date: <u>8/30/11</u>	<u>Total Metals</u> (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
<u>AB63382</u>	For Lab Use Only Time: <u>1645</u>							
<u>1106608</u> (Sample D)	Date: <u>8/29/11</u>	<u>Total Metals</u> (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water <u>Soil</u> Organic Sludge Other:	<u>bag</u>	<u>None</u>	<u>1</u>
<u>AB63383</u>	For Lab Use Only Time: <u>1710</u>							

Relinquished By: <u>Kenneth Hannon</u>	Received By: <u>[Signature]</u>	Date: <u>12/13/11</u>	Time: <u>1224</u>
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code: None	Sample Reference ID: 205
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Indian Creek, mile 4, Doe Run property, #60 sieve.				Sample Type: (circle one)
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)
				EPE (meters) PDOP
				<input type="checkbox"/> Bypass/SSO <input type="checkbox"/> Complaint <input type="checkbox"/> Emergency Response <input type="checkbox"/> Inspection <input checked="" type="checkbox"/> Investigation <input type="checkbox"/> Monitoring <input type="checkbox"/> Special Project
				<input type="checkbox"/> Air <input type="checkbox"/> Container <input type="checkbox"/> Discharge <input type="checkbox"/> Groundwater <input checked="" type="checkbox"/> Organic <input checked="" type="checkbox"/> Sediment <input type="checkbox"/> Sludge <input type="checkbox"/> Drinking Water Supply

Sample B		LDPR: FEVIB	Job Code: None	Sample Reference ID: 110
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Crooked Creek, Doe Run property, #60 sieve.				Sample Type: (circle one)
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)
				EPE (meters) PDOP
				<input type="checkbox"/> Bypass/SSO <input type="checkbox"/> Complaint <input type="checkbox"/> Emergency Response <input type="checkbox"/> Inspection <input checked="" type="checkbox"/> Investigation <input type="checkbox"/> Monitoring <input type="checkbox"/> Special Project
				<input type="checkbox"/> Air <input type="checkbox"/> Container <input type="checkbox"/> Discharge <input type="checkbox"/> Groundwater <input type="checkbox"/> Organic <input checked="" type="checkbox"/> Sediment <input type="checkbox"/> Sludge <input type="checkbox"/> Drinking Water Supply

Sample C		LDPR: FEVIB	Job Code: None	Sample Reference ID: 305
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Bill's Creek, downstream of BC CD3 outfall, #60 sieve.				Sample Type: (circle one)
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)
				EPE (meters) PDOP
				<input type="checkbox"/> Bypass/SSO <input type="checkbox"/> Complaint <input type="checkbox"/> Emergency Response <input type="checkbox"/> Inspection <input checked="" type="checkbox"/> Investigation <input type="checkbox"/> Monitoring <input type="checkbox"/> Special Project
				<input type="checkbox"/> Air <input type="checkbox"/> Container <input type="checkbox"/> Discharge <input type="checkbox"/> Groundwater <input type="checkbox"/> Organic <input checked="" type="checkbox"/> Sediment <input type="checkbox"/> Sludge <input type="checkbox"/> Drinking Water Supply

Sample D		LDPR: FEVIB	Job Code: None	Sample Reference ID: 204
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Indian Creek, Doe Run property, #60 sieve.				Sample Type: (circle one)
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)
				EPE (meters) PDOP
				<input type="checkbox"/> Bypass/SSO <input type="checkbox"/> Complaint <input type="checkbox"/> Emergency Response <input type="checkbox"/> Inspection <input checked="" type="checkbox"/> Investigation <input type="checkbox"/> Monitoring <input type="checkbox"/> Special Project
				<input type="checkbox"/> Air <input type="checkbox"/> Container <input type="checkbox"/> Discharge <input type="checkbox"/> Groundwater <input type="checkbox"/> Organic <input checked="" type="checkbox"/> Sediment <input type="checkbox"/> Sludge <input type="checkbox"/> Drinking Water Supply

Remarks:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Tape sealed and initialed
Shipped
 Hand Delivered

Description of Delivery
Total No. Of Containers: 4
Carrier:
By:

Collector's Name: Kenneth Hannon
(Please Print)
Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one)
MDC DHSS Other:

LAB USE ONLY!

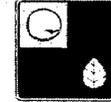
Laboratory ID: 111213004
Location: B25

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106609 (Sample A)	Date: 8/30/11	Total Metals (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> Soil Organic Sludge Other:	<u>bag</u>	<u>None</u>	1
For Lab Use Only AB63384	Time: 1420							
1106610 (Sample B)	Date: 8/29/11	Total Metals (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> Soil Organic Sludge Other:	<u>bag</u>	<u>None</u>	1
For Lab Use Only AB63385	Time: 1201							
1106611 (Sample C)	Date: 8/31/11	Total Metals (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> Soil Organic Sludge Other:	<u>bag</u>	<u>None</u>	1
For Lab Use Only AB63386	Time: 0900							
1106612 (Sample D)	Date: 8/30/11	Total Metals (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> Soil Organic Sludge Other:	<u>bag</u>	<u>None</u>	1
For Lab Use Only AB63389	Time: 0850							

Relinquished By: <u>Kenneth Hannon</u>	Received By: <u>[Signature]</u>	Date: <u>12/13/11</u>	Time: <u>1224</u>
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code: None	Sample Reference ID: 107
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Crooked Creek, Chandler property, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO
GPS Coordinates (UTM Zone 15 NAD83 Only)				Complaint
X Easting	Y Northing	Accuracy	(circle one)	Emergency Response
			EPE (meters)	Inspection
			PDOP	<u>Investigation</u>
				Monitoring
				Special Project
				Air
				Soil
				Container
				Spill
				Discharge
				Storm Water
				Groundwater
				Surface Water
				Organic
				Wipes
				<u>Sediment</u>
				Sludge
				Drinking Water Supply

Sample B		LDPR: FEVIB	Job Code: None	Sample Reference ID: 301
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Bill's Creek, lowermost (downstream) point, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO
GPS Coordinates (UTM Zone 15 NAD83 Only)				Complaint
X Easting	Y Northing	Accuracy	(circle one)	Emergency Response
			EPE (meters)	Inspection
			PDOP	<u>Investigation</u>
				Monitoring
				Special Project
				Air
				Soil
				Container
				Spill
				Discharge
				Storm Water
				Groundwater
				Surface Water
				Organic
				Wipes
				<u>Sediment</u>
				Sludge
				Drinking Water Supply

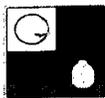
Sample C		LDPR: FEVIB	Job Code: None	Sample Reference ID: 412
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Left Fork of Neal's Creek, COMECO property, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO
GPS Coordinates (UTM Zone 15 NAD83 Only)				Complaint
X Easting	Y Northing	Accuracy	(circle one)	Emergency Response
			EPE (meters)	Inspection
			PDOP	<u>Investigation</u>
				Monitoring
				Special Project
				Air
				Soil
				Container
				Spill
				Discharge
				Storm Water
				Groundwater
				Surface Water
				Organic
				Wipes
				<u>Sediment</u>
				Sludge
				Drinking Water Supply

Sample D		LDPR: FEVIB	Job Code: None	Sample Reference ID: 307
Facility ID:	Site/Study Name: Viburnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Tom's Creek, at West fork confluence, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO
GPS Coordinates (UTM Zone 15 NAD83 Only)				Complaint
X Easting	Y Northing	Accuracy	(circle one)	Emergency Response
			EPE (meters)	Inspection
			PDOP	<u>Investigation</u>
				Monitoring
				Special Project
				Air
				Soil
				Container
				Spill
				Discharge
				Storm Water
				Groundwater
				Surface Water
				Organic
				Wipes
				<u>Sediment</u>
				Sludge
				Drinking Water Supply

Remarks:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Tape sealed and initialed

Shipped

Hand Delivered

Description of Delivery

Total No. Of Containers: 3

Carrier: _____

By: _____

Collector's Name:

Ken Hannon

(Please Print)

Affiliation:

KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
MDC DHSS Other:

(circle one)

LAB USE ONLY!

Laboratory ID:

111213004

Location:

B25

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
<i>1106613</i> (Sample A)	Date: <i>8/30/11</i>	<i>Total metals</i> (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> Soil Organic Sludge Other:	<i>bag</i>	<i>None</i>	<i>1</i>
<i>For Lab Use Only</i> <i>AB63388</i>	Time: <i>1259</i>							
<i>1106614</i> (Sample B)	Date: <i>8/30/11</i>	<i>Total metals</i> (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> Soil Organic Sludge Other:	<i>bag</i>	<i>None</i>	<i>1</i>
<i>For Lab Use Only</i> <i>AB63389</i>	Time: <i>0730</i>							
<i>1106615</i> (Sample C)	Date: <i>8/30/11</i>	<i>Total metals</i> (As, Cd, Cu, Pb, Ni, Zn)	(circle one) <u>None</u> Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	<u>Water</u> Soil Organic Sludge Other:	<i>bag</i>	<i>None</i>	<i>1</i>
<i>For Lab Use Only</i> <i>AB63390</i>	Time: <i>1025</i>							
<i>(Sample D)</i>	Date:		None Cl ₂ UV Ozone Other:	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:			
<i>For Lab Use Only</i>	Time:							

Relinquished By:

Kenneth Hannon

Received By:

Bob Rey

Date:

12/13/11

Time:

1224

Relinquished By:

Received By:

Date:

Time:

Relinquished By:

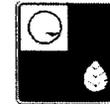
Received By:

Date:

Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code: None	Sample Reference ID: 409
Facility ID:	Site/Study Name: V. burnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Sweetwater Creek, Doe Run property, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP
				Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes <u>Sediment</u> Sludge Drinking Water Supply

Sample B		LDPR: FEVIB	Job Code: None	Sample Reference ID: 104
Facility ID:	Site/Study Name: V. burnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Crooked Creek, low water bridge Cottrell property, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP
				Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes <u>Sediment</u> Sludge Drinking Water Supply

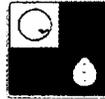
Sample C		LDPR: FEVIB	Job Code: None	Sample Reference ID: 105
Facility ID:	Site/Study Name: V. burnum NRD site		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): Sediment sample from Crooked Creek, Usher property, #60 sieve.				Sample Type: (circle one)
Grab <u>Composite</u> Modified Other:				Bypass/SSO Complaint Emergency Response Inspection <u>Investigation</u> Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP
				Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes <u>Sediment</u> Sludge Drinking Water Supply

Sample D		LDPR:	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name:		County:	Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected):				Sample Type: (circle one)
Grab Composite Modified Other:				Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP
				Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply

Remarks:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
 Total No. Of Containers: _____
 Carrier: _____
 By: _____
 Tape sealed and initialed
 Shipped
 Hand Delivered

Collector's Name: Pam Hackler
 (Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one) MDC DHSS Other:

LAB USE ONLY!

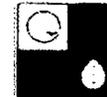
Laboratory ID: 110901132
 Location: B29

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1103341 (Sample A)	Date: 8/29/2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH 8.05 Cond. 644 μ S Temp. 26.0 $^{\circ}$ C Other: ORP 180 mV	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	250 CW	HNO ₃	2
For Lab Use Only AB58908	Time: 1201							
1103342 (Sample B)	Date: 8/29/2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH 8.19 Cond. 668 μ S Temp. 26.8 $^{\circ}$ C Other: ORP 263 mV	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	250 CW	HNO ₃	2
For Lab Use Only AB58909	Time: 1333							
1103343 (Sample C)	Date: 8/29/2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH 8.36 Cond. 689 μ S Temp. 26.6 $^{\circ}$ C Other: ORP 229 mV	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	250 CW	HNO ₃	2
For Lab Use Only AB58910	Time: 1451							
1103344 (Sample D)	Date: 8/29/2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH Cond. Temp. Other:	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	250 CW	HNO ₃	2
For Lab Use Only AB58911	Time: N/A							

Relinquished By: <i>[Signature]</i>	Received By: <i>[Signature]</i>	Date: 9/1/11	Time: 1017
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEVIB	Job Code:	Sample Reference ID: 301
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Bill's creek (demo sample) most downstream point at road crossing			Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>	Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 664303.39	Y Northing 4152259.77	Accuracy (circle one)	EPE (meters) PDOP

Sample B	LDPR:	FEVIB	Job Code:	Sample Reference ID: 302
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Bills creek, slow running area on east bank			Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>	Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 664406.16	Y Northing 4153003.79	Accuracy (circle one)	EPE (meters) PDOP

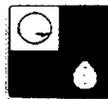
Sample C	LDPR:	FEVIB	Job Code:	Sample Reference ID: 303
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Bill's creek, below all Doe Run outfalls			Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>	Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 664169.59	Y Northing 4154422.64	Accuracy (circle one)	EPE (meters) PDOP

Sample D	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Blind Duplicate			Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>	Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Remarks:
Sample #s 1103341 - 11033424 **31°C** **Page 1 of 1**



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery

Tape sealed and initialed
Shipped
 Hand Delivered

Total No. Of Containers: _____

Carrier: _____

By: _____

Collector's Name: Pam Hackler

(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other: _____

LAB USE ONLY!

Laboratory ID:

110901132

Location:

B29

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1103345 (Sample A)	Date: 8/29 2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH 8.08 Cond. 490 μ S Temp. 25.6 $^{\circ}$ C Other: ORP 305 mV	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	250 CN	HNO ₃	2
For Lab Use Only AB58912	Time: 1525							
1103346 (Sample B)	Date: 8/29/ 2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH 7.53 Cond. 458 μ S Temp. 24.0 $^{\circ}$ C Other: ORP 690 mV	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	250 CN	HNO ₃	2
For Lab Use Only AB58913	Time: 1635							
1103347 (Sample C)	Date: 8/29 2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH 7.97 Cond. 399 μ S Temp. 24.2 $^{\circ}$ C Other: ORP	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	250 CN	HNO ₃	2
For Lab Use Only AB58914	Time: 1711							
1103348 (Sample D)	Date: 8/30 2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH 8.17 Cond. 269 μ S Temp. 20.2 $^{\circ}$ C Other:	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	250 CN	HNO ₃	2
For Lab Use Only AB58915	Time: 0834							

Relinquished By: *[Signature]*

Received By: *[Signature]*

Date: 9/1/11

Time: 1017

Relinquished By:

Received By:

Date:

Time:

Relinquished By:

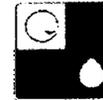
Received By:

Date:

Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEVIB	Job Code:	Sample Reference ID: 304
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Bills creek, above last Doe Run outfall - BC-001				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	664108.64	4154673.01		

Sample B	LDPR:	FEVIB	Job Code:	Sample Reference ID: 305
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Bills creek, just downstream of BC-003 outfall				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
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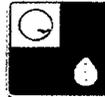
Sample C	LDPR:	FEVIB	Job Code:	Sample Reference ID: 306
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Bills creek, upstream of BC-003 outfall				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	663545.04	4155706.21		

Sample D	LDPR:	FEVIB	Job Code:	Sample Reference ID: 307
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Tom's creek at west fork confluence				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	667002.06	4151358.59		

Remarks:
Sample #s 1103345-1103348 3.1.06 Page 2 of 6



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery

Tape sealed and initialed

Total No. Of Containers: _____

Shipped

Carrier: _____

Hand Delivered

By: _____

Collector's Name: Pam Hackler

(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other: _____

LAB USE ONLY!

Laboratory ID:
110901132

Location:
B29

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1103349 (Sample A)	Date: 8/30 2011 Time: N/A	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH Cond. Temp. Other:	Water	250 CN	HNO ₃	2
For Lab Use Only AB58916			Cl ₂ UV Ozone Other:					
1103350 (Sample B)	Date: 8/30 2011 Time: 0947	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH Cond. Temp. Other:	Water	250 CN	HNO ₃	2
For Lab Use Only AB58917			Cl ₂ UV Ozone Other:	7.89 260 μ S 22.0 $^{\circ}$ C				
1103351 (Sample C)	Date: 8/30 2011 Time: 1045	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH Cond. Temp. Other:	Water	250 CN	HNO ₃	2
For Lab Use Only AB58918			Cl ₂ UV Ozone Other:	8.13 299 μ S 20.5 $^{\circ}$ C				
1103352 (Sample D)	Date: 8/30 2011 Time: 1126	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH Cond. Temp. Other:	Water	250 CN	HNO ₃	2
For Lab Use Only AB58919			Cl ₂ UV Ozone Other:	8.07 $^{\circ}$ C 287 μ S 21.5 $^{\circ}$ C				

Relinquished By: *Pam Hackler*

Relinquished By: _____

Relinquished By: _____

Received By: *Ann Rj*

Received By: _____

Received By: _____

Date: 8/11/11

Date: _____

Date: _____

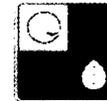
Time: 1017

Time: _____

Time: _____



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEVIB	Job Code:		Sample Reference ID:
Facility ID:	Site/Study Name:		Viburnum Trend Lead Mining Sites	County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Blind Duplicate					Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP	

Sample B	LDPR:	FEVIB	Job Code:		Sample Reference ID: 308
Facility ID:	Site/Study Name:		Viburnum Trend Lead Mining Sites	County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Tom's creek at CR 900, gully, 3/4 mile upstream of confluence					Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP	

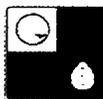
Sample C	LDPR:	FEVIB	Job Code:		Sample Reference ID: 309
Facility ID:	Site/Study Name:		Viburnum Trend Lead Mining Sites	County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Tom's creek, private drive of CR 909, Bob Jordan Property					Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP	

Sample D	LDPR:	FEVIB	Job Code:		Sample Reference ID: 310
Facility ID:	Site/Study Name:		Viburnum Trend Lead Mining Sites	County: Reynolds	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Tom's creek, west side of Gordon Property					Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP	

Remarks:
3106
Samples 1103349 - 1103352
Page 3 of 6



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
 Tape sealed and initialed _____ Total No. Of Containers: _____
 Shipped _____ Carrier: _____
 Hand Delivered By: _____

Collector's Name: Pam Hackler
 (Please Print)
 Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one) MDC DHSS Other:

LAB USE ONLY!

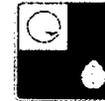
Laboratory ID: 110901132
 Location: B29

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units) ✓	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1103353 (Sample A)	Date: 8/30	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) D.O.		<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	None		Flow					
For Lab Use Only AB58920	Time: 2011		Cl ₂	pH 7.62				
	Time: 1236		UV	Cond. 222 μS				
1103354 (Sample B)	Date: 8/30	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) D.O.		<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	None		Flow					
For Lab Use Only AB58921	Time: 2011		Cl ₂	pH 7.48				
	Time: 1350		UV	Cond. 398				
1103355 (Sample C)	Date: 8/30	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) D.O.		<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	None		Flow					
For Lab Use Only AB58922	Time: 2011		Cl ₂	pH 8.07				
	Time: 1424		UV	Cond. 409 μS				
1103356 (Sample D)	Date: 8/31	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) D.O.		<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	None		Flow					
For Lab Use Only AB58923	Time: 2011		Cl ₂	pH 7.85				
	Time: 0830		UV	Cond. 355 μS				

Relinquished By: <i>Pam Hackler</i>	Received By: <i>Dan [Signature]</i>	Date: 9/1/11	Time: 1017
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code:		Sample Reference ID: 311
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Tom's creek, Carol Jordan property, just downstream of Cow fence.					Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting: 660860.01	Y Northing: 4149338.66	Accuracy	EPE (meters) PDOP	

Sample B		LDPR: FEVIB	Job Code:		Sample Reference ID: 312
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Bill's creek, mass property					Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting: 663055.48	Y Northing: 4156421.85	Accuracy	EPE (meters) PDOP	

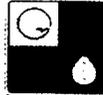
Sample C		LDPR: FEVIB	Job Code:		Sample Reference ID: 313
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Reynolds		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Bill's creek, Holmes Property					Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting: 662709.61	Y Northing: 4158178.60	Accuracy	EPE (meters) PDOP	

Sample D		LDPR: FEVIB	Job Code:		Sample Reference ID: 314
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Iron		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Neal's creek, most downstream point, just north of CR 66 crossing					Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting: 675026.45	Y Northing: 4164042.56	Accuracy	EPE (meters) PDOP	

Remarks: Sample #s 1103353 - 1103356 314 Page 4 of 6



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed _____
Shipped _____
x Hand Delivered _____

Total No. Of Containers: _____
Carrier: _____
By: _____

Collector's Name: Pam Hackler
(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other:

LAB USE ONLY!

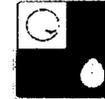
Laboratory ID: 110901132
Location: B29

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1103357 (Sample A)	Date: 8/31 2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow	Water	250 CN	HNO ₃	2
For Lab Use Only	Time: N/A		Cl ₂ UV Ozone Other:	pH Cond. Temp. Other:	Soil Organic Sludge Other:			
1103358 (Sample B)	Date: 8/31 2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow	Water	250 CN	HNO ₃	2
For Lab Use Only	Time: 0948		Cl ₂ UV Ozone Other:	pH 8.03 Cond. 378 μ S Temp. 22.5 °C Other:	Soil Organic Sludge Other:			
1103359 (Sample C)	Date: 8/31 2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow	Water	250 CN	HNO ₃	2
For Lab Use Only	Time: 1037		Cl ₂ UV Ozone Other:	pH 8.22 Cond. 376 μ S Temp. 22.7 °C Other:	Soil Organic Sludge Other:			
1103360 (Sample D)	Date: 8/31 2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow	Water	250 CN	HNO ₃	2
For Lab Use Only	Time: 1111		Cl ₂ UV Ozone Other:	pH 8.32 Cond. 399 μ S Temp. 22.1 °C Other:	Soil Organic Sludge Other:			

Relinquished By: <i>Pam Hackler</i>	Received By: <i>Dan By</i>	Date: 9/1/11	Time: 1017
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Iron	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Duplicate		Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>		Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample B	LDPR:	FEVIB	Job Code:	Sample Reference ID: 315
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Iron	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Neal's creek, south end of Barton property		Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>		Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 673851.07	Y Northing 4166283.31	Accuracy (circle one)	EPE (meters) PDOP

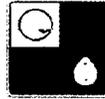
Sample C	LDPR:	FEVIB	Job Code:	Sample Reference ID: 316
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Iron	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Neal's creek, at corner of CR 74 and CR 79, just upstream of confluence of Henderson creek		Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>		Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 672895.20	Y Northing 4167690.51	Accuracy (circle one)	EPE (meters) PDOP

Sample D	LDPR:	FEVIB	Job Code:	Sample Reference ID: 317
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Iron	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Neal's creek, Vernon Asher property		Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>		Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 671987.24	Y Northing 4167699.58	Accuracy (circle one)	EPE (meters) PDOP

Remarks:
Sample #s 1103357-1103360 **317** **Page 5 of 6**



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed _____ Total No. Of Containers: _____
Shipped _____ Carrier: _____
 Hand Delivered By: _____

Collector's Name: Pam Hackler
(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other:

LAB USE ONLY!

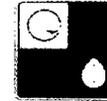
Laboratory ID: 110901132
Location: B29

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units) ✓	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106870 (Sample A)	Date: 8/31/2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	<input type="checkbox"/> None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO3	2
	Cl ₂		pH 8.50					
For Lab Use Only	Time: 1227		UV	Cond. 383 µS				
			Ozone	Temp. 24.1 °C				
			Other:	Other:				
1106871 (Sample B)	Date: 8/31/2011	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	<input type="checkbox"/> None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO3	2
	Cl ₂		pH 8.65					
For Lab Use Only	Time: 1315		UV	Cond. 385 µS				
			Ozone	Temp. 27.2 °C				
			Other:	Other:				
(Sample C)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	<input type="checkbox"/> None	D.O.	Water Soil Organic Sludge Other:			
	Cl ₂		pH					
For Lab Use Only	Time:		UV	Cond.				
			Ozone	Temp.				
			Other:	Other:				
(Sample D)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	<input type="checkbox"/> None	D.O.	Water Soil Organic Sludge Other:			
	Cl ₂		pH					
For Lab Use Only	Time:		UV	Cond.				
			Ozone	Temp.				
			Other:	Other:				

Relinquished By: *Pam Hackler* Received By: *Dan R...* Date: 9/1/11 Time: 1017
Relinquished By: _____ Received By: _____ Date: _____ Time: _____
Relinquished By: _____ Received By: _____ Date: _____ Time: _____



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEVIB	Job Code:	Sample Reference ID: 318
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Iron	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Neals creek, USA property			Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply	
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 669449.28	Y Northing 4168617.42	Accuracy (circle one)	EPE (meters) PDOP

Sample B	LDPR:	FEVIB	Job Code:	Sample Reference ID: 319
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Iron	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): Neals creek near headwaters, Dodson property			Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply	
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 667105.66	Y Northing 4168874.52	Accuracy (circle one)	EPE (meters) PDOP

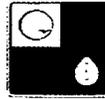
Sample C	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected):			Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply	
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample D	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected):			Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply	
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Remarks:
Sample #s 1106870-1106871 **3.10c** **Page 6 of 6**



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery: 8
 Total No. Of Containers: 8
 Tape sealed and initialed _____
 Shipped _____
 Carrier: _____
 By: _____
 Hand Delivered

Collector's Name: Sean Counihan
 (Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one) MDC DHSS Other:

LAB USE ONLY!

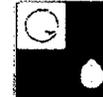
Laboratory ID: 110901130
 Location: B34

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106401 (Sample A)	Date: 8/29/11 Time: 1545 For Lab Use Only: AB58877	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH: 8.21 Cond.: 597 uS Temp.: 25.6 °C Other: ORP 118 mV	<u>Water</u> Soil Organic Sludge Other:	250 CN	HNO ₃	2
1106402 (Sample B)	Date: 8/29/11 Time: 1615 For Lab Use Only: AB58878	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH: 8.09 Cond.: 591 uS Temp.: 25.8 °C Other: ORP 64 mV	<u>Water</u> Soil Organic Sludge Other:	250 CN	HNO ₃	2
1106403 (Sample C)	Date: 8/29/11 Time: 1645 For Lab Use Only: AB58879	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH: 8.03 Cond.: 602 uS Temp.: 25.4 °C Other: ORP 54 mV	<u>Water</u> Soil Organic Sludge Other:	250 CN	HNO ₃	2
1106404 (Sample D)	Date: 8/29/11 Time: 1710 For Lab Use Only: AB58880	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH: 7.89 Cond.: 637 uS Temp.: 24.2 °C Other: ORP 53 mV	<u>Water</u> Soil Organic Sludge Other:	250 CN	HNO ₃	2

Relinquished By:	Received By:	Date: 9/1/11	Time: 0944
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Washington	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Sample # 1106401 Mile 1 from confluence. Goes with sediment sample 201 Indian Creek			Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>	Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample B	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Washington	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Sample # 1106402 Mile 2 just up stream of road crossing past mining facility road. Goes with sediment sample 202			Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>	Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

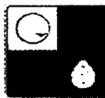
Sample C	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Washington	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Sample # 1106403 Mile 3 Indian Creek off Doe Run haul road where it crosses creek and goes with sediment sample 203 down stream			Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>	Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample D	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: Iron	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation
Sample Comment (where and how the sample was collected): Sample # 1106404 Indian Creek mile 3 off Doe Run haul road where it crosses stream up stream. Goes with sediment sample 204			Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>	Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Remarks:
AP 3.6°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery: 8
 Total No. Of Containers: 8
 Tape sealed and initialed _____
 Shipped _____
 Carrier: _____
 By: _____
 Hand Delivered

Collector's Name: Sean Counihan
 (Please Print)
 Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one) MDC DHSS Other:

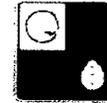
LAB USE ONLY!
 Laboratory ID: 110901130
 Location: B34

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
<u>1106405</u> (Sample A) For Lab Use Only	Date: <u>8/29/11</u>	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) D.O.		<u>Water</u> Soil Organic Sludge Other:	<u>250 CN</u>	<u>HNO₃</u>	<u>2</u>
	None		Flow					
	Time:		Cl ₂	pH <u>8.11</u> <u>SMC</u>				
			UV	Cond. <u>649.25</u>				
			Ozone	Temp. <u>20.0°C</u>				
			Other:	Other: <u>ORP 35mV</u>				
<u>1106406</u> (Sample B) For Lab Use Only	Date: <u>8/30/11</u>	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) D.O.		<u>Water</u> Soil Organic Sludge Other:	<u>250 CN</u>	<u>HNO₃</u>	<u>2</u>
	None		Flow					
	Time:		Cl ₂	pH <u>8.11</u>				
			UV	Cond. <u>647</u>				
			Ozone	Temp. <u>20.0°C</u>				
			Other:	Other: <u>ORP 35mV</u>				
<u>1106407</u> (Sample C) For Lab Use Only	Date: <u>8/30/11</u>	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) D.O.		<u>Water</u> Soil Organic Sludge Other:	<u>250 CN</u>	<u>HNO₃</u>	<u>2</u>
	None		Flow					
	Time:		Cl ₂	pH <u>8.29</u>				
			UV	Cond. <u>701.45</u>				
			Ozone	Temp. <u>19.3°C</u>				
			Other:	Other: <u>ORP 24mV</u>				
<u>1106408</u> (Sample D) For Lab Use Only	Date: <u>8/30/11</u>	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) D.O.		<u>Water</u> Soil Organic Sludge Other:	<u>250 CN</u>	<u>HNO₃</u>	<u>2</u>
	None		Flow					
	Time:		Cl ₂	pH <u>8.42</u>				
			UV	Cond. <u>426.45</u>				
			Ozone	Temp. <u>22.9°C</u>				
			Other:	Other: <u>ORP 12mV</u>				

Relinquished By: <u>[Signature]</u>	Received By: <u>[Signature]</u>	Date: <u>9/1/11</u>	Time: <u>0944</u>
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR:	FEVIB	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name:		County:		Sample Event Type: (circle one)	
		Viburnum Trend Lead Mining Sites		IRON		Bypass/SSO	
Sample Comment (where and how the sample was collected):		Grab		Composite Modified Other:		Complaint	
Sample # 1106405 Blind Duplicate						Emergency Response	
GPS Coordinates		X Easting		Y Northing		Inspection	
(UTM Zone 15 NAD83 Only)						Investigation	
				Accuracy (circle one)		Monitoring	
						Special Project	
				EPE (meters) PDOP		Organic Wipes	
						Sediment	
						Sludge	
						Drinking Water Supply	

Sample B		LDPR:	FEVIB	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name:		County:		Sample Event Type: (circle one)	
		Viburnum Trend Lead Mining Sites		IRON		Bypass/SSO	
Sample Comment (where and how the sample was collected):		Grab		Composite Modified Other:		Complaint	
Sample # 1106406. Upstream from Iron Co Rd/Frank Bay Road. Indian Creek Mile 4. Goes with Sediment Sample 205						Emergency Response	
GPS Coordinates		X Easting		Y Northing		Inspection	
(UTM Zone 15 NAD83 Only)						Investigation	
				Accuracy (circle one)		Monitoring	
						Special Project	
				EPE (meters) PDOP		Organic Wipes	
						Sediment	
						Sludge	
						Drinking Water Supply	

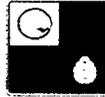
Sample C		LDPR:	FEVIB	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name:		County:		Sample Event Type: (circle one)	
		Viburnum Trend Lead Mining Sites		IRON		Bypass/SSO	
Sample Comment (where and how the sample was collected):		Grab		Composite Modified Other:		Complaint	
Sample # 1106407 Indian Creek Mile 5. UPstream from tailings mound road entrance. Goes with sediment sample 206						Emergency Response	
GPS Coordinates		X Easting		Y Northing		Inspection	
(UTM Zone 15 NAD83 Only)						Investigation	
				Accuracy (circle one)		Monitoring	
						Special Project	
				EPE (meters) PDOP		Organic Wipes	
						Sediment	
						Sludge	
						Drinking Water Supply	

Sample D		LDPR:	FEVIB	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name:		County:		Sample Event Type: (circle one)	
		Viburnum Trend Lead Mining Sites		IRON		Bypass/SSO	
Sample Comment (where and how the sample was collected):		Grab		Composite Modified Other:		Complaint	
Sample 1106408. Goes with sediment sample 207 Indian Creek Mile 6. From Forest Service road "Fargo" & CR 82 & Hwy 32						Emergency Response	
GPS Coordinates		X Easting		Y Northing		Inspection	
(UTM Zone 15 NAD83 Only)						Investigation	
				Accuracy (circle one)		Monitoring	
						Special Project	
				EPE (meters) PDOP		Organic Wipes	
						Sediment	
						Sludge	
						Drinking Water Supply	

Remarks: OK 3.6°C							
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MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery

Tape sealed and initialed
Shipped
 Hand Delivered

Total No. Of Containers: 2

Carrier: _____

By: _____

Collector's Name: Sean Counihan

(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other:

LAB USE ONLY!

Laboratory ID:
110901130

Location:
B34

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106409 (Sample A)	Date: <u>8/30/11</u> Time: _____	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. _____ Flow _____ pH _____ Cond. _____ Temp. _____ Other: _____	<u>Water</u> Soil _____ Organic _____ Sludge _____ Other: _____	<u>250 CN</u>	<u>HNO₃</u>	<u>2</u>
For Lab Use Only <u>AB58885</u>	Date: _____ Time: _____							
1106410 (Sample B)	Date: <u>8/30/11</u> Time: _____	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. _____ Flow _____ pH <u>8.16</u> Cond. <u>40.3 us</u> Temp. <u>22.7°C</u> Other: <u>Other: 22mV</u>	<u>Water</u> Soil _____ Organic _____ Sludge _____ Other: _____	<u>250 CN</u>	<u>HNO₃</u>	<u>2</u>
For Lab Use Only <u>AB58886</u>	Date: _____ Time: <u>1248</u>							
1106411 (Sample C)	Date: <u>8/30/11</u> Time: _____	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. _____ Flow _____ pH <u>8.17</u> Cond. <u>33.4 us</u> Temp. <u>25.0°C</u> Other: <u>Other: 17mV</u>	<u>Water</u> Soil _____ Organic _____ Sludge _____ Other: _____	<u>250 CN</u>	<u>HNO₃</u>	<u>2</u>
For Lab Use Only <u>AB58887</u>	Date: _____ Time: <u>1517</u>							
1106412 (Sample D)	Date: <u>8/30/11</u> Time: _____	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. _____ Flow _____ pH <u>7.92</u> Cond. <u>33.3 us</u> Temp. <u>24.6°C</u> Other: <u>Other: 22mV</u>	<u>Water</u> Soil _____ Organic _____ Sludge _____ Other: _____	<u>250 CN</u>	<u>HNO₃</u>	<u>2</u>
For Lab Use Only <u>AB58888</u>	Date: _____ Time: <u>1559</u>							

Relinquished By: [Signature]

Relinquished By: _____

Relinquished By: _____

Received By: [Signature]

Received By: _____

Received By: _____

Date: 9/1/11

Date: _____

Date: _____

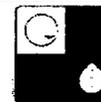
Time: 0944

Time: _____

Time: _____



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code:		Sample Reference ID:				
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)		Sample Type: (circle one)	
Sample Comment (where and how the sample was collected): Sample # 1106409 Blind Duplicate		<input checked="" type="checkbox"/> Grab		<input type="checkbox"/> Composite		<input type="checkbox"/> Modified		<input type="checkbox"/> Other:	
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Monitoring		Air	
					PDOP	Special Project		Soil	
						Bypass/SSO		Container	
						Complaint		Spill	
						Emergency Response		Discharge	
						Inspection		Storm Water	
						<input checked="" type="checkbox"/> Investigation		Groundwater	
								<input checked="" type="checkbox"/> Surface Water	
								Organic	
								Wipes	
								Sediment	
								Sludge	
								Drinking Water Supply	

Sample B		LDPR: FEVIB	Job Code:		Sample Reference ID:				
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County: IRON		Sample Event Type: (circle one)		Sample Type: (circle one)	
Sample Comment (where and how the sample was collected): Sample # 1106410 Indian Creek mile 7 Forest Service Road across from Church on CR 82. Goes with Sediment 208		<input checked="" type="checkbox"/> Grab		<input type="checkbox"/> Composite		<input type="checkbox"/> Modified		<input type="checkbox"/> Other:	
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Monitoring		Air	
					PDOP	Special Project		Soil	
						Bypass/SSO		Container	
						Complaint		Spill	
						Emergency Response		Discharge	
						Inspection		Storm Water	
						<input checked="" type="checkbox"/> Investigation		Groundwater	
								<input checked="" type="checkbox"/> Surface Water	
								Organic	
								Wipes	
								Sediment	
								Sludge	
								Drinking Water Supply	

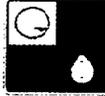
Sample C		LDPR: FEVIB	Job Code:		Sample Reference ID:				
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County: IRON		Sample Event Type: (circle one)		Sample Type: (circle one)	
Sample Comment (where and how the sample was collected): Sample # 1106411 m ^{ile} West Fork Black River mile 1 Nearest Confluence Miller Property Goes with Sediment 209		<input checked="" type="checkbox"/> Grab		<input type="checkbox"/> Composite		<input type="checkbox"/> Modified		<input type="checkbox"/> Other:	
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Monitoring		Air	
					PDOP	Special Project		Soil	
						Bypass/SSO		Container	
						Complaint		Spill	
						Emergency Response		Discharge	
						Inspection		Storm Water	
						<input checked="" type="checkbox"/> Investigation		Groundwater	
								<input checked="" type="checkbox"/> Surface Water	
								Organic	
								Wipes	
								Sediment	
								Sludge	
								Drinking Water Supply	

Sample D		LDPR: FEVIB	Job Code:		Sample Reference ID:				
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)		Sample Type: (circle one)	
Sample Comment (where and how the sample was collected): Sample # 1106412 ^{m. mile} West Fork Black River mile 2 Off CR 65 at curve nearest to stream Gehring Property. Goes with Sediment sample 210		<input checked="" type="checkbox"/> Grab		<input type="checkbox"/> Composite		<input type="checkbox"/> Modified		<input type="checkbox"/> Other:	
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Monitoring		Air	
					PDOP	Special Project		Soil	
						Bypass/SSO		Container	
						Complaint		Spill	
						Emergency Response		Discharge	
						Inspection		Storm Water	
						<input checked="" type="checkbox"/> Investigation		Groundwater	
								<input checked="" type="checkbox"/> Surface Water	
								Organic	
								Wipes	
								Sediment	
								Sludge	
								Drinking Water Supply	

Remarks:
OR 3.6°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery: 8
 Total No. Of Containers: 8
 Carrier: _____
 By: _____
 Tape sealed and initialed
 Shipped
 Hand Delivered

Collector's Name: Sean Counihan
 (Please Print)
 Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one) MDC DHSS Other:

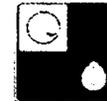
LAB USE ONLY!
 Laboratory ID: 110901130
 Location: B34

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106413 (Sample A)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Flow		pH 7.59					
For Lab Use Only AB58889	Time: 1650		Cl ₂	Cond. 344 μ S				
			UV	Temp. 24.5 °C				
1106414 (Sample B)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Flow		pH 8.11					
For Lab Use Only AB58890	Time: 0825		Cl ₂	Cond. 345 μ S				
			UV	Temp. 20.9 °C				
1106415 (Sample C)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Flow		pH 7.96					
For Lab Use Only AB58891	Time: 0900		Cl ₂	Cond. 345 μ S				
			UV	Temp. 19.6 °C				
1106416 (Sample D)	Date: 8/31/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Flow		pH 7.80					
For Lab Use Only AB58892	Time: 0955		Cl ₂	Cond. 281 μ S				
			UV	Temp. 20.8 °C				
Other:			Other: DRP	109 mV				
			Other: DRP	53 mV				
Other:			Other: DRP	61 mV				
			Other: DRP	13 mV				

Relinquished By: [Signature] Received By: [Signature] Date: 9/1/11 Time: 0944
 Relinquished By: _____ Received By: _____ Date: _____ Time: _____
 Relinquished By: _____ Received By: _____ Date: _____ Time: _____



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR:	FEVIB	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)	
Sample Comment (where and how the sample was collected):		<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:				Sample Type: (circle one)	
Sample # 1106413 middle fork Black River mile 2 off Hwy 49 - went through farm property. Bill property. Goes with Sediment Sample 210 ^{snc} 211						Air Soil	
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Container Spill	
					PDOP	Discharge Storm Water	
						Groundwater <input checked="" type="checkbox"/> Surface Water	
						Organic Wipes	
						Monitoring Sediment	
						Special Project Sludge	
						Drinking Water Supply	

Sample B		LDPR:	FEVIB	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)	
Sample Comment (where and how the sample was collected):		<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:				Sample Type: (circle one)	
Sample # 1106414 Middle fork Black River mile 3 CR 72 Benz Property Goes with Sediment sample 212						Air Soil	
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Container Spill	
					PDOP	Discharge Storm Water	
						Groundwater <input checked="" type="checkbox"/> Surface Water	
						Organic Wipes	
						Monitoring Sediment	
						Special Project Sludge	
						Drinking Water Supply	

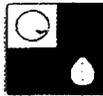
Sample C		LDPR:	FEVIB	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)	
Sample Comment (where and how the sample was collected):		<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:				Sample Type: (circle one)	
Sample # 1106415 Middle fork Black River mile 4 Forest Service Property Access off CR 72 downstream of Benz Property						Air Soil	
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Container Spill	
					PDOP	Discharge Storm Water	
						Groundwater <input checked="" type="checkbox"/> Surface Water	
						Organic Wipes	
						Monitoring Sediment	
						Special Project Sludge	
						Drinking Water Supply	

Sample D		LDPR:	FEVIB	Job Code:		Sample Reference ID:	
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)	
Sample Comment (where and how the sample was collected):		<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:				Sample Type: (circle one)	
Sample # 1106416 Middle fork Black River mile 5 off CR 72 Forest Service road stream crossing. Goes with sediment sample 214						Air Soil	
GPS Coordinates (UTM Zone 15 NAD83 Only)		X Easting	Y Northing	Accuracy (circle one)	EPE (meters)	Container Spill	
					PDOP	Discharge Storm Water	
						Groundwater <input checked="" type="checkbox"/> Surface Water	
						Organic Wipes	
						Monitoring Sediment	
						Special Project Sludge	
						Drinking Water Supply	

Remarks:
DR 3.6°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed _____
Shipped _____
x Hand Delivered _____
Total No. Of Containers: 2
Carrier: _____
By: _____

Collector's Name: Sean Counihan
(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other:

LAB USE ONLY!

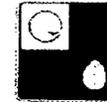
Laboratory ID: 110901130 Location: 1334

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
<u>1106417</u> (Sample A)	Date: <u>8/3/11</u>	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<u>Water</u> Soil Organic Sludge Other:	<u>550 CN</u>	<u>HNO₃</u>	<u>2</u>
	Cl ₂		pH	<u>8.41</u>				
For Lab Use Only	Time: <u>1227</u>		UV	Cond.				
<u>AB58893</u>			Ozone	Temp.				
			Other:	Other: <u>DRP</u>				
				<u>45 mV</u>				
(Sample B)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	Water			
For Lab Use Only	Time:		Cl ₂	pH	Soil			
			UV	Cond.	Organic			
			Ozone	Temp.	Sludge			
			Other:	Other:	Other:			
(Sample C)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	Water			
For Lab Use Only	Time:		Cl ₂	pH	Soil			
			UV	Cond.	Organic			
			Ozone	Temp.	Sludge			
			Other:	Other:	Other:			
(Sample D)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	Water			
For Lab Use Only	Time:		Cl ₂	pH	Soil			
			UV	Cond.	Organic			
			Ozone	Temp.	Sludge			
			Other:	Other:	Other:			

Relinquished By: <u>[Signature]</u>	Received By: <u>[Signature]</u>	Date: <u>9/1/11</u>	Time: <u>0944</u>
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code:		Sample Reference ID:		
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County: IRON		Sample Event Type: (circle one)	Sample Type: (circle one)
Sample Comment (where and how the sample was collected): Sample # 1106417 Neals Creek Forest Service Property off CR 79 at Ozark Trail stream crossing. Goes with Section 215		<input checked="" type="checkbox"/> Grab		Composite Modified Other:		Bypass/SSO	Air Soil
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)		EPE (meters)	Complaint	Container Spill
					PDOP	Emergency Response	Discharge Storm Water
						Inspection	Groundwater <input checked="" type="checkbox"/> Surface Water
						<input checked="" type="checkbox"/> Investigation	Organic Wipes
						Monitoring	Sediment
						Special Project	Sludge
							Drinking Water Supply

Sample B		LDPR: FEVIB	Job Code:		Sample Reference ID:		
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)	Sample Type: (circle one)
Sample Comment (where and how the sample was collected):		<input checked="" type="checkbox"/> Grab		Composite Modified Other:		Bypass/SSO	Air Soil
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)		EPE (meters)	Complaint	Container Spill
					PDOP	Emergency Response	Discharge Storm Water
						Inspection	Groundwater <input checked="" type="checkbox"/> Surface Water
						<input checked="" type="checkbox"/> Investigation	Organic Wipes
						Monitoring	Sediment
						Special Project	Sludge
							Drinking Water Supply

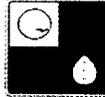
Sample C		LDPR: FEVIB	Job Code:		Sample Reference ID:		
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)	Sample Type: (circle one)
Sample Comment (where and how the sample was collected):		<input checked="" type="checkbox"/> Grab		Composite Modified Other:		Bypass/SSO	Air Soil
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)		EPE (meters)	Complaint	Container Spill
					PDOP	Emergency Response	Discharge Storm Water
						Inspection	Groundwater <input checked="" type="checkbox"/> Surface Water
						<input checked="" type="checkbox"/> Investigation	Organic Wipes
						Monitoring	Sediment
						Special Project	Sludge
							Drinking Water Supply

Sample D		LDPR: FEVIB	Job Code:		Sample Reference ID:		
Facility ID:		Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)	Sample Type: (circle one)
Sample Comment (where and how the sample was collected):		<input checked="" type="checkbox"/> Grab		Composite Modified Other:		Bypass/SSO	Air Soil
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)		EPE (meters)	Complaint	Container Spill
					PDOP	Emergency Response	Discharge Storm Water
						Inspection	Groundwater <input checked="" type="checkbox"/> Surface Water
						<input checked="" type="checkbox"/> Investigation	Organic Wipes
						Monitoring	Sediment
						Special Project	Sludge
							Drinking Water Supply

Remarks:
OR 3.6°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
 Tape sealed and initialed _____
 Shipped _____
 Hand Delivered _____
 Total No. Of Containers: _____
 Carrier: _____
 By: _____

Collector's Name: **Ben Frissell**
 (Please Print)
 Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
 (circle one) MDC DHSS Other: _____

LAB USE ONLY!

Laboratory ID: **110901131** Location: **B34**

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106501 (Sample A)	Date: 8/29/11 1326	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Cl ₂		Flow	pH 7.40				
For Lab Use Only AB58894	Time: 1326		UV	Cond. 267 uS				
			Ozone	Temp. 25.6 °C				
			Other:	Other: ORP 67 mV				
1106502 (Sample B)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Cl ₂		Flow	pH 7.05				
For Lab Use Only AB58895	Time: 1532		UV	Cond. 128.6 uS				
			Ozone	Temp. 25.6 °C				
			Other:	Other: ORP 51 mV				
1106503 (Sample C)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Cl ₂		Flow	pH 6.75				
For Lab Use Only AB58896	Time: 1619		UV	Cond. 131.9 uS				
			Ozone	Temp. 25.9 °C				
			Other:	Other: ORP 51 mV				
1106504 (Sample D)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Cl ₂		Flow	pH 6.75				
For Lab Use Only AB58897	Time: 1619		UV	Cond. 131.9 uS				
			Ozone	Temp. 25.9 °C				
			Other:	Other: ORP 51 mV				

Relinquished By:	Received By:	Date: 9/1/11	Time: 0933
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project	
Sample Comment (where and how the sample was collected): BEE FURN, COLLECTED BEFORE OUTFALL OF DOE RUN BY ROUTE TT			Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply	
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting: 667463.90	Y Northing: 4145796.47	Accuracy: 1	(circle one) EPE (meters) PDOP

Sample B		LDPR: FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project	
Sample Comment (where and how the sample was collected): BEE FURN, SUTTON PROPERTY BY GREEN CROSSING IN ROAD			Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply	
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting: 663036.74	Y Northing: 4145776.15	Accuracy: 1	(circle one) EPE (meters) PDOP

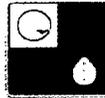
Sample C		LDPR: FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project	
Sample Comment (where and how the sample was collected): BEE FURN, LEHANT PROPERTY			Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply	
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting: 662916.25	Y Northing: 4145789.68	Accuracy: 1	(circle one) EPE (meters) PDOP

Sample D		LDPR: FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project	
Sample Comment (where and how the sample was collected): BEE FURN LEHANT PROPERTY DCP			Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply	
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting: 662916.25	Y Northing: 4145784.68	Accuracy: 1	(circle one) EPE (meters) PDOP

Remarks:
OR 3.5°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed _____
Shipped _____
x Hand Delivered _____
Carrier: _____
Total No. Of Containers: _____
By: _____

Collector's Name: Ben Frissell
(Please Print)
Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other:

LAB USE ONLY!

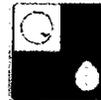
Laboratory ID: 110901131
Location: B34

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106505 (Sample A)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	For Lab Use Only		Time: 0904	Cl ₂				
			UV	Cond. 13.45				
			Ozone	Temp. 20.6°C				
			Other:	Other:				
				ORP 82 mV				
1106506 (Sample B)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	For Lab Use Only		Time: 1044	Cl ₂				
			UV	Cond. 158.6 uS				
			Ozone	Temp. 24°C				
			Other:	Other:				
				ORP 70 mV				
1106507 (Sample C)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	For Lab Use Only		Time: 1141	Cl ₂				
			UV	Cond. 121.1 uS				
			Ozone	Temp. 25.7°C				
			Other:	Other:				
				ORP 43 mV				
1106508 (Sample D)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	For Lab Use Only		Time: 1141	Cl ₂				
			UV	Cond. 121.1 uS				
			Ozone	Temp. 25.7°C				
			Other:	Other:				
				ORP 43 mV				

Relinquished By:	Received By:	Date: 9/1/11	Time: 0933
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name:	Viburnum Trend Lead Mining Sites	County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): BEE FERN, Hill PROPERTY				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	663533.82	4145860.60	1	

Sample B		LDPR: FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name:	Viburnum Trend Lead Mining Sites	County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): SWEETWATER, DOE RUN PROPERTY @ CR 760; 758				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	666028.48	4131287.01	1	

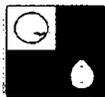
Sample C		LDPR: FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name:	Viburnum Trend Lead Mining Sites	County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): SWEETWATER, DOE RUN PROPERTY @ CR 758 ABOVE ARL				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	664919.42	4133332.46	1	

Sample D		LDPR: FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name:	Viburnum Trend Lead Mining Sites	County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): SWEETWATER, DOE RUN PROPERTY @ CR 758 ABOVE ARL (DUP)				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	664919.42	4133332.46	1	

Remarks:
at 3.5°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery

Tape sealed and initialed

Total No. Of Containers: _____

Shipped

Carrier: _____

Hand Delivered

By: _____

Collector's Name: Ben Frissell

(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other:

LAB USE ONLY!

Laboratory ID:
110901131

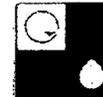
Location:
B34

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106509 (Sample A)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow	<u>Water</u> Soil Organic Sludge Other:	250 CN	HNO ₃	2
For Lab Use Only AB58902	Time: 1258		Cl ₂ UV Ozone Other:	pH 7.12 Cond. 129.4 uS Temp. 27.3°C Other: OER 42 mV				
1106510 (Sample B)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow	<u>Water</u> Soil Organic Sludge Other:	250 CN	HNO ₃	2
For Lab Use Only AB58903	Time: 1350		Cl ₂ UV Ozone Other:	pH 7.42 Cond. 118 uS Temp. 25.6°C Other: OER 21 mV				
1106511 (Sample C)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow	<u>Water</u> Soil Organic Sludge Other:	250 CN	HNO ₃	2
For Lab Use Only AB58904	Time: 1438		Cl ₂ UV Ozone Other:	pH 7.68 Cond. 108.5 uS Temp. 25.6°C Other: OER 21 mV				
1106512 (Sample D)	Date: 8/31/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow	<u>Water</u> Soil Organic Sludge Other:	250 CN	HNO ₃	2
For Lab Use Only AB58905	Time: 0858		Cl ₂ UV Ozone Other:	pH 7.95 Cond. 424 uS Temp. 23.6°C Other: OER 72 mV				

Relinquished By:	Received By:	Date: 9/1/11	Time: 0933
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): SWEET WATER, DOE RUN PROPERTY @ PRIVATE ROAD CROSSING				Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	664717.70	4133524.86	1	

Sample B	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): SWEET WATER, DOE RUN PROPERTY @ UGR ACCESS ROAD				Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	663572.51	4134079.56	1	

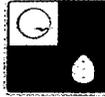
Sample C	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: REYNOLDS	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): SWEET WATER, DOE RUN PROPERTY @ CR 759				Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	663119.96	4134634.35	1	

Sample D	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: IRON	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): LEFT FORK NEALS CREEK, ASHER PROPERTY				Sample Type: (circle one) Air Container Discharge Groundwater Organic Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP
	668488.98	4168134.15	1	

Remarks:
DP 3.5°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery

Tape sealed and initialed

Total No. Of Containers: _____

Shipped

Carrier: _____

Hand Delivered

By: _____

Collector's Name: Ben Frissell

(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other: _____

LAB USE ONLY!

Laboratory ID:

110901131

Location:

B34

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106513 (Sample A)	Date: 8/31/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH 7.49 Cond. 2.07 uS Temp. 23.9 °C Other: ORP 108 mV	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	850 CN	#NO ₃	2
For Lab Use Only AB58906	Time: 1046							
1106514 (Sample B)	Date: 8/31/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH 7.49 Cond. 2.07 uS Temp. 23.9 °C Other: ORP 108 mV	<input checked="" type="radio"/> Water <input type="radio"/> Soil <input type="radio"/> Organic <input type="radio"/> Sludge <input type="radio"/> Other:	250 CN	#NO ₃	2
For Lab Use Only AB58907	Time: 1046							
(Sample C)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:			
For Lab Use Only	Time:							
(Sample D)	Date:	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O. Flow pH Cond. Temp. Other:	Water Soil Organic Sludge Other:			
For Lab Use Only	Time:							

Relinquished By:

[Signature]

Received By:

[Signature]

Date:

9/1/11

Time:

0933

Relinquished By:

Received By:

Date:

Time:

Relinquished By:

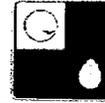
Received By:

Date:

Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: IRON	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): LEFT FURN NEAR CREEK, LOMINGO PROPERTY @ DECANT DITCH				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 667238.36	Y Northing 416656.07	Accuracy 1	(circle one) EPE (meters) PDOP

Sample B	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County: IRON	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): (DUP) LEFT FURN NEAR CREEK, LOMINGO PROPERTY @ DECANT DITCH				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting 667238.36	Y Northing 416656.07	Accuracy 1	(circle one) EPE (meters) PDOP

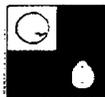
Sample C	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected):				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP

Sample D	LDPR:	FEVIB	Job Code:	Sample Reference ID:
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County:	Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected):				Sample Type: (circle one) Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one) EPE (meters) PDOP

Remarks:
OR 3.5°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed _____
Shipped _____
x Hand Delivered _____
Carrier: _____
Total No. Of Containers: 8
By: _____

Collector's Name: **Kenneth Hannon**
(Please Print)
Affiliation: **KCRO** **NERO** **SERO** **SLRO** **SWRO** **WPP** **DGLS** **HWP** **ESP** **MoDOT**
(circle one) **MDC** **DHSS** Other: _____

LAB USE ONLY!

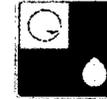
Laboratory ID: **110901133**
Location: **629**

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106551 (Sample A)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	Water	250 CN	HNO3	2
	Flow							
For Lab Use Only AB58930	Time: 1450		Cl ₂	pH 8.49	Soil			
			UV	Cond. 453 μS				
			Ozone	Temp. 24.3 °C	Organic			
			Other: ORP 100 mv					
1106552 (Sample B)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	Water	250 CN	HNO3	2
	Flow							
For Lab Use Only AB58931	Time: 1620		Cl ₂	pH 8.20	Soil			
			UV	Cond. 442 μS				
			Ozone	Temp. 24.8 °C	Organic			
			Other: ORP 65 mv					
1106553 (Sample C)	Date: 8/29/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	Water	250 CN	HNO3	2
	Flow							
For Lab Use Only AB58932	Time: 1730		Cl ₂	pH 8.34	Soil			
			UV	Cond. 474 μS				
			Ozone	Temp. 21.8 °C	Organic			
			Other: ORP 62 mv					
1106554 (Sample D)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	Water	250 CN	HNO3	2
	Flow							
For Lab Use Only AB58933	Time: 0930		Cl ₂	pH 7.96	Soil			
			UV	Cond. 1036 μS				
			Ozone	Temp. 21.9 °C	Organic			
			Other: ORP 62 mv					

Relinquished By: Kenneth Hannon	Received By: A. P. [Signature]	Date: 9-1-11	Time: 1120
Relinquished By: _____	Received By: _____	Date: _____	Time: _____
Relinquished By: _____	Received By: _____	Date: _____	Time: _____



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code: —	Sample Reference ID: 101
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County:		Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): 1106551, Mill Rock Creek, Carter property.				Sample Type: (circle one)
<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:				Bypass/SSO Complaint Emergency Response Inspection <input checked="" type="checkbox"/> Investigation Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample B		LDPR: FEVIB	Job Code: —	Sample Reference ID: 102
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County:		Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): 1106552, Mill Rock Creek, Doe Run Property.				Sample Type: (circle one)
<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:				Bypass/SSO Complaint Emergency Response Inspection <input checked="" type="checkbox"/> Investigation Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

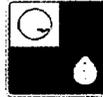
Sample C		LDPR: FEVIB	Job Code: —	Sample Reference ID: 103
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County:		Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): 1106553, Mill Rock Creek, Doe Run property near Forest Service Land.				Sample Type: (circle one)
<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:				Bypass/SSO Complaint Emergency Response Inspection <input checked="" type="checkbox"/> Investigation Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample D		LDPR: FEVIB	Job Code: —	Sample Reference ID: 104
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County:		Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): 1106554, low crooked creek at low water bridge cattrell property.				Sample Type: (circle one)
<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:				Bypass/SSO Complaint Emergency Response Inspection <input checked="" type="checkbox"/> Investigation Monitoring Special Project
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Remarks: Temp 3.7°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Description of Delivery
Tape sealed and initialed _____
Shipped _____
x Hand Delivered _____

Total No. Of Containers: 8
Carrier: _____
By: _____

Collector's Name: **Kenneth Hannon**
(Please Print)

Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other: _____

LAB USE ONLY!

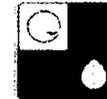
Laboratory ID: 110901133 Location: 329

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106555 (Sample A)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	<input type="checkbox"/> None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	For Lab Use Only: AB58934		Time: 1625	<input type="checkbox"/> Cl ₂				
			<input type="checkbox"/> UV	Cond. 1247 us				
			<input type="checkbox"/> Ozone	Temp. 20.9 °C				
			<input type="checkbox"/> Other:	Other: ORP 54 mv				
1106556 (Sample B)	Date: —	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	<input type="checkbox"/> None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	For Lab Use Only: AB58935		Time: —	<input type="checkbox"/> Cl ₂				
			<input type="checkbox"/> UV	Cond.				
			<input type="checkbox"/> Ozone	Temp.				
			<input type="checkbox"/> Other:	Other:				
1106557 (Sample C)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	<input type="checkbox"/> None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	For Lab Use Only: AB58936		Time: 1220	<input type="checkbox"/> Cl ₂				
			<input type="checkbox"/> UV	Cond. 1103 us				
			<input type="checkbox"/> Ozone	Temp. 22.5 °C				
			<input type="checkbox"/> Other:	Other: ORP 49 mv				
1106558 (Sample D)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	<input type="checkbox"/> None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	For Lab Use Only: AB58937		Time: 1420	<input type="checkbox"/> Cl ₂				
			<input type="checkbox"/> UV	Cond. 1104 us				
			<input type="checkbox"/> Ozone	Temp. 23.4 °C				
			<input type="checkbox"/> Other:	Other: ORP 59 mv				

Relinquished By: <u>Kenneth Hannon</u>	Received By: <u>A. Pelt</u>	Date: <u>9-1-11</u>	Time: <u>1120</u>
Relinquished By: _____	Received By: _____	Date: _____	Time: _____
Relinquished By: _____	Received By: _____	Date: _____	Time: _____



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code: —	Sample Reference ID: 105	
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): 1106555, Crooked Creek, Usher property.					Sample Type: (circle one)
<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:					Bypass/SSO Complaint Emergency Response Inspection Investigation
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	Monitoring
				EPE (meters) PDOP	Special Project
					Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply

Sample B		LDPR: FEVIB	Job Code: —	Sample Reference ID: —	
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): 1106556, Blind ^{Du} Ap licate.					Sample Type: (circle one)
<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:					Bypass/SSO Complaint Emergency Response Inspection Investigation
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	Monitoring
				EPE (meters) PDOP	Special Project
					Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply

Sample C		LDPR: FEVIB	Job Code: —	Sample Reference ID: 106	
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): 1106557, Crooked Creek, Turnbaugh property.					Sample Type: (circle one)
<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:					Bypass/SSO Complaint Emergency Response Inspection Investigation
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	Monitoring
				EPE (meters) PDOP	Special Project
					Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply

Sample D		LDPR: FEVIB	Job Code: —	Sample Reference ID: 107	
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites		County:		Sample Event Type: (circle one)
Sample Comment (where and how the sample was collected): 1106558, Crooked Creek, Chandler property upstream of fence.					Sample Type: (circle one)
<input checked="" type="checkbox"/> Grab <input type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other:					Bypass/SSO Complaint Emergency Response Inspection Investigation
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy	(circle one)	Monitoring
				EPE (meters) PDOP	Special Project
					Air Soil Container Spill Discharge Storm Water Groundwater Surface Water Organic Wipes Sediment Sludge Drinking Water Supply

Remarks: Temp 3.7°C



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Tape sealed and initialed
Shipped
 Hand Delivered

Description of Delivery
Total No. Of Containers: 6
Carrier: _____
By: _____

Collector's Name: **Kenneth Hannon**
(Please Print)
Affiliation: KCRO NERO SERO SLRO SWRO WPP DGLS HWP ESP MoDOT
(circle one) MDC DHSS Other: _____

LAB USE ONLY!

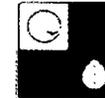
Laboratory ID: 110901133
Location: B29

Sample Number	Sample Collected	Analyses Requested	Disinfect. Type	Field Parameters (include units)	Matrix (circle one)	Container Type	Preservative Type	Number of Containers
1106559 (Sample A)	Date: 8/30/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Flow		pH 8.12					
For Lab Use Only	Time: 1620		Cl ₂	Cond. 1061 μS				
AB58938			UV	Temp. 22.6 °C				
			Ozone	Other: ORP 54 mV				
			Other:					
1106560 (Sample B)	Date: 8/31/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Flow		pH 8.17					
For Lab Use Only	Time: 1022		Cl ₂	Cond. 471 μS				
AB58939			UV	Temp. 21.9 °C				
			Ozone	Other: ORP 182 mV				
			Other:					
1106561 (Sample C)	Date: 8/31/11	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Flow		pH 8.35					
For Lab Use Only	Time: 1450		Cl ₂	Cond. 19.93 ms				
AB58940			UV	Temp. 26.5 °C				
			Ozone	Other: ORP 74 mV				
			Other:					
1106562 (Sample D)	Date: —	Total Metals (As, Cu, Cd, Pb, Ni, Zn) Hardness (Ca, Mg) Dissolved Metals (As, Cu, Cd, Pb, Ni, Zn)	(circle one) None	D.O.	<input checked="" type="radio"/> Water Soil Organic Sludge Other:	250 CN	HNO ₃	2
	Flow		pH					
For Lab Use Only	Time: —		Cl ₂	Cond.				
AB58941			UV	Temp.				
			Ozone	Other:				
			Other:					

Relinquished By: <u>Kenneth Hannon</u>	Received By: <u>A-JEL</u>	Date: <u>9-1-11</u>	Time: <u>1120</u>
Relinquished By:	Received By:	Date:	Time:
Relinquished By:	Received By:	Date:	Time:



MISSOURI DEPARTMENT OF NATURAL RESOURCES
FIELD SHEET AND CHAIN-OF-CUSTODY RECORD



Sample A		LDPR: FEVIB	Job Code: <u> </u>	Sample Reference ID: <u>108</u>
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County: <u> </u>		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): <u>1106559, Cooked Creek, Pryor property.</u>		Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>		Sample Type: (circle one) Air <input type="checkbox"/> Soil <input type="checkbox"/> Container <input type="checkbox"/> Spill <input type="checkbox"/> Discharge <input type="checkbox"/> Storm Water <input type="checkbox"/> Groundwater <input type="checkbox"/> Surface Water Organic <input type="checkbox"/> Wipes <input type="checkbox"/> Sediment <input type="checkbox"/> Sludge <input type="checkbox"/> Drinking Water Supply <input type="checkbox"/>
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample B		LDPR: FEVIB	Job Code: <u> </u>	Sample Reference ID: <u>107</u>
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County: <u> </u>		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): <u>1106560, Mill Rock Creek, Seller's property.</u>		Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>		Sample Type: (circle one) Air <input type="checkbox"/> Soil <input type="checkbox"/> Container <input type="checkbox"/> Spill <input type="checkbox"/> Discharge <input type="checkbox"/> Storm Water <input type="checkbox"/> Groundwater <input type="checkbox"/> Surface Water Organic <input type="checkbox"/> Wipes <input type="checkbox"/> Sediment <input type="checkbox"/> Sludge <input type="checkbox"/> Drinking Water Supply <input type="checkbox"/>
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample C		LDPR: FEVIB	Job Code: <u> </u>	Sample Reference ID: <u>110</u>
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County: <u> </u>		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): <u>1106561, Cooked Creek, Doe Run property north of Highway 32.</u>		Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>		Sample Type: (circle one) Air <input type="checkbox"/> Soil <input type="checkbox"/> Container <input type="checkbox"/> Spill <input type="checkbox"/> Discharge <input type="checkbox"/> Storm Water <input type="checkbox"/> Groundwater <input type="checkbox"/> Surface Water Organic <input type="checkbox"/> Wipes <input type="checkbox"/> Sediment <input type="checkbox"/> Sludge <input type="checkbox"/> Drinking Water Supply <input type="checkbox"/>
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Sample D		LDPR: FEVIB	Job Code: <u> </u>	Sample Reference ID: <u> </u>
Facility ID:	Site/Study Name: Viburnum Trend Lead Mining Sites	County: <u> </u>		Sample Event Type: (circle one) Bypass/SSO Complaint Emergency Response Inspection Investigation Monitoring Special Project
Sample Comment (where and how the sample was collected): <u>1106562, Blind Duplicate.</u>		Grab <input checked="" type="checkbox"/> Composite <input type="checkbox"/> Modified <input type="checkbox"/> Other: <input type="checkbox"/>		Sample Type: (circle one) Air <input type="checkbox"/> Soil <input type="checkbox"/> Container <input type="checkbox"/> Spill <input type="checkbox"/> Discharge <input type="checkbox"/> Storm Water <input type="checkbox"/> Groundwater <input type="checkbox"/> Surface Water Organic <input type="checkbox"/> Wipes <input type="checkbox"/> Sediment <input type="checkbox"/> Sludge <input type="checkbox"/> Drinking Water Supply <input type="checkbox"/>
GPS Coordinates (UTM Zone 15 NAD83 Only)	X Easting	Y Northing	Accuracy (circle one)	EPE (meters) PDOP

Remarks: Temp 3.7°C