# Reconnaissance-Level Stream Assessment and Water Quality Collection at the Riverbend Landfill, McMinville, Oregon

PREPARED FOR: Jim Denson/Riverbend Landfill
Jeff O'Leary/Riverbend Landfill

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PREPARED BY: CH2M HILL

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## Introduction

The purpose of this technical memorandum is to summarize the findings of an initial site visit and subsequent reconnaissance-level stream assessment and water quality sampling at the Riverbend Landfill site in McMinnville, Oregon (Figure 1, Attachment 1). CH2M HILL conducted the initial site visit on February 12, 2014, and then returned to the site on February 21, 2014, for the reconnaissance-level stream assessment and water quality sampling. The visits were conducted in response to a leachate seep discovered at the landfill on February 10, 2014.

This technical memorandum is organized into the following sections:

- Background
- Environmental Baseline Conditions
- Leachate Seep Characterization
- Analysis
- Conclusions
- References

Tables are located at the end of text. Attachment 1 contains figures showing the site location, sampling locations, and other referenced material, Attachment 2 contains a timeline of the site visits, and Attachment 3 contains laboratory reports from both sampling events .

## Background

February 7, 2014, marked the beginning of a severe weather event that resulted in impassable road conditions and ultimately the suspension of Riverbend Landfill's north tank leachate transfer/hauling operations, located near McMinnville, Oregon. As a result of the suspension of leachate hauling operations, tanks used to collect the leachate continued to fill until they reached approximately 1 foot from the overflow level. Once the tank levels were within 1 foot of the overflow level, tank isolation valves were closed on February 7, 2014, to prevent the tanks from overtopping. The isolation valves remained closed until they were briefly reopened on February 9 to allow the tanks to top off to the overflow level, and then were reclosed. Visual inspections of the landfill and leachate collection systems were performed by the Riverbend Landfill's district manager (DM) between February 7 and 10.

On February 10, 2014, the DM discovered a leachate seep on the north side of the landfill, near the Module 8 leachate collection and removal sump. The DM observed one location of moderate flow and several locations of minor flow. The combined flows from the seep were observed at the base of the northern landfill slope flowing across the service road and into the adjacent vegetated area. The DM did not observe

any flow going directly into the unnamed creek; however, the creek was not visible from his vantage point. Furthermore, snow and ice on the ground complicated determination of the flow path. The DM immediately implemented corrective actions to mitigate potential impacts from the seep, including construction of small berms and sumps to contain flow and use of vacuum trucks and pumps to recover the remaining ponded liquids.

In addition to the series of actions taken in response to the leachate seep, WMI contracted CH2M HILL and SCS Engineers to perform further investigation. CH2M HILL performed an initial site visit of the seep area on February 12, and then returned to the site on February 21 to conduct a reconnaissance-level stream assessment (stream assessment) of the unnamed creek (located north-northeast of the existing site footprint). The goal of the stream assessment was to assess the physical characteristics of the unnamed creek (upstream and downstream of the seep) and identify any indicators that may suggest potential impacts to the aquatic environment as a result of the seep. The stream assessment included observations along the unnamed creek upstream and downstream of the landfill and a description of the physical characteristics of habitat including: general habitat trend, water quality, in-stream habitat, riparian and anthropogenic factors.

A complete description of the timeline of events (prepared by WMI) is included as Attachment 2.

# Environmental Baseline Conditions

## Physical Characteristics and Vegetation

The landfill is located in the Lower Yamhill watershed, which is part of the Yamhill River basin in northwestern Willamette Valley. The 63,747-acre watershed is on the eastern side of the Coastal Cascade Mountain range. Nearly the entire watershed is within Yamhill County. Historically, the South Yamhill River exhibited well-established and broad riparian corridors, with an active channel that meandered across the floodplain. Population growth, shifting land use practices, and a rapidly growing population have dramatically reduced the extent of riparian buffer and restricted the channel (GYWC, 2013).

The general surrounding riparian area along the unnamed creek (from Highway 18 culvert to the confluence at the South Yamhill River) is bordered by agricultural fields to the east and Riverbend Landfill to the west. The unnamed creek corridor consists of moderate to heavily wooded riparian banks, dense blackberry bushes, and shrubs.

The gradient of the upper portion of the unnamed creek (in the assessment area) is gently sloped and consists primarily of a short, low-gradient riffle extending downstream of the Highway 18 culvert. The rest of the site consists primarily of runs near Sample Point (SP)1 and runs and pools near SP2 and SP3 (see Figure 2 in Attachment 1). The wetted width of the unnamed creek at the time of the site visit ranged from approximately 15 to 45 feet, and generally became wider moving downstream toward the confluence with the South Yamhill River. The wetted width of the unnamed creek at SP1, SP2, and SP3 was approximately 15, 25, and 40 feet, respectively. The pool section in the unnamed creek extending from SP2 to SP3 and continuing downstream appeared to have been created by backwater effects from high flows in the South Yamhill River. The riverbanks throughout this entire section (SP1, SP2, and SP3) are vegetated on both sides of the creek, with some small pockets of undercut banks. This area would be considered to have an overall good quality riparian zone that ranged in width from approximately 50 feet at SP1 to approximately 300 feet (in some locations) near SP2 and SP3. The bankside vegetation appeared stable and consisted of large oak and alder trees, blackberry bushes, and shrubs.

The bottom substrate of the unnamed creek at SP1, SP2, and SP3 consists primarily of mud and silt (based on previous recollection of sediment substrate during the low flow period in summer months, as noted in the February 21, 2014, field assessment and personnel communication with Jeff O'Leary/WMI).

Based on readings at the U.S. Geological Survey (USGS) Gauge Site 14194150 RM5.6, mean flows in the South Yamhill River range on an annual basis from 46 $ft^3$/second during the month of September to 4,690 $ft^3$/second during the month of January.

## Fish and Aquatic Biota

The South Yamhill River provides habitat for a wide variety of aquatic biota. Historically, fish assemblages in the South Yamhill River were more diverse and populations more robust (YBC, 2002). Decreased habitat complexity and water quality have contributed to a decrease in most native species in the South Yamhill River. Today, the most abundant and only resident native salmonid in the South Yamhill River is the cutthroat trout (*Oncorhynchus clarki).* Other native resident fish in the basin include sculpin *(Cottus sp.)*, dace *(Rhinichthys sp.)*, redside shiner *(Richardsonius balteatus)*, three spine stickleback *(Gasterosteus aculeatus)*, sucker *(Catostomus sp.),* and northern pike minnow *(Ptychocheilus oregonensis)*. Several native anadromous species are also known to occur in the Yamhill River basin, including winter steelhead (*Oncorhynchus mykiss),* Pacific lamprey *(Entosphenus tridentatus)*, and spring Chinook salmon (*Oncorhynchus tshawytscha).* Non-native fishes are also present in the system, such as coho salmon *(Oncorhynchus kisutch)*, catfish *(Ameiurus sp.)*, mosquitofish *(Gambusia affinis)*, crappie *Pomoxis sp.)*, and bass *(Micropterus sp.)* (YBC, 2002 and GYWC, 2013).

Most native species, including Chinook salmon and steelhead trout populations, have declined from historical levels. Both Chinook salmon and winter steelhead are now listed as threatened under the Endangered Species Act. Conversely, coho salmon, which were stocked by the Oregon Department of Fish and Wildlife, have become well established and are considered by some to be self sustaining (YBC, 2002). Crayfish and other common aquatic macro invertebrates are present in the South Yamhill River basin, as well as other wildlife such as amphibians, birds, and mammals.

The unnamed creek does not have the habitat complexity and diversity that occurs throughout the rest of the South Yamhill River, although riparian buffers along the creek are established and may provide cover and potential refugia for aquatic biota, including fish. Substrate in the unnamed creek indicates that it likely does not provide spawning habitat for native fishes that require gravel and cobble (such as salmonids). Other fish that utilize finer substrates such as silt and mud (for example, larval lamprey) may find valuable refugia and habitat there.

No fish were observed during either of the site visits conducted by CH2M HILL. However, no barriers to passage were identified and the unnamed creek is directly connected to the South Yamhill River, which makes it likely that a variety of fish species use the creek during various life stages. Macroinvertebrates and an unidentified species of newt were identified during the stream assessment conducted on February 21, 2014.

# Leachate Seep Characterization

## Stream Observations of Leachate Seep-Related Contaminants

On February 10, 2014, the approximate flow in the South Yamhill River at USGS Gauge Site 14194150 (provisional reading) river mile (RM) 5.6 was approximately 800 cubic feet per second ($ft^3$/second). The flows in the South Yamhill River rose to approximately 10,000 $ft^3$/second by February 20, 2014. This was due to heavy rains combined with the snowmelt and caused extremely high flows in the unnamed creek and the South Yamhill River.

On February 12, 2014, during the initial site visit, CH2M HILL conducted a visual inspection of the seep area. Some minimal seepage was still evident and being collected in the concrete sump at the base of the hill. This collected seepage was actively being recovered with a pump installed in the sump. No seepage was observed flowing past the sump. A considerable amount of runoff was observed flowing downslope across

the road. The runoff appeared to consist of snowmelt and stormwater runoff, as the seeps were being collected in the sump and controlled with a sump pump.

During the initial site visit, CH2M HILL personnel (escorted by Jeff O'Leary/WMI) walked the wetland N area just south of the unnamed creek, in the general vicinity of the seep. The wetland N area was channelized and appeared to drain to the unnamed creek. CH2M HILL personnel observed no obvious evidence (odors or discolored water) of leachate in the wetland N area. There was a slight difference in the turbidity of the water within the channelized portion of the wetland, as it appeared slightly more turbid than water in the unnamed creek.

On February 21, 2014, CH2M HILL returned to the site to conduct a reconnaissance-level stream assessment of the unnamed creek. Based on visual observation, flora and fauna in the unnamed creek did not appear to be impacted by the seep that was discovered on February 10, 2014. No mortality of any flora or fauna was observed and expected biota (including newts, water skippers, and other aquatic invertebrates) were observed downstream of the suspected location of where the leachate may have entered the unnamed creek. No odor, sheens, or films were identified by the CH2M HILL sampling field crew on water quality samples collected from the unnamed creek on February 21, 2014.

At SP2, just downstream of the potential leachate release area (see Attachment 1, Figure 2), some type of bacterial or fungal growth was observed clinging to vegetation from the anticipated recent high water mark to the existing water line. Recent heavy rain events likely elevated the stream levels (and associated nutrient intakes) to the high water mark at the time of the release. No bacteria or fungal growth were observed in the unnamed creek upstream of the leachate release area or farther downstream on substrate at lower elevations within the unnamed creek channel (below the leachate release area) however it is unknown at this time if the seep contributed to this growth.

## Water Quality Sampling Methods

On February 10, 2014, SCS Engineers collected water quality samples in the unnamed creek at three locations (SP1, SP2, and SP3). The water quality samples were taken to Test America Laboratory in Portland, Oregon, for select parameters. The parameters included volatile organic compounds (VOCs) (GCMS Method 8260), mercury, chloride, and total metals (arsenic, barium, cadmium, chromium, lead, selenium, and silver). The laboratory report for these samples is in Attachment 3.

On February 21, 2014, a two-person sampling team from CH2M HILL arrived at the site. Jeff O'Leary/WMI accompanied CH2M HILL staff to the previously sampled sites (SP1, SP2, and SP3). Samples were collected at all three previously sampled locations plus one additional site located on the South Yamhill River, approximately 1,000 feet upstream of the unnamed creek confluence. This fourth sample (SPYMUP) was collected to establish background water quality in the South Yamhill River. CH2M Hill personnel also visited the culvert site where the unknown creek crossed under Highway 18, to visually survey the habitat of the unnamed creek and determine if any potential stormwater runoff areas occurred upstream of the Riverbend Landfill site. Additional sample collection below the confluence of the unnamed creek and the South Yamhill River was precluded due to high water and dense blackberry bushes. The four water quality samples collected on February 21, 2014, were transported to CH2M HILL's Applied Sciences Laboratory in Corvallis, Oregon. The parameters tested included VOCs (GCMS Method 8260), mercury, chloride, total metals (arsenic, barium, cadmium, chromium, lead, selenium, and silver), ammonia, nitrogen, total Kjeldahl nitrogen, total dissolved solids (TDS), total suspended solids, (TSS), nitrate/nitrite, and total phosphorus. The laboratory report for these samples is in Attachment 3.

In addition to collecting water samples, other water quality parameters were directly measured at the time of sampling. These water quality parameters included pH, temperature, conductivity, and turbidity. Visual observations regarding, water color, odors, and flora/fauna presence were also noted.

# Analysis

## Physical Aquatic Habitat

Substrate in the unnamed creek, consisting of mud and silt, would limit the extent that it is conducive to salmonid spawning. Additionally, limited habitat complexity in the unnamed creek likely does not support the diversity of life stages for the assemblages of fish in the basin that the South Yamhill River does. That said, the unnamed creek has established riparian vegetation along its banks, and combined with the presence of large woody debris, it likely provides refuge and limited rearing habitat for juvenile fishes in the system and in turn forage habitat for introduced and invasive species such as bass. The overall characterization of the unnamed creek habitat trend, including water quality, in-stream habitat, and riparian would be classified as fair to moderate based on the reconnaissance-level stream assessment conducted on February 21, 2014.

## Water Quality

### Water Quality Sample Results

Table 1 shows the unnamed creek and South Yamhill River water quality measurement results and locations from the February 21, 2014, site visit.

Measured water quality parameters were similar at all locations. Temperature ranged from 8.6 degrees Celsius (°C) at SP1 to 9.0°C at SP2, and 8.2°C in the South Yamhill River. The pH at all sites was within the range of 6.5 to 6.9 as established for water quality. The conductivity was slightly higher at sites SP2 and SP3 when compared with the SP1 site.

Water quality measurements in the unnamed creek of pH, temperature, conductivity, and turbidity conducted on February 21, 2014, were similar at all sites. This demonstrates that at the time of the site visit, no effect to these indicators as a result of the seep was occurring.

### Water Quality Analytical Results

Two sets of water quality samples were collected after the seep was discovered on February 10, 2014. The first set was collected by SCS Engineers on February 10, 2014, and the second set by CH2M HILL on February 21, 2014. Table 2 summarizes the analytical results from these events.

To provide an indication of whether the levels detected during these sampling events are high enough to pose a potential for impact in the unnamed stream, concentrations were compared with risk-based levels considered protective of the aquatic and human uses that may be present.

**Aquatic Screening Results.** Table 2 provides the results of the two sampling events (on February 10 and 21, 2014) and compares these results to the acute and chronic water quality criteria of the Oregon Department of Environmental Quality (DEQ) Tables, 20 and 33B. The criteria concentrations for each compound listed in Tables 20 and 33B represent the levels not to be exceeded in waters of the state, and are considered protective of aquatic life (fish and invertebrates). The acute criterion is intended to apply to the 1-hour average in-stream concentration, whereas the chronic criterion applies to the 96-hour (4-day) average in-stream concentration; these criteria should not be exceeded more than once every 3 years.

For chemicals with no available acute or chronic criteria listed in Tables 20 or 33B, values were taken from DEQ Level II Screening Level Values (DEQ, 2002). For the organic VOC analysis (8260B), only two compounds acetone and MEK were detected in samples SP2 and SP3. For acetone, the Level II Screening Level Values of 1,500 micrograms per liter (µg/L) is well above the detected levels in the creek. No Level II Screening Level Value is available for MEK, and therefore this compound was not assessed. However, given the similar structures and properties of MEK and acetone, the detected MEK levels are not anticipated to pose unacceptable risk to aquatic life. The aquatic toxicity of ammonia is temperature- and pH-dependent. Ammonia concentrations from February 21, 2014, samples did not exceed the level for acute screening in all

samples based on the measured site-specific stream temperature of 9**°C** and a pH of 6.8. The ammonia concentrations did exceed the chronic screening level (but not the acute level) on February 10, 2014, for samples SP2 and SP3 (temperature and pH were not measured on February 10, 2014, so were interpolated from February 21, 2014). However, it should be noted that the ammonia chronic criterion applies to a 4-day average exposure to in-stream aquatic life. It is apparent from USGS streamflow measurements that, during the period from February 10, 2014, to February 13, 2014, the flow in South Yamhill River increased by an order of magnitude as a result of storm events (Figure 3). Given the dramatic increase in flow and instream dilution in the days immediately after the leachate release event, it is unlikely that the 4-day aquatic exposure to ammonia is meaningful from a chronic basis.

**Human Health Screening Results.** The sample concentrations were also compared (Table 2) to the values in DEQ's Human Health Criteria Table 40. The criteria concentrations for each compound listed in Table 40 represent the levels protective of humans from water and/or fish consumption pathways. None of the detected levels in any of the samples exceeded the human health screening levels.

A raw leachate sample taken from the North Slope on January 30, 2014, was tested for metals, VOCs, and chloride. Test results indicated a detection of acetone 780 micrograms per kilogram (µg/kg), 2-butanone (MEK), 2-hexanone 31 µg/kg, arsenic 0.13 milligrams per liter (mg/L), barium 0.67 mg/L, and chromium 0.21 mg/L. Analytical results of all other chemicals of concern were below reported detection limits. These numbers are based on the raw leachate and do not account for any dilution which might have occurred with the unnamed creek flow during the seep event.

### Dilution Estimates

Based on the estimated flows in the unnamed creek on February 21, 2014, of 27 $ft^3$/second and flows in the South Yamhill River of 9,750 $ft^3$/s, the South Yamhill River flow was more than 300 times higher than the unnamed creek. With such a high dilution, there would have been little or no impact to the South Yamhill River or aquatic biota that occurs there.

# Conclusions

Evaluation results are summarized as follows:

- The unnamed creek habitat at sites SP1, SP2, and SP3 provides fair refugia for fish consisting of large woody debris, a few small undercut banks, and overhanging vegetation. The overall characterization and quality of the unnamed creek habitat trend, including water quality, in-stream habitat, and riparian, was considered to be of fair to moderate condition and did not appear to be altered from its baseline condition as a result of the seep.
- Benthic substrate at SP1, SP2, and SP3 is primarily mud and silt. The mud and silt bottom substrate would likely not provide suitable spawning habitat for salmonids that require clear clean gravels. Some invasive or introduced species may find the habitat more suitable.
- The South Yamhill River flows reported for the USGS gauge site 14194150 on the left bank, 0.3 mile downstream of Cozine Creek, at Highway 18 McMinnville Spur bridge (provisional data at RM 5.6), was approximately 800 $ft^3$/second on February 10, 2014, and peaked at 11,400 $ft^3$/second on February 20, 2014. The South Yamhill River flow at 0800 on February 21, 2014, was 9,750 $ft^3$/second.
- No film, foam, slime, or odors were noted in the water during the water quality sampling measurements taken on February 21, 2014, at sites SP1, SP2, and SP3. Water quality measurements, including temperature, conductivity, pH, and turbidity, were recorded during the stream reconnaissance field assessment. Little to no changes occurred in the creek temperature, pH, and turbidity downstream of the seep site. The conductivity was slightly higher at sites SP2 and SP3 when compared with the SP1 site. The temperature, conductivity, pH, and turbidity of the unnamed creek sites were all similar to those in the South Yamhill River.

- Water quality measurements in the unnamed creek of pH, temperature, and conductivity conducted on February 21, 2014, were similar at all sites. This demonstrates that at the time of the site visits, no effect on these indicators as a result of the leachate seep was occurring. Turbidity was slightly higher at SP-2 and SP-3 than SP-1.
- No mortality of aquatic flora or fauna was observed during either site visit. Overall, the impact to aquatic biota was estimated to be minimal on the basis of the high flows of the unnamed creek and the South Yamhill River, and the comparison to aquatic water quality criteria and human health criteria.

# References

Greater Yamhill Watershed Council (GYWC). 2013. Watershed Restoration Action Plan. Prepared by Cascade Environmental Group, LLC.

Oregon Department of Environmental Quality (DEQ). 1985. *Freshwater Ammonia Calculator Ambient Water Quality Criteria for Ammonia 1984*. EPA 440/5-85-001. January 1985.

Oregon Department of Environmental Quality (DEQ). 1998. *Guidance for Ecological Risk Assessment: Levels I, II, III, IV*. Waste Management and Cleanup Division, Clean Up Policy and Program Development Section, Portland, Oregon. Final. April 1998.

Oregon Department of Environmental Quality (DEQ). 2012. *Implementation Instructions for Water Quality Criteria Chromium III (CAS#:16065-831) and Chromium VI (Cas # 18540-29-9)*. October 23, 2012.

U.S. Environmental Protection Agency (EPA). 2011. *Water Quality Criteria*.

U.S. Geological Survey Northwest Information System. On-line data-base for river flow and stage elevation (February 9-21, 2014) for South Yamhill gage No. 14194150

Yamhill Basin Council. 2002. Upper South Yamhill River Watershed Assessment, Yamhill and Polk Counties, Oregon. November 2002.

# Tables

TABLE 1

**Unnamed Creek Water Quality Measurement Results (Samples Collected February 21, 2014)**

| Sampling Location | GPS Coordinates | Temperature °C | Conductivity (µS/cm) | pH | Turbidity NTU | Comments |
|---|---|---|---|---|---|---|
| SP1 | N45.16451 W123.24627 | 8.6 | 170 | 6.81 | 30.7 | No odor, color very light brown |
| SP2 | N45.16272 W123.24212 | 9.0 | 191 | 6.59 | 34.8 | No odor, color very light brown |
| SP3 | N45.66226 W123.24144 | 8.8 | 195 | 6.69 | 32.6 | No odor, color very light brown, water slower moving |
| SPYMUP* | N45.15885 W123.24159 | 8.2 | 80 | 6.75 | 38.1 | No odor, very light brown, high water |

*Collected from South Yamhill

Abbreviations:

°C = degrees Celsius
GPS = global positioning system
µS/cm = microSiemens per centimeter
NTU = nephelometric turbidity unit

TABLE 2

**Sample Data Results for Sites SP1, SP2 , SP3—February 10 and 21, 2014, and South Yamhill River Upstream of Unnamed Creek—February 21, 2014**

| | | | SP1 | | SP2 | | SP3 | | YM | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Analyte** | **Unit** | **Method** | **10-Feb Result** | **21-Feb Result** | **10-Feb Result** | **21-Feb Result** | **10-Feb Result** | **21-Feb Result** | **21-Feb Result** | **Acute Screening Level Freshwater CMC (µg/L)** | **Chronic Screening Level Freshwater CCC (µg/L)** | **Pass Water Quality Criteria Y/N** | **Human Health Water + Organism (µg/L)** | **Human Health Water Only (µg/L)** | **Pass Water Quality Criteria Y/N** |
| 2-Butanone (MEK) | µg/L | 8260B | 6.0 U | 0.15 U | 6.0 U | 2.53 | 8.2 | 3.62 | 0.15 U | NA | NA | NA | NA | NA | NA |
| Acetone | µg/L | 8260B | 10 U | 0.15 U | 16 | 3.00 | 26 | 4.51 | 0.15 U | NA | 1500 d | Y | NA | NA | NA |
| Arsenic | µg/L | 200.8 | NT | 0.54 | NT | 0.70 | NT | 0.68 | 0.43 J | 360 | 190 | Y | 2.1 | 2.1 | Y |
| Barium | µg/L | 200.8 | NT | 31.4 | NT | 38.1 | NT | 36.9 | 20.1 | NA | NA | NA | 1000 | NA | Y |
| Cadmium | µg/L | 200.8 | 0.10 U | 0.030 U | 0.10 U | 0.030 U | 0.10 U | 0.030 U | 0.030 U | 2.2 e | 1.7 ac | Y | NA | NA | NA |
| Chromium | µg/L | 200.8 | 1.5 | 2.78 | 2.1 | 2.92 | 2.8 | 2.61 | 2.69 | 16 b | 11 b | Y | NA | NA | NA |
| Copper | µg/L | 200.8 | 4.0 U | NT | 4.0 U | NT | 4.0 U | NT | NT | 11 ac | 7.6 ac | Y | 1300 | NA | Y |
| Lead | µg/L | 200.8 | 5.0 U | 0.44 J | 5.0 U | 0.57 | 5.0 U | 0.48 J | 0.50 | 82 ac | 3.2 ac | Y | NA | NA | NA |
| Mercury | µg/L | 7470A | NT | 0.015 U | NT | 0.015 U | NT | 0.015 U | 0.015 U | 1.4 | 0.77 | y | NA | NA | NA |
| Nickel | µg/L | 201.8 | 1.2 | NT | 1.6 | NT | 2.0 | NT | NT | 304 ac | 33.8 ac | Y | 140 | 170 | Y |
| Selenium | µg/L | 200.8 | NT | 0.29 J | NT | 0.37 J | NT | 0.36 J | 0.30 J | 260 | 35 | Y | 120 | 420 | Y |
| Silver | µg/L | 200.8 | NT | 0.11 J | NT | 0.012 J | NT | 0.013 J | 0.0098 J | 1.3 c | NA | Y | NA | NA | NA |
| Zinc | µg/L | 200.8 | 5.0 U | NT | 5.0 U | NT | 5.0 U | NT | NT | 76 ac | 77 ac | Y | 2100 | 2600 | Y |
| Oil and Grease (HEM) | µg/L | 1664A | 9900 U | NT | 11000 U | NT | 9900 U | NT | NT | NA | NA | NA | NA | NA | NA |
| Chloride | µg/L | 300.0 | 25000 | 9120 | 30000 | 9830 | 34000 | 9810 | 4720 | 860,000 | 230,000 | Y | NA | NA | NA |
| Sulfate | µg/L | 300.0 | 14000 | NT | 13000 | NT | 13000 | NT | NT | NA | NA | NA | NA | NA | NA |
| Ammonia | mg/L | 350.1 | 0.59 | 0.014 U | 3.6 | 0.014 U | 6.5 | 0.014 U | 0.014 U | 23.2 mg/L | 1.86 f (mg/L) | N | NA | NA | NA |
| Nitrate/Nitrite | µg/L | 353.2 | 2400 | 3980 | 2700 | 5320 | 2700 | 5200 | 860 | NA | NA | NA | 10000 | NA | Y |
| Phosphate, Total as P | µg/L | 365.4 | NT | 160 | NT | 170 | NT | 140 | 110 | NA | NA | NA | NA | NA | NA |
| Chemical Oxygen Demand (COD) | µg/L | 410.4 | 5000 U | NT | 21000 | NT | 95000 | NT | NT | NA | NA | NA | NA | NA | NA |
| Total Organic Carbon - Average | µg/L | 9060 | 3600 | NT | 11000 | NT | 16000 | NT | NT | NA | NA | NA | NA | NA | NA |
| Total Alkalinity | µg/L | SM 2320B | 86000 | NT | 96000 | NT | 100000 | NT | NT | NA | 20000 | NA | NA | NA | NA |
| Bicarbonate Alkalinity | µg/L | SM 2320B | 86000 | NT | 96000 | NT | 100000 | NT | NT | NA | NA | NA | NA | NA | NA |
| Carbonate Alkalinity | µg/L | SM 2320B | 5000 U | NT | 5000 U | NT | 5000 U | NT | NT | NA | NA | NA | NA | NA | NA |
| Total Dissolved Solids | µg/L | SM 2540C | 170000 | 102000 | 190000 | 101000 | 200000 | 141000 | 25000 | NA | NA | NA | NA | NA | NA |
| Total Kjeldahl Nitrogen as N | µg/L | 351.2 | NT | 430 | NT | 220 | NT | 150 J | 210 | NA | NA | NA | NA | NA | NA |
| Total Suspended Solids | µg/L | SM 2540D | 19000 | 9200 | 12000 | 23200 | 14000 | 14600 | 36000 | NA | NA | NA | NA | NA | NA |
| Total Hardness | mg/L | 130.1 | NT | 60 | NT | 70 | NT | 70 | 27 | NA | NA | NA | NA | NA | NA |
| ***Dissolved*** | | | | | | | | | | | | | | | |
| Calcium | µg/L | 6010B | 24000 | NT | 25000 | NT | 25000 | NT | NT | NA | NA | NA | NA | NA | NA |
| Iron | µg/L | 6010B | 170 | NT | 140 | NT | 240 | NT | NT | NA | 1000 | NA | NA | NA | NA |
| Magnesium+A33 | µg/L | 6010B | 8000 | NT | 9000 | NT | 9000 | NT | NT | NA | NA | NA | NA | NA | NA |
| Manganese | µg/L | 6010B | 76 | NT | 95 | NT | 100 | NT | NT | NA | NA | NA | NA | NA | NA |
| Potassium | µg/L | 6010B | 970 | NT | 2200 | NT | 3700 | NT | NT | NA | NA | NA | NA | NA | NA |
| Sodium | µg/L | 6010B | 14000 | NT | 19000 | NT | 23000 | NT | NT | NA | NA | NA | NA | NA | NA |

**Notes:**

**Gray-shaded** cells = Criterion above water quality screening level

a. Source: EPA's Water Quality Criteria (EPA, 2011). Freshwater criteria for metals are expressed in terms of the dissolved metal in the water column.

b. Source: Implementation Instructions for Water Quality Criteria Chromium III (CAS#:16065-831) and Chromium VI (Cas # 18540-29-9). DEQ Memorandum, October 23, 2012.

c. The freshwater criterion for this metal depends on water column hardness. Hardness used was 60 mg/L as $CaCO_3$ from DEQ Table for dissolved value 33B.

d. *Guidance for Ecological Risk Assessment Levels I, II, III IV.* DEQ, April 1998.

e. Source: U.S. EPA's Water Quality Criteria (EPA, 2011). DEQ Table 20 expressed as total metal hardness dependent.

f. DEQ *Freshwater Ammonia Calculator Ambient Water Quality Criteria for Ammonia 1984,* EPA 440/5-85-001. January 1985 (page 105).

**Abbreviations:**

$CaCO_3$ = calcium carbonate

CCC = criterion continuous concentration

CMC = criterion maximum concentration

DEQ = Oregon Department of Environmental Quality

EPA = U.S. Environmental Protection Agency

J = Between the method detection limit (MDL) and reporting limit

µg/L = micrograms per liter

mg/L = micrograms per liter

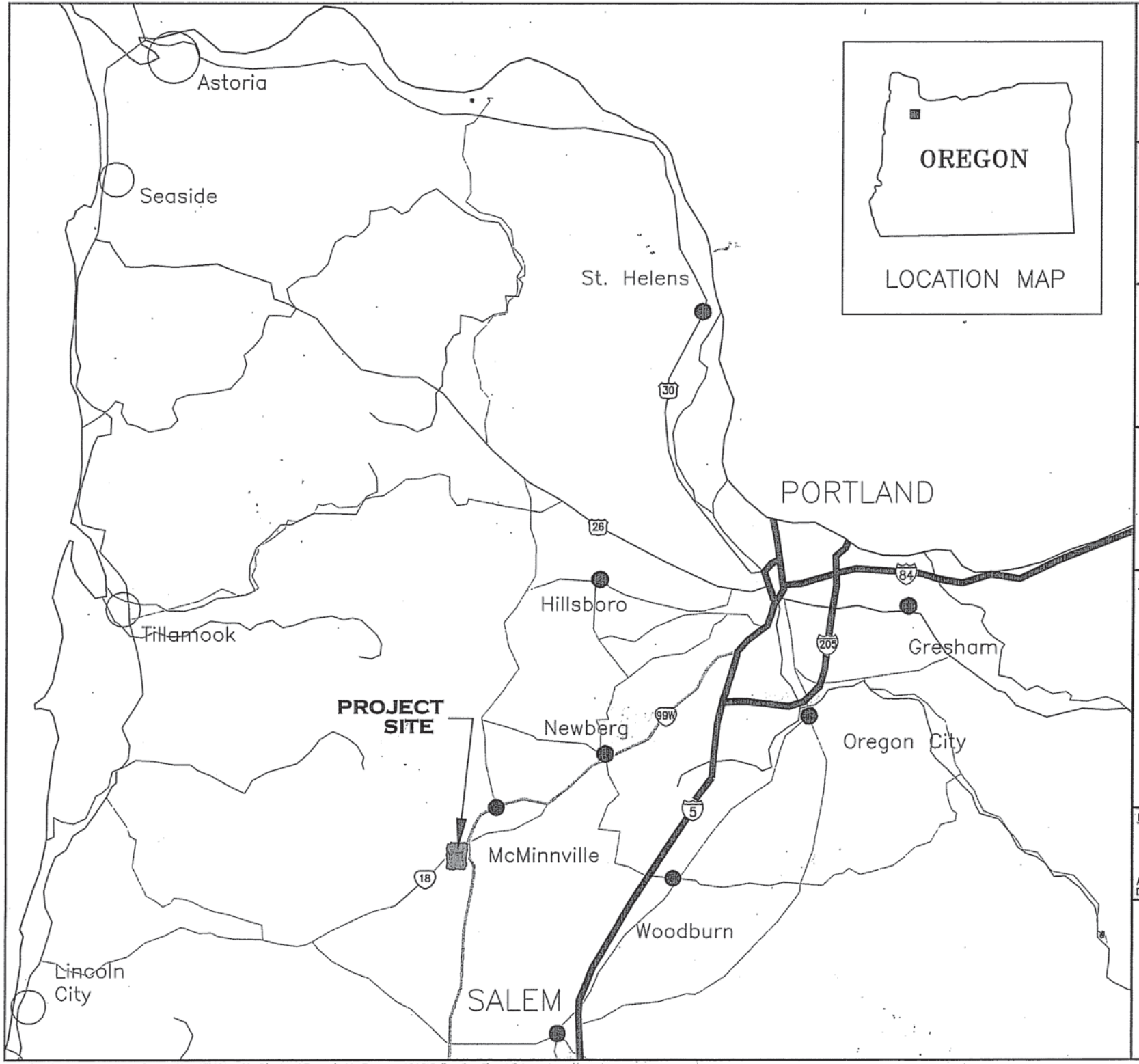
NA = Not applicable

NT = Not tested

U or UJ = nondetect

*Detection limits for CH2M HILL samples were lower than detection limits fro SCS sample.*

# Attachment 1
# Figures




Jones & Stokes
317 SW Alder Street, Suite 800
Portland, OR 97204

CLIENT:

WM WASTE MANAGEMENT

PROJECT:

**Riverbend Landfill Expansion**

TITLE:

**Vicinity Map**

WO#07-0733

DATA:

**LEGEND**

**Project Site Location**

N

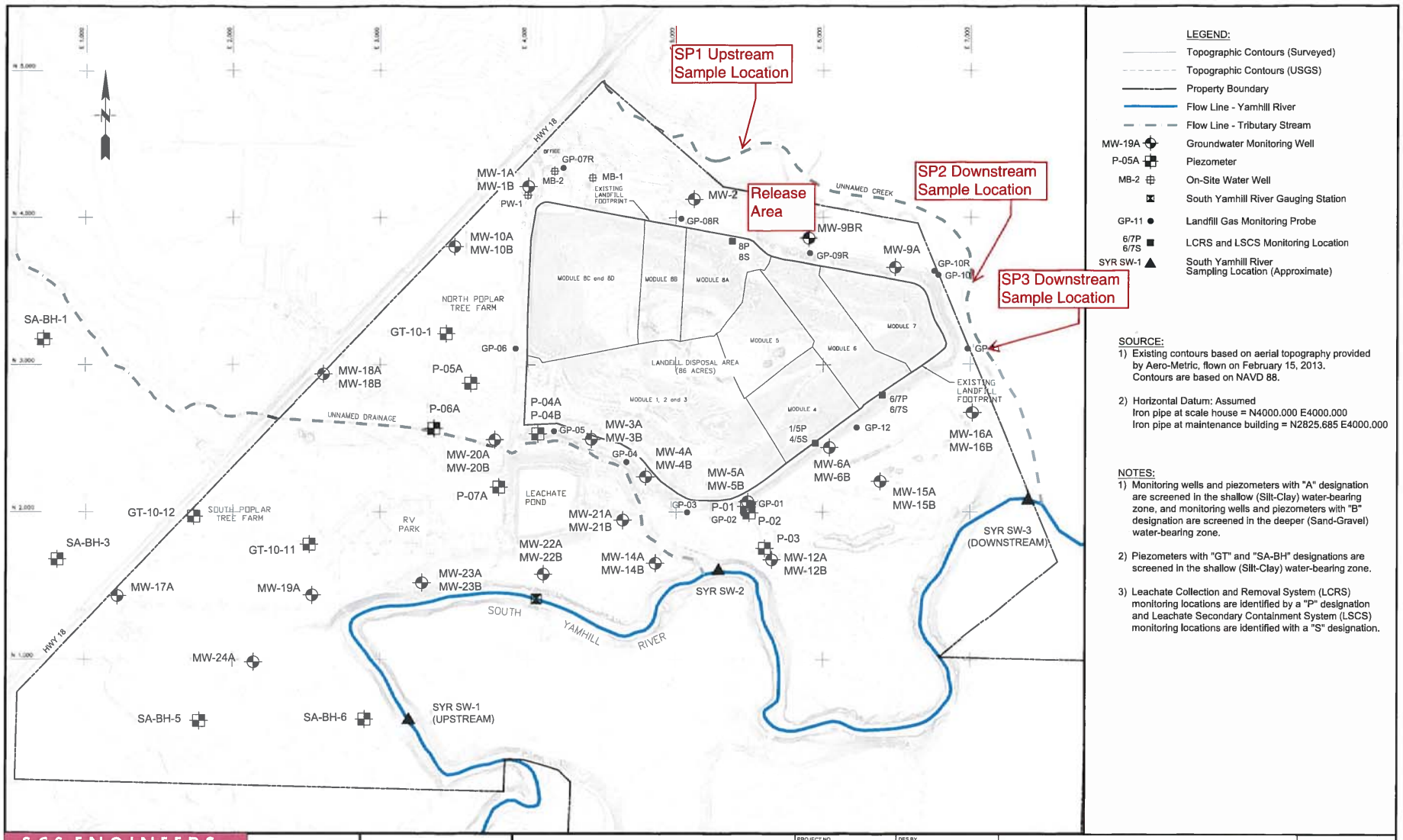
Not To Scale

NOTES:

Author:
Dec 17, 2007 – 4:34pm

**FIGURE 1**
**Site Location**

G:\Projects\Waste Management\Riverbend Landfill\06293.06 - Riverbend Expansion\04 Resources\CAD\Delineation_Figs_1-5.dwg




SCS ENGINEERS
Environmental Consultants and Contractors
14945 SW Sequoia Parkway, Suite 180
Portland, Oregon 97224
(503) 639-9201 FAX: (503) 684-6948

| | |
|---|---|
| PROJECT NO. | 04208022.13 |
| DES BY | D.L. |
| SCALE | AS SHOWN |
| CHK BY | J.D. |
| CAD FILE | FIGURE 1-2 |
| APP BY | L.C. |

**FIGURE 2**
**Site Plan and Monitoring Locations**
**Riverbend Landfill, McMinnville, OR**

DATE: APRIL 2013
FIGURE

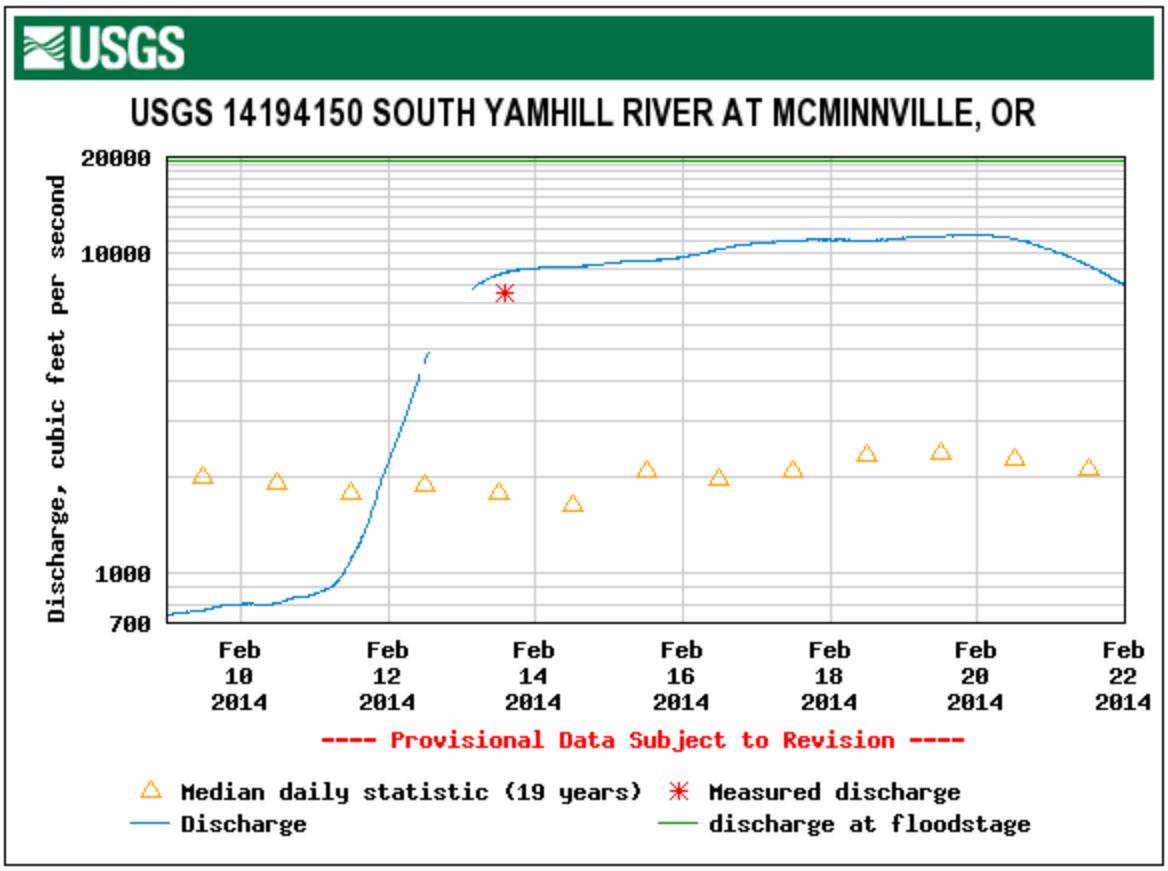



FIGURE 3
**Flow in South Yamhill River from February 10, 2014, to February 22, 2014**

# Attachment 2
# Site Visit Timeline

This document describes events prior to, during and after the leachate seep event verbally reported to DEQ on Mon Feb 9th by Jim Denson, WM EP Manager.

Riverbend Leachate system manages two sets of liquids from the landfill. The leachate collection and removal sumps (LCRS) are manifolded together and pumped to the Leachate Pond. The facility also has several vertical gas wells with extraction pumps manifolded with several horizontal gas collectors which drain to 3 - ~21,000 gallon tanks known as the "North Tanks". These tanks generally are considered to take Gas System Liquids (GSL).

**Thursday February 6**

Normal operating day, approximately 78,250 gallons of liquid were transported from Riverbend to disposal facilities. The liquids transported off site included 46,750 gallons of leachate from the pond taken to Hillsboro Landfill and 31,500 gallons of GSL taken to PPV. Tank levels at the end of the day were as planned, all three tanks nearly empty.

District Manager (DM), Larry Pierce conducted a visual inspection of the site before he left site – all looked fine.

Weather for the evening/night was light to moderate rain.

**Friday, February 7**

Weather turned to heavy snow and ice. Public roads became nearly impassable over the morning hours. The North Tank transfer operations were suspended all day due to tankers being unable to access PPV/Bravo. Liquid hauling operations from the pond were discontinued around 12:00 (noon) due to impassable public roads. All landfill LCRS sumps were functioning properly with no head on liner exceedances.

At around 5:00 PM, DM conducted a visual inspection of the site. At that time, the North Tanks had filled to within 1 ft of the overflow level. As a result of the tanks being full, the isolation valves were closed to prevent the tanks from overtopping. All landfill LCRS sumps pumping to the pond were functioning properly with no head on liner exceedances.

Weather for the evening/night was snow and freezing rain.

**Saturday February 8**

The weather continued to be extremely bad, and the public road situation worsened overnight. Hauling operations of the GSL from the North Tanks, or leachate from the pond was not possible due to road conditions. The North Tank isolation valves remained closed preventing additional GSL flow to the North Tanks. All landfill LCRS sumps were functioning properly with no head on liner exceedances.

Weather throughout the day was moderate snow and freezing rain.

**Sunday, February 9**

DM arrived at the site at approximately 6:00PM to inspect site conditions. The North tanks were still at approximately one foot below capacity. DM opened the valves and filled all three tanks to the tank overflow level, with continuous observation. Once the tanks were completely full, the isolation valves were again closed. At that time, DM conducted a site inspection and did not observe any seepage from the landfill.

Weather throughout the day was moderate to heavy snow showers, tapering off in the evening.

**Monday, February 10**

**6:40 AM:** DM arrived at the site and drove around the site to inspect conditions. During the visual inspection, DM discovered a seep on the North side of the landfill, near Module 8 LCRS sump. DM observed one location of moderate flow and several minor seeps. DM observed the combined flows of from the seeps at the base of the northern landfill slope, flowing across the service road, and into the adjacent vegetated

area. He did not observe any flow going directly into the creek; however the creek was not visible from his vantage point. Further, snow and ice on the ground complicated observation of the flow path. DM immediately implemented corrective actions to mitigate impacts due to the seepage, including construction of small berms and sumps to contain the flow and use of vacuum trucks and pumps to recover the remaining ponded liquids. The temporary sumps were pumped to the Module 8 primary riser and the vacuum trucks collected and disposed of the liquid at the onsite leachate pond. A total of 6 vacuum truck loads of liquids were recovered throughout the day, a mixture of seep liquids and snow/rain melt. The vacuum trucks were reported to have a capacity of 2000 gallons.

Weather for the day/evening/night was icing, freezing rain to rain in the evening.

**7:00 AM:** First liquid transportation truck arrived and commenced pumping out of North tanks. Site personnel re-opened the isolation valves and noted flow into the tanks. By this time, the seepage reduced to a trickle and stopped entirely within approximately 30 minutes after the leachate collection/drainage system isolation valves were re-opened.

A sump pump was placed in the concrete vault at the downstream of the seep and all residual seepage was removed. No seepage was leaving the landfill footprint at this time.

**8:00-9:00 AM:** Once flow from the seep had been stopped; DM followed the most direct path of the flow to observe conditions in the area adjacent to the creek. Initially, he observed what appeared to be a discolored liquid in the low-lying area at the base of the North slope. DM also observed that the liquid flowed only limited distance into the stormwater swale at the base of the slope, which extended to the East.

Vacuum trucks were dispatched to the swale to remove any discolored liquids.

At 9:00 AM, no discolored liquid was visible in the swale or unnamed creek.

**2:00 PM:** EP Specialist arrived and walked the same area previously observed by DM. At this time, Jeff did not observe any leachate entering the unnamed creek. Jeff observed the temporary sumps at the base of the north slope and clean-up efforts with the vacuum truck. Jim Denson notified Bob Schwarz, Lissa Druback and Mindi English of ODEQ.

**3:45 PM:** SCS Engineers conducted water quality sampling at one upstream and two downstream locations in the unnamed creek. SCS sampled for stormwater parameters and for leachate parameters. Results of this sampling are expected within two weeks of sampling.

**Tuesday, February 11**

As a precaution, the site continued use of vacuum trucks and temporary sumps to ensure any residual liquids were collected. WM personnel continued to frequently inspected the landfill and North sideline

Weather for the day/evening/night was moderate to light rain into the evening

**Wednesday, February 12**

DEQ Personnel (Tim Spencer and Daniel Hough) arrived onsite at approximately 11:15am. Jeff O'Leary provided a brief overview of the incident and accompanied DEQ for a thorough inspection of the area of concern as well as inspected several areas along the bank of the unnamed creek.

WM site personnel continue to conduct daily inspections for leachate seeps and to ensure all landfill liquids (leachate and gas system liquids) are collected and managed per the site leachate management plan.

# Attachment 3
# Laboratory Reports 2/10/14 and 2/21/14

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

# ANALYTICAL REPORT

Job Number: 280-52060-1

Job Description: 1003|Riverbend Landfill STW

For:
Waste Management
13469 SW Highway 18
McMinnville, OR 97128

Attention: Mr. Jeff O'Leary

Approved for release.
Betsy A Sara
Project Manager II
2/20/2014 9:35 AM

Betsy A Sara, Project Manager II
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0189
betsy.sara@testamericainc.com
02/20/2014

cc: Ms. Tiffany Andrews
Mr. Jason Davendonis
Mr. Brian McMullen

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is E87667.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

# Table of Contents

**CASE NARRATIVE**

**Client: Waste Management**

**Project: 1003|Riverbend Landfill STW**

**Report Number: 280-52060-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

This report may include reporting limits (RLs) less than TestAmerica's standard reporting limit. The reported sample results and associated reporting limits are being used specifically to meet the needs of this project. Note that data are not normally reported to these levels without qualification because they are inherently less reliable and potentially less defensible than required by the latest industry standards.

**Sample Receiving**

The samples were received on 02/12/2014; the samples arrived in good condition, properly preserved and on ice. The temperatures of the coolers at receipt were 0.8º C and 3.5º C.

**Holding Times**

All holding times were met.

**Method Blanks**

All Method Blanks met method criteria.

**Laboratory Control Samples (LCS)**

All Laboratory Control Sample recoveries were within control limits.

**Matrix Spike (MS) and Matrix Spike Duplicate (MSD)**

The percent recoveries and/or relative percent difference of the MS/MSD performed on a sample from another client were outside control limits for Total Copper Method 200.8 because the sample concentration was greater than four times the spike amount. Because the corresponding Laboratory Control Sample and the Method Blank sample were within control limits, no corrective action was taken.

The Matrix Spikes and Matrix Spike Duplicates performed on samples from other clients exhibited recoveries outside control limits for Ammonia Method 350.1 and Nitrate/Nitrite Method 353.2. Because the corresponding Laboratory Control Samples and the Method Blank samples were within control limits, these anomalies may be due to matrix interference and no corrective action was taken.

All other MS and MSD results were within established control limits.

**General Comments**

For samples requiring analysis at a dilution, the dilution factor has been multiplied by the Method Detection Limit (MDL) for each analyte and evaluated versus the project-specific reporting limit (PSRL). If the obtained value is below the PSRL, then the PSRL is preserved as the reporting limit for the diluted result, otherwise, the obtained value becomes the reporting limit. This is done in order to maintain the PSRL to meet permit requirements at the request of the client and to report the lowest possible RL for each analyte.

## EXECUTIVE SUMMARY - Detections

Client: Waste Management

Job Number: 280-52060-1

| Lab Sample ID / Analyte | Client Sample ID | Result | Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **280-52060-1** | **SP1** | | | | | |
| Chromium | | 0.0015 | | 0.0010 | mg/L | 200.8 |
| Nickel | | 0.0012 | | 0.0010 | mg/L | 200.8 |
| Chloride | | 25 | | 0.50 | mg/L | 300.0 |
| Sulfate | | 14 | | 1.0 | mg/L | 300.0 |
| Ammonia as N | | 0.59 | | 0.040 | mg/L | 350.1 |
| Nitrate/Nitrite | | 2.4 | | 0.050 | mg/L | 353.2 |
| Total Organic Carbon - Average | | 3.6 | | 1.0 | mg/L | 9060 |
| Total Alkalinity | | 86 | | 5.0 | mg/L | SM 2320B |
| Bicarbonate Alkalinity | | 86 | | 5.0 | mg/L | SM 2320B |
| Total Dissolved Solids | | 170 | | 10 | mg/L | SM 2540C |
| Total Suspended Solids | | 19 | | 4.0 | mg/L | SM 2540D |
| ***Dissolved*** | | | | | | |
| Calcium | | 24000 | | 500 | ug/L | 6010B |
| Iron | | 170 | | 30 | ug/L | 6010B |
| Magnesium | | 8000 | | 200 | ug/L | 6010B |
| Manganese | | 76 | | 3.0 | ug/L | 6010B |
| Potassium | | 970 | | 500 | ug/L | 6010B |
| Sodium | | 14000 | | 1000 | ug/L | 6010B |
| **280-52060-2** | **SP2** | | | | | |
| Acetone | | 16 | | 10 | ug/L | 8260B |
| Chromium | | 0.0021 | | 0.0010 | mg/L | 200.8 |
| Nickel | | 0.0016 | | 0.0010 | mg/L | 200.8 |
| Chloride | | 30 | | 0.50 | mg/L | 300.0 |
| Sulfate | | 13 | | 1.0 | mg/L | 300.0 |
| Ammonia as N | | 3.6 | | 0.040 | mg/L | 350.1 |
| Nitrate/Nitrite | | 2.7 | | 0.050 | mg/L | 353.2 |
| Chemical Oxygen Demand (COD) | | 21 | | 5.0 | mg/L | 410.4 |
| Total Organic Carbon - Average | | 11 | | 1.0 | mg/L | 9060 |
| Total Alkalinity | | 96 | | 5.0 | mg/L | SM 2320B |
| Bicarbonate Alkalinity | | 96 | | 5.0 | mg/L | SM 2320B |
| Total Dissolved Solids | | 190 | | 10 | mg/L | SM 2540C |
| Total Suspended Solids | | 12 | | 4.0 | mg/L | SM 2540D |
| ***Dissolved*** | | | | | | |
| Calcium | | 25000 | | 500 | ug/L | 6010B |
| Iron | | 140 | | 30 | ug/L | 6010B |
| Magnesium | | 9000 | | 200 | ug/L | 6010B |
| Manganese | | 95 | | 3.0 | ug/L | 6010B |
| Potassium | | 2200 | | 500 | ug/L | 6010B |
| Sodium | | 19000 | | 1000 | ug/L | 6010B |

## EXECUTIVE SUMMARY - Detections

Client: Waste Management

Job Number: 280-52060-1

| Lab Sample ID / Analyte | Client Sample ID | Result | Qualifier | Reporting Limit | Units | Method |
|---|---|---|---|---|---|---|
| **280-52060-3** | **SP3** | | | | | |
| 2-Butanone (MEK) | | 8.2 | | 6.0 | ug/L | 8260B |
| Acetone | | 26 | | 10 | ug/L | 8260B |
| Chromium | | 0.0028 | | 0.0010 | mg/L | 200.8 |
| Nickel | | 0.0020 | | 0.0010 | mg/L | 200.8 |
| Chloride | | 34 | | 0.50 | mg/L | 300.0 |
| Sulfate | | 13 | | 1.0 | mg/L | 300.0 |
| Ammonia as N | | 6.5 | | 0.080 | mg/L | 350.1 |
| Nitrate/Nitrite | | 2.7 | | 0.050 | mg/L | 353.2 |
| Chemical Oxygen Demand (COD) | | 95 | | 5.0 | mg/L | 410.4 |
| Total Organic Carbon - Average | | 16 | | 1.0 | mg/L | 9060 |
| Total Alkalinity | | 100 | | 5.0 | mg/L | SM 2320B |
| Bicarbonate Alkalinity | | 100 | | 5.0 | mg/L | SM 2320B |
| Total Dissolved Solids | | 200 | | 10 | mg/L | SM 2540C |
| Total Suspended Solids | | 14 | | 4.0 | mg/L | SM 2540D |
| ***Dissolved*** | | | | | | |
| Calcium | | 25000 | | 500 | ug/L | 6010B |
| Iron | | 240 | | 30 | ug/L | 6010B |
| Magnesium | | 9000 | | 200 | ug/L | 6010B |
| Manganese | | 100 | | 3.0 | ug/L | 6010B |
| Potassium | | 3700 | | 500 | ug/L | 6010B |
| Sodium | | 23000 | | 1000 | ug/L | 6010B |

# METHOD SUMMARY

Client: Waste Management

Job Number: 280-52060-1

| Description | Lab Location | Method | Preparation Method |
|---|---|---|---|
| **Matrix: Water** | | | |
| Volatile Organic Compounds (GC/MS) | TAL DEN | SW846 8260B | |
| Purge and Trap | TAL DEN | | SW846 5030B |
| Metals (ICP/MS) | TAL DEN | EPA 200.8 | |
| Preparation, Total Metals | TAL DEN | | EPA 200.8 |
| Metals (ICP) | TAL DEN | SW846 6010B | |
| Preparation, Total Recoverable or Dissolved Metals | TAL DEN | | SW846 3005A |
| Sample Filtration, Field | | | FIELD_FLTRD |
| HEM and SGT-HEM | TAL DEN | 1664A 1664A | |
| HEM and SGT-HEM (SPE) | TAL DEN | | 1664A 1664A |
| Anions, Ion Chromatography | TAL DEN | MCAWW 300.0 | |
| Nitrogen, Ammonia | TAL DEN | MCAWW 350.1 | |
| Nitrogen, Nitrate-Nitrite | TAL DEN | MCAWW 353.2 | |
| COD | TAL DEN | MCAWW 410.4 | |
| Organic Carbon, Total (TOC) | TAL DEN | SW846 9060 | |
| Alkalinity | TAL DEN | SM SM 2320B | |
| Solids, Total Dissolved (TDS) | TAL DEN | SM SM 2540C | |
| Solids, Total Suspended (TSS) | TAL DEN | SM SM 2540D | |

**Lab References:**

TAL DEN = TestAmerica Denver

**Method References:**

1664A = EPA-821-98-002

EPA = US Environmental Protection Agency

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

## METHOD / ANALYST SUMMARY

Client: Waste Management

Job Number: 280-52060-1

| Method | Analyst | Analyst ID |
|---|---|---|
| SW846 8260B | Contreras, Evan | EC |
| EPA 200.8 | Trudell, Lynn-Anne M | LMT |
| SW846 6010B | Harre, John K | JKH |
| 1664A 1664A | Benson, Alex F | AFB |
| MCAWW 300.0 | Allen, Andrew J | AJA |
| MCAWW 350.1 | Graham, Shane M | SMG |
| MCAWW 350.1 | Hoefler, Alexandra F | AFH |
| MCAWW 353.2 | Ayala, Delaina V | DVA |
| MCAWW 410.4 | Jewell, Connie C | CCJ |
| SW846 9060 | Jewell, Connie C | CCJ |
| SM SM 2320B | Hoefler, Alexandra F | AFH |
| SM SM 2540C | Janssen, Elizabeth L | ELJ |
| SM SM 2540D | Janssen, Elizabeth L | ELJ |

## SAMPLE SUMMARY

Client: Waste Management

Job Number: 280-52060-1

| Lab Sample ID | Client Sample ID | Client Matrix | Date/Time Sampled | Date/Time Received |
|---|---|---|---|---|
| 280-52060-1 | SP1 | Water | 02/10/2014 1745 | 02/12/2014 1040 |
| 280-52060-2 | SP2 | Water | 02/10/2014 1715 | 02/12/2014 1040 |
| 280-52060-3 | SP3 | Water | 02/10/2014 1640 | 02/12/2014 1040 |
| 280-52060-4TB | TRIP BLANK | Water | 02/10/2014 0000 | 02/12/2014 1040 |

# SAMPLE RESULTS

Client: Waste Management | Job Number: 280-52060-1

**Client Sample ID:** **SP1**

Lab Sample ID: 280-52060-1 | Date Sampled: 02/10/2014 1745
Client Matrix: Water | Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2255.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2120 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2120 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,2-Trichloroethane | ND | | 1.0 |
| 1,1-Dichloroethane | ND | | 1.0 |
| 1,1-Dichloroethene | ND | | 1.0 |
| 1,1-Dichloropropene | ND | | 1.0 |
| 1,2,3-Trichlorobenzene | ND | | 1.0 |
| 1,2,3-Trichloropropane | ND | | 1.0 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 |
| 1,2-Dibromo-3-Chloropropane | ND | | 5.0 |
| 1,2-Dibromoethane | ND | | 1.0 |
| 1,2-Dichlorobenzene | ND | | 1.0 |
| 1,2-Dichloroethane | ND | | 1.0 |
| 1,2-Dichloropropane | ND | | 1.0 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 |
| 1,3-Dichlorobenzene | ND | | 1.0 |
| 1,3-Dichloropropane | ND | | 1.0 |
| 1,4-Dichlorobenzene | ND | | 1.0 |
| 2,2-Dichloropropane | ND | | 5.0 |
| 2-Butanone (MEK) | ND | | 6.0 |
| 2-Chlorotoluene | ND | | 1.0 |
| 2-Hexanone | ND | | 5.0 |
| 4-Chlorotoluene | ND | | 1.0 |
| 4-Isopropyltoluene | ND | | 1.0 |
| 4-Methyl-2-pentanone | ND | | 5.0 |
| Acetone | ND | | 10 |
| Benzene | ND | | 1.0 |
| Bromobenzene | ND | | 1.0 |
| Bromochloromethane | ND | | 1.0 |
| Bromodichloromethane | ND | | 1.0 |
| Bromoform | ND | | 1.0 |
| Bromomethane | ND | | 2.0 |
| Carbon disulfide | ND | | 2.0 |
| Carbon tetrachloride | ND | | 1.0 |
| Chlorobenzene | ND | | 1.0 |
| Chloroethane | ND | | 2.0 |
| Chloroform | ND | | 1.0 |
| Chloromethane | ND | | 2.0 |
| cis-1,2-Dichloroethene | ND | | 1.0 |
| cis-1,3-Dichloropropene | ND | | 1.0 |
| Dibromochloromethane | ND | | 1.0 |
| Dibromomethane | ND | | 1.0 |
| Dichlorodifluoromethane | ND | | 2.0 |
| Ethylbenzene | ND | | 1.0 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **SP1**

Lab Sample ID: 280-52060-1
Client Matrix: Water

Date Sampled: 02/10/2014 1745
Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2255.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2120 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2120 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| Hexachlorobutadiene | ND | | 1.0 |
| Isopropylbenzene | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| Naphthalene | ND | | 1.0 |
| n-Butylbenzene | ND | | 1.0 |
| N-Propylbenzene | ND | | 1.0 |
| sec-Butylbenzene | ND | | 1.0 |
| Styrene | ND | | 1.0 |
| tert-Butylbenzene | ND | | 1.0 |
| Tetrachloroethene | ND | | 1.0 |
| Toluene | ND | | 1.0 |
| trans-1,2-Dichloroethene | ND | | 1.0 |
| trans-1,3-Dichloropropene | ND | | 3.0 |
| Trichloroethene | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 2.0 |
| Vinyl chloride | ND | | 1.0 |
| Xylenes (total) | ND | | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 108 | | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 85 | | 78 - 120 |
| Dibromofluoromethane (Surr) | 108 | | 77 - 120 |
| Toluene-d8 (Surr) | 84 | | 80 - 125 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **SP1**

Lab Sample ID: 280-52060-1
Client Matrix: Water

Date Sampled: 02/10/2014 1745
Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2255.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2120 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2120 | | | | |

**Tentatively Identified Compounds** **Number TIC's Found:** **2**

| Cas Number | Analyte | RT | Est. Result (ug/L) | Qualifier |
|---|---|---|---|---|
| 75659-63-1 | 3,5-Dimethylamphetamine | 5.06 | 180 | T J N |
| 1066-40-6 | Silanol, trimethyl- | 7.07 | 110 | T J N |

Client: Waste Management | Job Number: 280-52060-1

**Client Sample ID:** **SP2**

Lab Sample ID: 280-52060-2 | Date Sampled: 02/10/2014 1715
Client Matrix: Water | Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2256.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2142 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2142 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,2-Trichloroethane | ND | | 1.0 |
| 1,1-Dichloroethane | ND | | 1.0 |
| 1,1-Dichloroethene | ND | | 1.0 |
| 1,1-Dichloropropene | ND | | 1.0 |
| 1,2,3-Trichlorobenzene | ND | | 1.0 |
| 1,2,3-Trichloropropane | ND | | 1.0 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 |
| 1,2-Dibromo-3-Chloropropane | ND | | 5.0 |
| 1,2-Dibromoethane | ND | | 1.0 |
| 1,2-Dichlorobenzene | ND | | 1.0 |
| 1,2-Dichloroethane | ND | | 1.0 |
| 1,2-Dichloropropane | ND | | 1.0 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 |
| 1,3-Dichlorobenzene | ND | | 1.0 |
| 1,3-Dichloropropane | ND | | 1.0 |
| 1,4-Dichlorobenzene | ND | | 1.0 |
| 2,2-Dichloropropane | ND | | 5.0 |
| 2-Butanone (MEK) | ND | | 6.0 |
| 2-Chlorotoluene | ND | | 1.0 |
| 2-Hexanone | ND | | 5.0 |
| 4-Chlorotoluene | ND | | 1.0 |
| 4-Isopropyltoluene | ND | | 1.0 |
| 4-Methyl-2-pentanone | ND | | 5.0 |
| Acetone | 16 | | 10 |
| Benzene | ND | | 1.0 |
| Bromobenzene | ND | | 1.0 |
| Bromochloromethane | ND | | 1.0 |
| Bromodichloromethane | ND | | 1.0 |
| Bromoform | ND | | 1.0 |
| Bromomethane | ND | | 2.0 |
| Carbon disulfide | ND | | 2.0 |
| Carbon tetrachloride | ND | | 1.0 |
| Chlorobenzene | ND | | 1.0 |
| Chloroethane | ND | | 2.0 |
| Chloroform | ND | | 1.0 |
| Chloromethane | ND | | 2.0 |
| cis-1,2-Dichloroethene | ND | | 1.0 |
| cis-1,3-Dichloropropene | ND | | 1.0 |
| Dibromochloromethane | ND | | 1.0 |
| Dibromomethane | ND | | 1.0 |
| Dichlorodifluoromethane | ND | | 2.0 |
| Ethylbenzene | ND | | 1.0 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **SP2**

Lab Sample ID: 280-52060-2
Client Matrix: Water

Date Sampled: 02/10/2014 1715
Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2256.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2142 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2142 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| Hexachlorobutadiene | ND | | 1.0 |
| Isopropylbenzene | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| Naphthalene | ND | | 1.0 |
| n-Butylbenzene | ND | | 1.0 |
| N-Propylbenzene | ND | | 1.0 |
| sec-Butylbenzene | ND | | 1.0 |
| Styrene | ND | | 1.0 |
| tert-Butylbenzene | ND | | 1.0 |
| Tetrachloroethene | ND | | 1.0 |
| Toluene | ND | | 1.0 |
| trans-1,2-Dichloroethene | ND | | 1.0 |
| trans-1,3-Dichloropropene | ND | | 3.0 |
| Trichloroethene | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 2.0 |
| Vinyl chloride | ND | | 1.0 |
| Xylenes (total) | ND | | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 115 | | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 97 | | 78 - 120 |
| Dibromofluoromethane (Surr) | 116 | | 77 - 120 |
| Toluene-d8 (Surr) | 96 | | 80 - 125 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **SP2**

Lab Sample ID: 280-52060-2
Client Matrix: Water

Date Sampled: 02/10/2014 1715
Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2256.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2142 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2142 | | | | |

**Tentatively Identified Compounds** **Number TIC's Found:** **1**

| Cas Number | Analyte | RT | Est. Result (ug/L) | Qualifier |
|---|---|---|---|---|
| 1066-40-6 | Silanol, trimethyl- | 7.06 | 180 | T J N |

Client: Waste Management | Job Number: 280-52060-1

**Client Sample ID:** **SP3**

Lab Sample ID: 280-52060-3 | Date Sampled: 02/10/2014 1640
Client Matrix: Water | Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2257.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2203 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2203 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,2-Trichloroethane | ND | | 1.0 |
| 1,1-Dichloroethane | ND | | 1.0 |
| 1,1-Dichloroethene | ND | | 1.0 |
| 1,1-Dichloropropene | ND | | 1.0 |
| 1,2,3-Trichlorobenzene | ND | | 1.0 |
| 1,2,3-Trichloropropane | ND | | 1.0 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 |
| 1,2-Dibromo-3-Chloropropane | ND | | 5.0 |
| 1,2-Dibromoethane | ND | | 1.0 |
| 1,2-Dichlorobenzene | ND | | 1.0 |
| 1,2-Dichloroethane | ND | | 1.0 |
| 1,2-Dichloropropane | ND | | 1.0 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 |
| 1,3-Dichlorobenzene | ND | | 1.0 |
| 1,3-Dichloropropane | ND | | 1.0 |
| 1,4-Dichlorobenzene | ND | | 1.0 |
| 2,2-Dichloropropane | ND | | 5.0 |
| 2-Butanone (MEK) | 8.2 | | 6.0 |
| 2-Chlorotoluene | ND | | 1.0 |
| 2-Hexanone | ND | | 5.0 |
| 4-Chlorotoluene | ND | | 1.0 |
| 4-Isopropyltoluene | ND | | 1.0 |
| 4-Methyl-2-pentanone | ND | | 5.0 |
| Acetone | 26 | | 10 |
| Benzene | ND | | 1.0 |
| Bromobenzene | ND | | 1.0 |
| Bromochloromethane | ND | | 1.0 |
| Bromodichloromethane | ND | | 1.0 |
| Bromoform | ND | | 1.0 |
| Bromomethane | ND | | 2.0 |
| Carbon disulfide | ND | | 2.0 |
| Carbon tetrachloride | ND | | 1.0 |
| Chlorobenzene | ND | | 1.0 |
| Chloroethane | ND | | 2.0 |
| Chloroform | ND | | 1.0 |
| Chloromethane | ND | | 2.0 |
| cis-1,2-Dichloroethene | ND | | 1.0 |
| cis-1,3-Dichloropropene | ND | | 1.0 |
| Dibromochloromethane | ND | | 1.0 |
| Dibromomethane | ND | | 1.0 |
| Dichlorodifluoromethane | ND | | 2.0 |
| Ethylbenzene | ND | | 1.0 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **SP3**

Lab Sample ID: 280-52060-3
Client Matrix: Water

Date Sampled: 02/10/2014 1640
Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2257.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2203 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2203 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| Hexachlorobutadiene | ND | | 1.0 |
| Isopropylbenzene | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| Naphthalene | ND | | 1.0 |
| n-Butylbenzene | ND | | 1.0 |
| N-Propylbenzene | ND | | 1.0 |
| sec-Butylbenzene | ND | | 1.0 |
| Styrene | ND | | 1.0 |
| tert-Butylbenzene | ND | | 1.0 |
| Tetrachloroethene | ND | | 1.0 |
| Toluene | ND | | 1.0 |
| trans-1,2-Dichloroethene | ND | | 1.0 |
| trans-1,3-Dichloropropene | ND | | 3.0 |
| Trichloroethene | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 2.0 |
| Vinyl chloride | ND | | 1.0 |
| Xylenes (total) | ND | | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 107 | | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 89 | | 78 - 120 |
| Dibromofluoromethane (Surr) | 107 | | 77 - 120 |
| Toluene-d8 (Surr) | 88 | | 80 - 125 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **SP3**

Lab Sample ID: 280-52060-3
Client Matrix: Water

Date Sampled: 02/10/2014 1640
Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2257.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2203 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2203 | | | | |

**Tentatively Identified Compounds** **Number TIC's Found:** **1**

| Cas Number | Analyte | RT | Est. Result (ug/L) | Qualifier |
|---|---|---|---|---|
| 1066-40-6 | Silanol, trimethyl- | 7.06 | 97 | T J N |

Client: Waste Management | Job Number: 280-52060-1

**Client Sample ID:** **TRIP BLANK**

Lab Sample ID: 280-52060-4TB | Date Sampled: 02/10/2014 0000
Client Matrix: Water | Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2258.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2225 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2225 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,2-Trichloroethane | ND | | 1.0 |
| 1,1-Dichloroethane | ND | | 1.0 |
| 1,1-Dichloroethene | ND | | 1.0 |
| 1,1-Dichloropropene | ND | | 1.0 |
| 1,2,3-Trichlorobenzene | ND | | 1.0 |
| 1,2,3-Trichloropropane | ND | | 1.0 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 |
| 1,2-Dibromo-3-Chloropropane | ND | | 5.0 |
| 1,2-Dibromoethane | ND | | 1.0 |
| 1,2-Dichlorobenzene | ND | | 1.0 |
| 1,2-Dichloroethane | ND | | 1.0 |
| 1,2-Dichloropropane | ND | | 1.0 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 |
| 1,3-Dichlorobenzene | ND | | 1.0 |
| 1,3-Dichloropropane | ND | | 1.0 |
| 1,4-Dichlorobenzene | ND | | 1.0 |
| 2,2-Dichloropropane | ND | | 5.0 |
| 2-Butanone (MEK) | ND | | 6.0 |
| 2-Chlorotoluene | ND | | 1.0 |
| 2-Hexanone | ND | | 5.0 |
| 4-Chlorotoluene | ND | | 1.0 |
| 4-Isopropyltoluene | ND | | 1.0 |
| 4-Methyl-2-pentanone | ND | | 5.0 |
| Acetone | ND | | 10 |
| Benzene | ND | | 1.0 |
| Bromobenzene | ND | | 1.0 |
| Bromochloromethane | ND | | 1.0 |
| Bromodichloromethane | ND | | 1.0 |
| Bromoform | ND | | 1.0 |
| Bromomethane | ND | | 2.0 |
| Carbon disulfide | ND | | 2.0 |
| Carbon tetrachloride | ND | | 1.0 |
| Chlorobenzene | ND | | 1.0 |
| Chloroethane | ND | | 2.0 |
| Chloroform | ND | | 1.0 |
| Chloromethane | ND | | 2.0 |
| cis-1,2-Dichloroethene | ND | | 1.0 |
| cis-1,3-Dichloropropene | ND | | 1.0 |
| Dibromochloromethane | ND | | 1.0 |
| Dibromomethane | ND | | 1.0 |
| Dichlorodifluoromethane | ND | | 2.0 |
| Ethylbenzene | ND | | 1.0 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **TRIP BLANK**

Lab Sample ID: 280-52060-4TB
Client Matrix: Water

Date Sampled: 02/10/2014 0000
Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2258.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2225 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2225 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| Hexachlorobutadiene | ND | | 1.0 |
| Isopropylbenzene | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| Naphthalene | ND | | 1.0 |
| n-Butylbenzene | ND | | 1.0 |
| N-Propylbenzene | ND | | 1.0 |
| sec-Butylbenzene | ND | | 1.0 |
| Styrene | ND | | 1.0 |
| tert-Butylbenzene | ND | | 1.0 |
| Tetrachloroethene | ND | | 1.0 |
| Toluene | ND | | 1.0 |
| trans-1,2-Dichloroethene | ND | | 1.0 |
| trans-1,3-Dichloropropene | ND | | 3.0 |
| Trichloroethene | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 2.0 |
| Vinyl chloride | ND | | 1.0 |
| Xylenes (total) | ND | | 2.0 |

| Surrogate | %Rec | Qualifier | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 112 | | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 90 | | 78 - 120 |
| Dibromofluoromethane (Surr) | 114 | | 77 - 120 |
| Toluene-d8 (Surr) | 90 | | 80 - 125 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **TRIP BLANK**

Lab Sample ID: 280-52060-4TB
Client Matrix: Water

Date Sampled: 02/10/2014 0000
Date Received: 02/12/2014 1040

**8260B Volatile Organic Compounds (GC/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 8260B | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Prep Method: | 5030B | Prep Batch: | N/A | Lab File ID: | MS2258.D |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 2225 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 2225 | | | | |

**Tentatively Identified Compounds** **Number TIC's Found:** **1**

| Cas Number | Analyte | RT | Est. Result (ug/L) | Qualifier |
|---|---|---|---|---|
| 1066-40-6 | Silanol, trimethyl- | 7.07 | 110 | T J N |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **SP1**

Lab Sample ID: 280-52060-1
Client Matrix: Water

Date Sampled: 02/10/2014 1745
Date Received: 02/12/2014 1040

**200.8 Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 200.8 | Analysis Batch: | 280-213012 | Instrument ID: | MT_077 |
| Prep Method: | 200.8 | Prep Batch: | 280-212734 | Lab File ID: | 122SMPL.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/13/2014 1944 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |

| Analyte | Result (mg/L) | Qualifier | RL |
|---|---|---|---|
| Cadmium | ND | | 0.00010 |
| Chromium | 0.0015 | | 0.0010 |
| Copper | ND | | 0.0040 |
| Lead | ND | | 0.0050 |
| Nickel | 0.0012 | | 0.0010 |
| Zinc | ND | | 0.0050 |

**6010B Metals (ICP)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-213018 | Instrument ID: | MT_025 |
| Prep Method: | 3005A | Prep Batch: | 280-212747 | Lab File ID: | 25A5021314.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/14/2014 0332 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| Calcium | 24000 | | 500 |
| Iron | 170 | | 30 |
| Magnesium | 8000 | | 200 |
| Manganese | 76 | | 3.0 |
| Potassium | 970 | | 500 |
| Sodium | 14000 | | 1000 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **SP2**

Lab Sample ID: 280-52060-2
Client Matrix: Water

Date Sampled: 02/10/2014 1715
Date Received: 02/12/2014 1040

**200.8 Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 200.8 | Analysis Batch: | 280-213012 | Instrument ID: | MT_077 |
| Prep Method: | 200.8 | Prep Batch: | 280-212734 | Lab File ID: | 123SMPL.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/13/2014 1948 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |

| Analyte | Result (mg/L) | Qualifier | RL |
|---|---|---|---|
| Cadmium | ND | | 0.00010 |
| Chromium | 0.0021 | | 0.0010 |
| Copper | ND | | 0.0040 |
| Lead | ND | | 0.0050 |
| Nickel | 0.0016 | | 0.0010 |
| Zinc | ND | | 0.0050 |

**6010B Metals (ICP)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-213018 | Instrument ID: | MT_025 |
| Prep Method: | 3005A | Prep Batch: | 280-212747 | Lab File ID: | 25A5021314.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/14/2014 0334 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| Calcium | 25000 | | 500 |
| Iron | 140 | | 30 |
| Magnesium | 9000 | | 200 |
| Manganese | 95 | | 3.0 |
| Potassium | 2200 | | 500 |
| Sodium | 19000 | | 1000 |

Client: Waste Management

Job Number: 280-52060-1

**Client Sample ID:** **SP3**

Lab Sample ID: 280-52060-3
Client Matrix: Water

Date Sampled: 02/10/2014 1640
Date Received: 02/12/2014 1040

**200.8 Metals (ICP/MS)**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 200.8 | Analysis Batch: | 280-213012 | Instrument ID: | MT_077 |
| Prep Method: | 200.8 | Prep Batch: | 280-212734 | Lab File ID: | 124SMPL.d |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/13/2014 1952 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |

| Analyte | Result (mg/L) | Qualifier | RL |
|---|---|---|---|
| Cadmium | ND | | 0.00010 |
| Chromium | 0.0028 | | 0.0010 |
| Copper | ND | | 0.0040 |
| Lead | ND | | 0.0050 |
| Nickel | 0.0020 | | 0.0010 |
| Zinc | ND | | 0.0050 |

**6010B Metals (ICP)-Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| Analysis Method: | 6010B | Analysis Batch: | 280-213018 | Instrument ID: | MT_025 |
| Prep Method: | 3005A | Prep Batch: | 280-212747 | Lab File ID: | 25A5021314.asc |
| Dilution: | 1.0 | | | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/14/2014 0337 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |

| Analyte | Result (ug/L) | Qualifier | RL |
|---|---|---|---|
| Calcium | 25000 | | 500 |
| Iron | 240 | | 30 |
| Magnesium | 9000 | | 200 |
| Manganese | 100 | | 3.0 |
| Potassium | 3700 | | 500 |
| Sodium | 23000 | | 1000 |

**General Chemistry**

**Client Sample ID:** **SP1**

Lab Sample ID: 280-52060-1 Date Sampled: 02/10/2014 1745
Client Matrix: Water Date Received: 02/12/2014 1040

| Analyte | Result | Qual | Units | RL | Dil | Method |
|---|---|---|---|---|---|---|
| Oil & Grease (HEM) | ND | | mg/L | 9.9 | 1.0 | 1664A |
| Analysis Batch: 280-213506 | Analysis Date: 02/18/2014 1453 | | | | | |
| Prep Batch: 280-213423 | Prep Date: 02/18/2014 0908 | | | | | |
| Chloride | 25 | | mg/L | 0.50 | 1.0 | 300.0 |
| Analysis Batch: 280-213440 | Analysis Date: 02/18/2014 1940 | | | | | |
| Sulfate | 14 | | mg/L | 1.0 | 1.0 | 300.0 |
| Analysis Batch: 280-213440 | Analysis Date: 02/18/2014 1940 | | | | | |
| Ammonia as N | 0.59 | | mg/L | 0.040 | 1.0 | 350.1 |
| Analysis Batch: 280-213140 | Analysis Date: 02/14/2014 1350 | | | | | |
| Nitrate/Nitrite | 2.4 | | mg/L | 0.050 | 1.0 | 353.2 |
| Analysis Batch: 280-213707 | Analysis Date: 02/18/2014 2334 | | | | | |
| Chemical Oxygen Demand (COD) | ND | | mg/L | 5.0 | 1.0 | 410.4 |
| Analysis Batch: 280-213080 | Analysis Date: 02/14/2014 1016 | | | | | |
| Total Organic Carbon - Average | 3.6 | | mg/L | 1.0 | 1.0 | 9060 |
| Analysis Batch: 280-213056 | Analysis Date: 02/14/2014 0120 | | | | | |
| Total Alkalinity | 86 | | mg/L | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-213100 | Analysis Date: 02/13/2014 2046 | | | | | |
| Bicarbonate Alkalinity | 86 | | mg/L | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-213100 | Analysis Date: 02/13/2014 2046 | | | | | |
| Carbonate Alkalinity | ND | | mg/L | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-213100 | Analysis Date: 02/13/2014 2046 | | | | | |
| Total Dissolved Solids | 170 | | mg/L | 10 | 1.0 | SM 2540C |
| Analysis Batch: 280-212751 | Analysis Date: 02/12/2014 1918 | | | | | |
| Total Suspended Solids | 19 | | mg/L | 4.0 | 1.0 | SM 2540D |
| Analysis Batch: 280-212951 | Analysis Date: 02/13/2014 1711 | | | | | |

**General Chemistry**

**Client Sample ID:** **SP2**

Lab Sample ID: 280-52060-2 Date Sampled: 02/10/2014 1715
Client Matrix: Water Date Received: 02/12/2014 1040

| Analyte | Result | Qual | Units | RL | Dil | Method |
|---|---|---|---|---|---|---|
| Oil & Grease (HEM) | ND | | mg/L | 11 | 1.0 | 1664A |
| Analysis Batch: 280-213506 | Analysis Date: 02/18/2014 1453 | | | | | |
| Prep Batch: 280-213423 | Prep Date: 02/18/2014 0908 | | | | | |
| Chloride | 30 | | mg/L | 0.50 | 1.0 | 300.0 |
| Analysis Batch: 280-213440 | Analysis Date: 02/18/2014 1957 | | | | | |
| Sulfate | 13 | | mg/L | 1.0 | 1.0 | 300.0 |
| Analysis Batch: 280-213440 | Analysis Date: 02/18/2014 1957 | | | | | |
| Ammonia as N | 3.6 | | mg/L | 0.040 | 1.0 | 350.1 |
| Analysis Batch: 280-213140 | Analysis Date: 02/14/2014 1352 | | | | | |
| Nitrate/Nitrite | 2.7 | | mg/L | 0.050 | 1.0 | 353.2 |
| Analysis Batch: 280-213707 | Analysis Date: 02/18/2014 2336 | | | | | |
| Chemical Oxygen Demand (COD) | 21 | | mg/L | 5.0 | 1.0 | 410.4 |
| Analysis Batch: 280-213080 | Analysis Date: 02/14/2014 1016 | | | | | |
| Total Organic Carbon - Average | 11 | | mg/L | 1.0 | 1.0 | 9060 |
| Analysis Batch: 280-213056 | Analysis Date: 02/14/2014 0212 | | | | | |
| Total Alkalinity | 96 | | mg/L | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-213100 | Analysis Date: 02/13/2014 2050 | | | | | |
| Bicarbonate Alkalinity | 96 | | mg/L | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-213100 | Analysis Date: 02/13/2014 2050 | | | | | |
| Carbonate Alkalinity | ND | | mg/L | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-213100 | Analysis Date: 02/13/2014 2050 | | | | | |
| Total Dissolved Solids | 190 | | mg/L | 10 | 1.0 | SM 2540C |
| Analysis Batch: 280-212751 | Analysis Date: 02/12/2014 1918 | | | | | |
| Total Suspended Solids | 12 | | mg/L | 4.0 | 1.0 | SM 2540D |
| Analysis Batch: 280-212951 | Analysis Date: 02/13/2014 1711 | | | | | |

**General Chemistry**

**Client Sample ID:** **SP3**

Lab Sample ID: 280-52060-3 Date Sampled: 02/10/2014 1640
Client Matrix: Water Date Received: 02/12/2014 1040

| Analyte | Result | Qual | Units | RL | Dil | Method |
|---|---|---|---|---|---|---|
| Oil & Grease (HEM) | ND | | mg/L | 9.9 | 1.0 | 1664A |
| Analysis Batch: 280-213506 | Analysis Date: 02/18/2014 1453 | | | | | |
| Prep Batch: 280-213423 | Prep Date: 02/18/2014 0908 | | | | | |
| Chloride | 34 | | mg/L | 0.50 | 1.0 | 300.0 |
| Analysis Batch: 280-213440 | Analysis Date: 02/18/2014 2014 | | | | | |
| Sulfate | 13 | | mg/L | 1.0 | 1.0 | 300.0 |
| Analysis Batch: 280-213440 | Analysis Date: 02/18/2014 2014 | | | | | |
| Ammonia as N | 6.5 | | mg/L | 0.080 | 2.0 | 350.1 |
| Analysis Batch: 280-213572 | Analysis Date: 02/18/2014 2000 | | | | | |
| Nitrate/Nitrite | 2.7 | | mg/L | 0.050 | 1.0 | 353.2 |
| Analysis Batch: 280-213707 | Analysis Date: 02/18/2014 2337 | | | | | |
| Chemical Oxygen Demand (COD) | 95 | | mg/L | 5.0 | 1.0 | 410.4 |
| Analysis Batch: 280-213080 | Analysis Date: 02/14/2014 1025 | | | | | |
| Total Organic Carbon - Average | 16 | | mg/L | 1.0 | 1.0 | 9060 |
| Analysis Batch: 280-213056 | Analysis Date: 02/14/2014 0229 | | | | | |
| Total Alkalinity | 100 | | mg/L | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-213100 | Analysis Date: 02/13/2014 2054 | | | | | |
| Bicarbonate Alkalinity | 100 | | mg/L | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-213100 | Analysis Date: 02/13/2014 2054 | | | | | |
| Carbonate Alkalinity | ND | | mg/L | 5.0 | 1.0 | SM 2320B |
| Analysis Batch: 280-213100 | Analysis Date: 02/13/2014 2054 | | | | | |
| Total Dissolved Solids | 200 | | mg/L | 10 | 1.0 | SM 2540C |
| Analysis Batch: 280-212751 | Analysis Date: 02/12/2014 1918 | | | | | |
| Total Suspended Solids | 14 | | mg/L | 4.0 | 1.0 | SM 2540D |
| Analysis Batch: 280-212951 | Analysis Date: 02/13/2014 1711 | | | | | |

## DATA REPORTING QUALIFIERS

Client: Waste Management Job Number: 280-52060-1

| Lab Section | Qualifier | Description |
|---|---|---|
| GC/MS VOA | | |
| | J | Indicates an Estimated Value for TICs |
| | N | Presumptive evidence of material. |
| | T | Result is a tentatively identified compound (TIC) and an estimated value. |
| | J | Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value. |
| Metals | | |
| | 4 | MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable. |
| General Chemistry | | |
| | F1 | MS and/or MSD Recovery exceeds the control limits |

# QUALITY CONTROL RESULTS

Client: Waste Management

Job Number: 280-52060-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **GC/MS VOA** | | | | | |
| **Analysis Batch:280-213182** | | | | | |
| LCS 280-213182/4 | Lab Control Sample | T | Water | 8260B | |
| MB 280-213182/5 | Method Blank | T | Water | 8260B | |
| 280-52029-W-3 MS | Matrix Spike | T | Water | 8260B | |
| 280-52029-W-3 MSD | Matrix Spike Duplicate | T | Water | 8260B | |
| 280-52060-1 | SP1 | T | Water | 8260B | |
| 280-52060-2 | SP2 | T | Water | 8260B | |
| 280-52060-3 | SP3 | T | Water | 8260B | |
| 280-52060-4TB | TRIP BLANK | T | Water | 8260B | |

**Report Basis**
T = Total

| | | | | | |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| **Prep Batch: 280-212734** | | | | | |
| LCS 280-212734/2-A | Lab Control Sample | T | Water | 200.8 | |
| MB 280-212734/1-A | Method Blank | T | Water | 200.8 | |
| 280-52056-A-1-E MS | Matrix Spike | T | Water | 200.8 | |
| 280-52056-A-1-F MSD | Matrix Spike Duplicate | T | Water | 200.8 | |
| 280-52060-1 | SP1 | T | Water | 200.8 | |
| 280-52060-2 | SP2 | T | Water | 200.8 | |
| 280-52060-3 | SP3 | T | Water | 200.8 | |
| **Prep Batch: 280-212747** | | | | | |
| LCS 280-212747/2-A | Lab Control Sample | R | Water | 3005A | |
| MB 280-212747/1-A | Method Blank | R | Water | 3005A | |
| 280-51987-F-11-C MS | Matrix Spike | D | Water | 3005A | |
| 280-51987-F-11-D MSD | Matrix Spike Duplicate | D | Water | 3005A | |
| 280-52060-1 | SP1 | D | Water | 3005A | |
| 280-52060-2 | SP2 | D | Water | 3005A | |
| 280-52060-3 | SP3 | D | Water | 3005A | |
| **Analysis Batch:280-213012** | | | | | |
| LCS 280-212734/2-A | Lab Control Sample | T | Water | 200.8 | 280-212734 |
| MB 280-212734/1-A | Method Blank | T | Water | 200.8 | 280-212734 |
| 280-52056-A-1-E MS | Matrix Spike | T | Water | 200.8 | 280-212734 |
| 280-52056-A-1-F MSD | Matrix Spike Duplicate | T | Water | 200.8 | 280-212734 |
| 280-52060-1 | SP1 | T | Water | 200.8 | 280-212734 |
| 280-52060-2 | SP2 | T | Water | 200.8 | 280-212734 |
| 280-52060-3 | SP3 | T | Water | 200.8 | 280-212734 |
| **Analysis Batch:280-213018** | | | | | |
| LCS 280-212747/2-A | Lab Control Sample | R | Water | 6010B | 280-212747 |
| MB 280-212747/1-A | Method Blank | R | Water | 6010B | 280-212747 |
| 280-51987-F-11-C MS | Matrix Spike | D | Water | 6010B | 280-212747 |
| 280-51987-F-11-D MSD | Matrix Spike Duplicate | D | Water | 6010B | 280-212747 |

Client: Waste Management

Job Number: 280-52060-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **Metals** | | | | | |
| **Analysis Batch:280-213018** | | | | | |
| 280-52060-1 | SP1 | D | Water | 6010B | 280-212747 |
| 280-52060-2 | SP2 | D | Water | 6010B | 280-212747 |
| 280-52060-3 | SP3 | D | Water | 6010B | 280-212747 |

**Report Basis**

D = Dissolved

R = Total Recoverable

T = Total

Client: Waste Management

Job Number: 280-52060-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-212751** | | | | | |
| LCS 280-212751/2 | Lab Control Sample | T | Water | SM 2540C | |
| LCSD 280-212751/3 | Lab Control Sample Duplicate | T | Water | SM 2540C | |
| MB 280-212751/1 | Method Blank | T | Water | SM 2540C | |
| 280-52060-1 | SP1 | T | Water | SM 2540C | |
| 280-52060-1DU | Duplicate | T | Water | SM 2540C | |
| 280-52060-2 | SP2 | T | Water | SM 2540C | |
| 280-52060-3 | SP3 | T | Water | SM 2540C | |
| **Analysis Batch:280-212951** | | | | | |
| LCS 280-212951/2 | Lab Control Sample | T | Water | SM 2540D | |
| LCSD 280-212951/3 | Lab Control Sample Duplicate | T | Water | SM 2540D | |
| MB 280-212951/1 | Method Blank | T | Water | SM 2540D | |
| 280-52028-B-1 DU | Duplicate | T | Water | SM 2540D | |
| 280-52060-1 | SP1 | T | Water | SM 2540D | |
| 280-52060-2 | SP2 | T | Water | SM 2540D | |
| 280-52060-3 | SP3 | T | Water | SM 2540D | |
| **Analysis Batch:280-213056** | | | | | |
| LCS 280-213056/42 | Lab Control Sample | T | Water | 9060 | |
| LCSD 280-213056/43 | Lab Control Sample Duplicate | T | Water | 9060 | |
| MB 280-213056/44 | Method Blank | T | Water | 9060 | |
| 280-52060-1 | SP1 | T | Water | 9060 | |
| 280-52060-1MS | Matrix Spike | T | Water | 9060 | |
| 280-52060-1MSD | Matrix Spike Duplicate | T | Water | 9060 | |
| 280-52060-2 | SP2 | T | Water | 9060 | |
| 280-52060-3 | SP3 | T | Water | 9060 | |
| **Analysis Batch:280-213080** | | | | | |
| LCS 280-213080/3 | Lab Control Sample | T | Water | 410.4 | |
| LCSD 280-213080/4 | Lab Control Sample Duplicate | T | Water | 410.4 | |
| MB 280-213080/5 | Method Blank | T | Water | 410.4 | |
| 280-51979-D-4 MS | Matrix Spike | T | Water | 410.4 | |
| 280-51979-D-4 MSD | Matrix Spike Duplicate | T | Water | 410.4 | |
| 280-52060-1 | SP1 | T | Water | 410.4 | |
| 280-52060-2 | SP2 | T | Water | 410.4 | |
| 280-52060-3 | SP3 | T | Water | 410.4 | |
| **Analysis Batch:280-213100** | | | | | |
| LCS 280-213100/31 | Lab Control Sample | T | Water | SM 2320B | |
| LCSD 280-213100/32 | Lab Control Sample Duplicate | T | Water | SM 2320B | |
| MB 280-213100/33 | Method Blank | T | Water | SM 2320B | |
| 280-52060-1 | SP1 | T | Water | SM 2320B | |
| 280-52060-2 | SP2 | T | Water | SM 2320B | |
| 280-52060-3 | SP3 | T | Water | SM 2320B | |
| 280-52082-C-5 DU | Duplicate | T | Water | SM 2320B | |

Client: Waste Management

Job Number: 280-52060-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-213140** | | | | | |
| LCS 280-213140/19 | Lab Control Sample | T | Water | 350.1 | |
| LCSD 280-213140/20 | Lab Control Sample Duplicate | T | Water | 350.1 | |
| MB 280-213140/21 | Method Blank | T | Water | 350.1 | |
| 280-52060-1 | SP1 | T | Water | 350.1 | |
| 280-52060-2 | SP2 | T | Water | 350.1 | |
| **Prep Batch: 280-213423** | | | | | |
| LCS 280-213423/2-A | Lab Control Sample | T | Water | 1664A | |
| LCSD 280-213423/3-A | Lab Control Sample Duplicate | T | Water | 1664A | |
| MB 280-213423/1-A | Method Blank | T | Water | 1664A | |
| 280-52060-1 | SP1 | T | Water | 1664A | |
| 280-52060-2 | SP2 | T | Water | 1664A | |
| 280-52060-3 | SP3 | T | Water | 1664A | |
| 280-52133-A-2-A MS | Matrix Spike | T | Water | 1664A | |
| 280-52133-B-2-B MSD | Matrix Spike Duplicate | T | Water | 1664A | |
| **Analysis Batch:280-213440** | | | | | |
| LCS 280-213440/4 | Lab Control Sample | T | Water | 300.0 | |
| LCSD 280-213440/5 | Lab Control Sample Duplicate | T | Water | 300.0 | |
| MB 280-213440/6 | Method Blank | T | Water | 300.0 | |
| 280-51650-J-1 DU | Duplicate | T | Water | 300.0 | |
| 280-51650-J-1 MS | Matrix Spike | T | Water | 300.0 | |
| 280-51650-J-1 MSD | Matrix Spike Duplicate | T | Water | 300.0 | |
| 280-52060-1 | SP1 | T | Water | 300.0 | |
| 280-52060-2 | SP2 | T | Water | 300.0 | |
| 280-52060-3 | SP3 | T | Water | 300.0 | |
| **Analysis Batch:280-213506** | | | | | |
| LCS 280-213423/2-A | Lab Control Sample | T | Water | 1664A | 280-213423 |
| LCSD 280-213423/3-A | Lab Control Sample Duplicate | T | Water | 1664A | 280-213423 |
| MB 280-213423/1-A | Method Blank | T | Water | 1664A | 280-213423 |
| 280-52060-1 | SP1 | T | Water | 1664A | 280-213423 |
| 280-52060-2 | SP2 | T | Water | 1664A | 280-213423 |
| 280-52060-3 | SP3 | T | Water | 1664A | 280-213423 |
| 280-52133-A-2-A MS | Matrix Spike | T | Water | 1664A | 280-213423 |
| 280-52133-B-2-B MSD | Matrix Spike Duplicate | T | Water | 1664A | 280-213423 |
| **Analysis Batch:280-213572** | | | | | |
| LCS 280-213572/57 | Lab Control Sample | T | Water | 350.1 | |
| LCSD 280-213572/58 | Lab Control Sample Duplicate | T | Water | 350.1 | |
| MB 280-213572/59 | Method Blank | T | Water | 350.1 | |
| 280-52060-3 | SP3 | T | Water | 350.1 | |
| 280-52198-A-1 MS | Matrix Spike | T | Water | 350.1 | |
| 280-52198-A-1 MSD | Matrix Spike Duplicate | T | Water | 350.1 | |

Client: Waste Management

Job Number: 280-52060-1

## QC Association Summary

| Lab Sample ID | Client Sample ID | Report Basis | Client Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| **General Chemistry** | | | | | |
| **Analysis Batch:280-213707** | | | | | |
| LCS 280-213707/104 | Lab Control Sample | T | Water | 353.2 | |
| LCSD 280-213707/105 | Lab Control Sample Duplicate | T | Water | 353.2 | |
| MB 280-213707/103 | Method Blank | T | Water | 353.2 | |
| 280-52060-1 | SP1 | T | Water | 353.2 | |
| 280-52060-2 | SP2 | T | Water | 353.2 | |
| 280-52060-3 | SP3 | T | Water | 353.2 | |
| 280-52185-D-2 MS | Matrix Spike | T | Water | 353.2 | |
| 280-52185-D-2 MSD | Matrix Spike Duplicate | T | Water | 353.2 | |

**Report Basis**

T = Total

Client: Waste Management

Job Number: 280-52060-1

## Surrogate Recovery Report

**8260B Volatile Organic Compounds (GC/MS)**

**Client Matrix: Water**

| Lab Sample ID | Client Sample ID | DCA %Rec | BFB %Rec | DBFM %Rec | TOL %Rec |
|---|---|---|---|---|---|
| 280-52060-1 | SP1 | 108 | 85 | 108 | 84 |
| 280-52060-2 | SP2 | 115 | 97 | 116 | 96 |
| 280-52060-3 | SP3 | 107 | 89 | 107 | 88 |
| 280-52060-4 | TRIP BLANK | 112 | 90 | 114 | 90 |
| MB 280-213182/5 | | 111 | 95 | 114 | 99 |
| LCS 280-213182/4 | | 105 | 96 | 107 | 89 |
| 280-52029-W-3 MS | | 109 | 107 | 105 | 103 |
| 280-52029-W-3 MSD | | 109 | 105 | 109 | 98 |

| Surrogate | Acceptance Limits |
|---|---|
| DCA = 1,2-Dichloroethane-d4 (Surr) | 70-127 |
| BFB = 4-Bromofluorobenzene (Surr) | 78-120 |
| DBFM = Dibromofluoromethane (Surr) | 77-120 |
| TOL = Toluene-d8 (Surr) | 80-125 |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-213182**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213182/5 | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | MS2234.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 1349 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 1349 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| 1,1,1,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,1-Trichloroethane | ND | | 1.0 |
| 1,1,2,2-Tetrachloroethane | ND | | 1.0 |
| 1,1,2-Trichloroethane | ND | | 1.0 |
| 1,1-Dichloroethane | ND | | 1.0 |
| 1,1-Dichloroethene | ND | | 1.0 |
| 1,1-Dichloropropene | ND | | 1.0 |
| 1,2,3-Trichlorobenzene | ND | | 1.0 |
| 1,2,3-Trichloropropane | ND | | 1.0 |
| 1,2,4-Trichlorobenzene | ND | | 1.0 |
| 1,2,4-Trimethylbenzene | ND | | 1.0 |
| 1,2-Dibromo-3-Chloropropane | ND | | 5.0 |
| 1,2-Dibromoethane | ND | | 1.0 |
| 1,2-Dichlorobenzene | ND | | 1.0 |
| 1,2-Dichloroethane | ND | | 1.0 |
| 1,2-Dichloropropane | ND | | 1.0 |
| 1,3,5-Trimethylbenzene | ND | | 1.0 |
| 1,3-Dichlorobenzene | ND | | 1.0 |
| 1,3-Dichloropropane | ND | | 1.0 |
| 1,4-Dichlorobenzene | ND | | 1.0 |
| 2,2-Dichloropropane | ND | | 5.0 |
| 2-Butanone (MEK) | ND | | 6.0 |
| 2-Chlorotoluene | ND | | 1.0 |
| 2-Hexanone | ND | | 5.0 |
| 4-Chlorotoluene | ND | | 1.0 |
| 4-Isopropyltoluene | ND | | 1.0 |
| 4-Methyl-2-pentanone | ND | | 5.0 |
| Acetone | ND | | 10 |
| Benzene | ND | | 1.0 |
| Bromobenzene | ND | | 1.0 |
| Bromochloromethane | ND | | 1.0 |
| Bromodichloromethane | ND | | 1.0 |
| Bromoform | ND | | 1.0 |
| Bromomethane | ND | | 2.0 |
| Carbon disulfide | ND | | 2.0 |
| Carbon tetrachloride | ND | | 1.0 |
| Chlorobenzene | ND | | 1.0 |
| Chloroethane | ND | | 2.0 |
| Chloroform | ND | | 1.0 |
| Chloromethane | ND | | 2.0 |
| cis-1,2-Dichloroethene | ND | | 1.0 |
| cis-1,3-Dichloropropene | ND | | 1.0 |
| Dibromochloromethane | ND | | 1.0 |
| Dibromomethane | ND | | 1.0 |
| Dichlorodifluoromethane | ND | | 2.0 |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-213182**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213182/5 | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | MS2234.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 1349 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 1349 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Ethylbenzene | ND | | 1.0 |
| Hexachlorobutadiene | ND | | 1.0 |
| Isopropylbenzene | ND | | 1.0 |
| Methylene Chloride | ND | | 5.0 |
| Naphthalene | ND | | 1.0 |
| n-Butylbenzene | ND | | 1.0 |
| N-Propylbenzene | ND | | 1.0 |
| sec-Butylbenzene | ND | | 1.0 |
| Styrene | ND | | 1.0 |
| tert-Butylbenzene | ND | | 1.0 |
| Tetrachloroethene | ND | | 1.0 |
| Toluene | ND | | 1.0 |
| trans-1,2-Dichloroethene | ND | | 1.0 |
| trans-1,3-Dichloropropene | ND | | 3.0 |
| Trichloroethene | ND | | 1.0 |
| Trichlorofluoromethane | ND | | 2.0 |
| Vinyl chloride | ND | | 1.0 |
| Xylenes (total) | ND | | 2.0 |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 111 | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 95 | 78 - 120 |
| Dibromofluoromethane (Surr) | 114 | 77 - 120 |
| Toluene-d8 (Surr) | 99 | 80 - 125 |

**Method Blank TICs- Batch: 280-213182**

| Cas Number | Analyte | RT | Est. Result (ug/L | Qual |
|---|---|---|---|---|
| 75-07-0 | Acetaldehyde | 5.06 | 201 | T J N |
| 541-05-9 | Cyclotrisiloxane, hexamethyl- | 9.56 | ND | J N |
| 75-37-6 | Ethane, 1,1-difluoro- | 4.42 | 46.9 | T J N |
| 1066-40-6 | Silanol, trimethyl- | 7.07 | 49.6 | T J N |

Client: Waste Management

Job Number: 280-52060-1

**Lab Control Sample - Batch: 280-213182**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-213182/4 | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | MS2235.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 1410 | Units: | ug/L | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 1410 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| 1,1,1-Trichloroethane | 5.00 | 5.12 | 102 | 70 - 135 | |
| 1,1-Dichloroethane | 5.00 | 4.75 | 95 | 75 - 135 | |
| 1,1-Dichloroethene | 5.00 | 4.66 | 93 | 71 - 136 | |
| 1,2-Dichloropropane | 5.00 | 4.22 | 84 | 71 - 120 | |
| 1,3-Dichlorobenzene | 5.00 | 4.23 | 85 | 74 - 135 | |
| Benzene | 5.00 | 4.57 | 91 | 74 - 135 | |
| Bromodichloromethane | 5.00 | 4.29 | 86 | 73 - 135 | |
| Carbon tetrachloride | 5.00 | 5.18 | 104 | 67 - 135 | |
| Chlorobenzene | 5.00 | 4.11 | 82 | 76 - 135 | |
| Chloroform | 5.00 | 4.64 | 93 | 76 - 120 | |
| Ethylbenzene | 5.00 | 4.35 | 87 | 72 - 120 | |
| Methylene Chloride | 5.00 | 4.55 | 91 | 54 - 141 | J |
| Tetrachloroethene | 5.00 | 4.20 | 84 | 70 - 135 | |
| Toluene | 5.00 | 5.19 | 104 | 73 - 120 | |
| trans-1,2-Dichloroethene | 5.00 | 4.91 | 98 | 75 - 135 | |
| Trichloroethene | 5.00 | 4.25 | 85 | 73 - 135 | |

| Surrogate | % Rec | Acceptance Limits |
|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 105 | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 96 | 78 - 120 |
| Dibromofluoromethane (Surr) | 107 | 77 - 120 |
| Toluene-d8 (Surr) | 89 | 80 - 125 |

Client: Waste Management

Job Number: 280-52060-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-213182**

**Method: 8260B**
**Preparation: 5030B**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-52029-W-3 MS | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | MS2239.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 1536 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 1536 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-52029-W-3 MSD | Analysis Batch: | 280-213182 | Instrument ID: | VMS_MS1 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | MS2240.D |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 20 mL |
| Analysis Date: | 02/15/2014 1558 | | | Final Weight/Volume: | 20 mL |
| Prep Date: | 02/15/2014 1558 | | | | 20 mL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| 1,1,1-Trichloroethane | 94 | 100 | 70 - 135 | 6 | 20 | | |
| 1,1-Dichloroethane | 91 | 96 | 75 - 135 | 6 | 21 | | |
| 1,1-Dichloroethene | 85 | 93 | 71 - 136 | 9 | 20 | | |
| 1,2-Dichloropropane | 93 | 93 | 71 - 120 | 0 | 20 | | |
| 1,3-Dichlorobenzene | 93 | 95 | 74 - 135 | 2 | 20 | | |
| Benzene | 96 | 97 | 74 - 135 | 1 | 20 | | |
| Bromodichloromethane | 94 | 90 | 73 - 135 | 5 | 20 | | |
| Carbon tetrachloride | 97 | 100 | 67 - 135 | 3 | 21 | | |
| Chlorobenzene | 92 | 89 | 76 - 135 | 4 | 20 | | |
| Chloroform | 91 | 94 | 76 - 120 | 4 | 20 | | |
| Ethylbenzene | 97 | 92 | 72 - 120 | 6 | 26 | | |
| Methylene Chloride | 68 | 83 | 54 - 141 | 19 | 20 | | |
| Tetrachloroethene | 99 | 92 | 70 - 135 | 7 | 20 | | |
| Toluene | 112 | 112 | 73 - 120 | 0 | 20 | | |
| trans-1,2-Dichloroethene | 87 | 96 | 75 - 135 | 10 | 24 | | |
| Trichloroethene | 93 | 94 | 73 - 135 | 0 | 20 | | |

| Surrogate | MS % Rec | MSD % Rec | Acceptance Limits |
|---|---|---|---|
| 1,2-Dichloroethane-d4 (Surr) | 109 | 109 | 70 - 127 |
| 4-Bromofluorobenzene (Surr) | 107 | 105 | 78 - 120 |
| Dibromofluoromethane (Surr) | 105 | 109 | 77 - 120 |
| Toluene-d8 (Surr) | 103 | 98 | 80 - 125 |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-212734**

**Method: 200.8**
**Preparation: 200.8**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-212734/1-A | Analysis Batch: | 280-213012 | Instrument ID: | MT_077 |
| Client Matrix: | Water | Prep Batch: | 280-212734 | Lab File ID: | 113_BLK.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/13/2014 1910 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Cadmium | ND | | 0.00010 |
| Chromium | ND | | 0.0010 |
| Copper | ND | | 0.0040 |
| Lead | ND | | 0.0050 |
| Nickel | ND | | 0.0010 |
| Zinc | ND | | 0.0050 |

**Lab Control Sample - Batch: 280-212734**

**Method: 200.8**
**Preparation: 200.8**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-212734/2-A | Analysis Batch: | 280-213012 | Instrument ID: | MT_077 |
| Client Matrix: | Water | Prep Batch: | 280-212734 | Lab File ID: | 114_LCS.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/13/2014 1914 | Units: | mg/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Cadmium | 0.0400 | 0.0366 | 92 | 89 - 111 | |
| Chromium | 0.0400 | 0.0374 | 93 | 86 - 115 | |
| Copper | 0.0400 | 0.0371 | 93 | 90 - 115 | |
| Lead | 0.0400 | 0.0377 | 94 | 88 - 115 | |
| Nickel | 0.0400 | 0.0379 | 95 | 86 - 115 | |
| Zinc | 0.0400 | 0.0390 | 97 | 88 - 115 | |

Client: Waste Management

Job Number: 280-52060-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-212734**

**Method: 200.8**
**Preparation: 200.8**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-52056-A-1-E MS | Analysis Batch: | 280-213012 | Instrument ID: | MT_077 |
| Client Matrix: | Water | Prep Batch: | 280-212734 | Lab File ID: | 126SMPL.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/13/2014 2000 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-52056-A-1-F MSD | Analysis Batch: | 280-213012 | Instrument ID: | MT_077 |
| Client Matrix: | Water | Prep Batch: | 280-212734 | Lab File ID: | 127SMPL.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/13/2014 2004 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Cadmium | 102 | 101 | 89 - 111 | 1 | 20 | | |
| Chromium | 103 | 96 | 86 - 115 | 7 | 20 | | |
| Copper | 170 | 112 | 90 - 115 | 6 | 20 | 4 | 4 |
| Lead | 105 | 95 | 88 - 115 | 7 | 20 | | |
| Nickel | 108 | 98 | 86 - 115 | 4 | 20 | | |
| Zinc | 104 | 97 | 88 - 115 | 4 | 20 | | |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-212747**

**Method: 6010B**
**Preparation: 3005A**
**Total Recoverable**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-212747/1-A | Analysis Batch: | 280-213018 | Instrument ID: | MT_025 |
| Client Matrix: | Water | Prep Batch: | 280-212747 | Lab File ID: | 25A5021314.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/14/2014 0300 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Calcium | ND | | 500 |
| Iron | ND | | 30 |
| Magnesium | ND | | 200 |
| Manganese | ND | | 3.0 |
| Potassium | ND | | 500 |
| Sodium | ND | | 1000 |

**Lab Control Sample - Batch: 280-212747**

**Method: 6010B**
**Preparation: 3005A**
**Total Recoverable**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | LCS 280-212747/2-A | Analysis Batch: | 280-213018 | Instrument ID: | MT_025 |
| Client Matrix: | Water | Prep Batch: | 280-212747 | Lab File ID: | 25A5021314.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/14/2014 0302 | Units: | ug/L | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Calcium | 50000 | 49000 | 98 | 90 - 111 | |
| Iron | 1000 | 1040 | 104 | 89 - 115 | |
| Magnesium | 50000 | 52200 | 104 | 90 - 113 | |
| Manganese | 500 | 519 | 104 | 90 - 110 | |
| Potassium | 50000 | 55000 | 110 | 89 - 114 | |
| Sodium | 50000 | 57600 | 115 | 90 - 115 | |

Client: Waste Management

Job Number: 280-52060-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-212747**

**Method: 6010B**
**Preparation: 3005A**
**Dissolved**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-51987-F-11-C MS | Analysis Batch: | 280-213018 | Instrument ID: | MT_025 |
| Client Matrix: | Water | Prep Batch: | 280-212747 | Lab File ID: | 25A5021314.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/14/2014 0328 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-51987-F-11-D MSD | Analysis Batch: | 280-213018 | Instrument ID: | MT_025 |
| Client Matrix: | Water | Prep Batch: | 280-212747 | Lab File ID: | 25A5021314.asc |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 50 mL |
| Analysis Date: | 02/14/2014 0330 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | 02/13/2014 1145 | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Calcium | 92 | 94 | 48 - 153 | 1 | 20 | | |
| Iron | 101 | 101 | 52 - 155 | 0 | 20 | | |
| Magnesium | 99 | 100 | 62 - 146 | 0 | 20 | | |
| Manganese | 100 | 100 | 79 - 121 | 0 | 20 | | |
| Potassium | 108 | 109 | 76 - 132 | 1 | 20 | | |
| Sodium | 110 | 112 | 70 - 203 | 1 | 20 | | |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-213423**

**Method: 1664A**
**Preparation: 1664A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213423/1-A | Analysis Batch: | 280-213506 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-213423 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 02/18/2014 1453 | Units: | mg/L | Final Weight/Volume: | 1000 mL |
| Prep Date: | 02/18/2014 0908 | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Oil & Grease (HEM) | ND | | 10 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-213423**

**Method: 1664A**
**Preparation: 1664A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-213423/2-A | Analysis Batch: | 280-213506 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-213423 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 02/18/2014 1453 | Units: | mg/L | Final Weight/Volume: | 1000 mL |
| Prep Date: | 02/18/2014 0908 | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-213423/3-A | Analysis Batch: | 280-213506 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-213423 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 1000 mL |
| Analysis Date: | 02/18/2014 1453 | Units: | mg/L | Final Weight/Volume: | 1000 mL |
| Prep Date: | 02/18/2014 0908 | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Oil & Grease (HEM) | 86 | 88 | 81 - 107 | 3 | 22 | | |

Client: Waste Management

Job Number: 280-52060-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-213423**

**Method: 1664A**
**Preparation: 1664A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-52133-A-2-A MS | Analysis Batch: | 280-213506 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-213423 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 934 mL |
| Analysis Date: | 02/18/2014 1453 | | | Final Weight/Volume: | 1000 mL |
| Prep Date: | 02/18/2014 0908 | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-52133-B-2-B MSD | Analysis Batch: | 280-213506 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | 280-213423 | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 906 mL |
| Analysis Date: | 02/18/2014 1453 | | | Final Weight/Volume: | 1000 mL |
| Prep Date: | 02/18/2014 0908 | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Oil & Grease (HEM) | 83 | 80 | 78 - 114 | 1 | 20 | | |

**Method Blank - Batch: 280-213440**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213440/6 | Analysis Batch: | 280-213440 | Instrument ID: | WC_IonChrom8 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 13.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 02/18/2014 1437 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Chloride | ND | | 0.50 |
| Sulfate | ND | | 1.0 |

**Method Reporting Limit Check - Batch: 280-213440**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-213440/3 | Analysis Batch: | 280-213440 | Instrument ID: | WC_IonChrom8 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 10.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 02/18/2014 1347 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Chloride | 1.00 | ND | 88 | 50 - 150 | |
| Sulfate | 1.00 | ND | 61 | 50 - 150 | |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-213440**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-213440/4 | Analysis Batch: | 280-213440 | Instrument ID: | WC_IonChrom8 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 11.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 02/18/2014 1404 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 10 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-213440/5 | Analysis Batch: | 280-213440 | Instrument ID: | WC_IonChrom8 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 12.0000.d |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 02/18/2014 1421 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 10 uL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Chloride | 101 | 101 | 90 - 110 | 0 | 10 | | |
| Sulfate | 100 | 99 | 90 - 110 | 1 | 10 | | |

Client: Waste Management

Job Number: 280-52060-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-213440**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-51650-J-1 MS | Analysis Batch: | 280-213440 | Instrument ID: | WC_IonChrom8 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 19.0000.d |
| Dilution: | 5.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 02/18/2014 2105 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 10 uL |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-51650-J-1 MSD | Analysis Batch: | 280-213440 | Instrument ID: | WC_IonChrom8 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 20.0000.d |
| Dilution: | 5.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 02/18/2014 2121 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 10 uL |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Chloride | 106 | 108 | 80 - 120 | 2 | 20 | | |
| Sulfate | 105 | 107 | 80 - 120 | 1 | 20 | | |

**Duplicate - Batch: 280-213440**

**Method: 300.0**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-51650-J-1 DU | Analysis Batch: | 280-213440 | Instrument ID: | WC_IonChrom8 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 18.0000.d |
| Dilution: | 5.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 02/18/2014 2048 | Units: | mg/L | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | 10 uL |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Chloride | 14 | 14.1 | 0.1 | 15 | |
| Sulfate | 86 | 86.5 | 0.03 | 15 | |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-213140**

**Method: 350.1**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213140/21 | Analysis Batch: | 280-213140 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | E:\FLOW_4\021414.RST |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 10 mL |
| Analysis Date: | 02/14/2014 1256 | Units: | mg/L | Final Weight/Volume: | 10 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Ammonia as N | ND | | 0.040 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-213140**

**Method: 350.1**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-213140/19 | Analysis Batch: | 280-213140 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | E:\FLOW_4\021414.RST |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/14/2014 1251 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-213140/20 | Analysis Batch: | 280-213140 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | E:\FLOW_4\021414.RST |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/14/2014 1254 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Ammonia as N | 99 | 98 | 90 - 110 | 0 | 10 | | |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-213572**

**Method: 350.1**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213572/59 | Analysis Batch: | 280-213572 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | E:\FLOW_4\021814B.RST |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 10 mL |
| Analysis Date: | 02/18/2014 1733 | Units: | mg/L | Final Weight/Volume: | 10 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Ammonia as N | ND | | 0.040 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-213572**

**Method: 350.1**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-213572/57 | Analysis Batch: | 280-213572 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | E:\FLOW_4\021814B.RST |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/18/2014 1728 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-213572/58 | Analysis Batch: | 280-213572 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | E:\FLOW_4\021814B.RST |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/18/2014 1730 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Ammonia as N | 103 | 101 | 90 - 110 | 2 | 10 | | |

Client: Waste Management

Job Number: 280-52060-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-213572**

**Method: 350.1**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-52198-A-1 MS | Analysis Batch: | 280-213572 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | E:\FLOW_4\021814B.RST |
| Dilution: | 10 | Leach Batch: | N/A | Initial Weight/Volume: | 10 mL |
| Analysis Date: | 02/18/2014 1833 | | | Final Weight/Volume: | 10 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-52198-A-1 MSD | Analysis Batch: | 280-213572 | Instrument ID: | WC_Alp 3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | E:\FLOW_4\021814B.RST |
| Dilution: | 10 | Leach Batch: | N/A | Initial Weight/Volume: | 10 mL |
| Analysis Date: | 02/18/2014 1836 | | | Final Weight/Volume: | 10 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Ammonia as N | 125 | 126 | 90 - 110 | 0 | 10 | F1 | F1 |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-213707**

**Method: 353.2**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213707/103 | Analysis Batch: | 280-213707 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0218NXNV.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/18/2014 2316 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Nitrate/Nitrite | ND | | 0.050 |

**Method Reporting Limit Check - Batch: 280-213707**

**Method: 353.2**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MRL 280-213707/18 | Analysis Batch: | 280-213707 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0218NXNV.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/18/2014 2046 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Spike Amount | Result | % Rec. | Limit | Qual |
|---|---|---|---|---|---|
| Nitrate/Nitrite | 0.100 | ND | 86 | 50 - 150 | |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-213707**

**Method: 353.2**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-213707/104 | Analysis Batch: | 280-213707 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0218NXNV.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/18/2014 2318 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-213707/105 | Analysis Batch: | 280-213707 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0218NXNV.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/18/2014 2319 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Nitrate/Nitrite | 109 | 108 | 90 - 110 | 1 | 10 | | |

Client: Waste Management

Job Number: 280-52060-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-213707**

**Method: 353.2**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-52185-D-2 MS | Analysis Batch: | 280-213707 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0218NXNV.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 02/18/2014 2331 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-52185-D-2 MSD | Analysis Batch: | 280-213707 | Instrument ID: | WC_Alp 2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | C:\FLOW_4\0218NXNV.RS |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 5 mL |
| Analysis Date: | 02/18/2014 2333 | | | Final Weight/Volume: | 5 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Nitrate/Nitrite | 115 | 113 | 90 - 110 | 2 | 10 | F1 | F1 |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-213080**

**Method: 410.4**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213080/5 | Analysis Batch: | 280-213080 | Instrument ID: | WC_HACH SPEC |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 2 mL |
| Analysis Date: | 02/14/2014 1016 | Units: | mg/L | Final Weight/Volume: | 2 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Chemical Oxygen Demand (COD) | ND | | 5.0 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-213080**

**Method: 410.4**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-213080/3 | Analysis Batch: | 280-213080 | Instrument ID: | WC_HACH SPEC |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/14/2014 1016 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-213080/4 | Analysis Batch: | 280-213080 | Instrument ID: | WC_HACH SPEC |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/14/2014 1016 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Chemical Oxygen Demand (COD) | 100 | 101 | 90 - 110 | 0 | 11 | | |

Client: Waste Management

Job Number: 280-52060-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-213080**

**Method: 410.4**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-51979-D-4 MS | Analysis Batch: | 280-213080 | Instrument ID: | WC_HACH SPEC |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/14/2014 1016 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-51979-D-4 MSD | Analysis Batch: | 280-213080 | Instrument ID: | WC_HACH SPEC |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/14/2014 1016 | | | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Chemical Oxygen Demand (COD) | 90 | 95 | 90 - 110 | 4 | 11 | | |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-213056**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213056/44 | Analysis Batch: | 280-213056 | Instrument ID: | WC_SHI2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 021314.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/14/2014 0051 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Total Organic Carbon - Average | ND | | 1.0 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-213056**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-213056/42 | Analysis Batch: | 280-213056 | Instrument ID: | WC_SHI2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 021314.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/14/2014 0015 | Units: | mg/L | Final Weight/Volume: | 200 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-213056/43 | Analysis Batch: | 280-213056 | Instrument ID: | WC_SHI2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 021314.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/14/2014 0033 | Units: | mg/L | Final Weight/Volume: | 200 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Total Organic Carbon - Average | 96 | 96 | 88 - 112 | 0 | 15 | | |

Client: Waste Management

Job Number: 280-52060-1

**Matrix Spike/**
**Matrix Spike Duplicate Recovery Report - Batch: 280-213056**

**Method: 9060**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| MS Lab Sample ID: | 280-52060-1 | Analysis Batch: | 280-213056 | Instrument ID: | WC_SHI2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 021314.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/14/2014 0137 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| MSD Lab Sample ID: | 280-52060-1 | Analysis Batch: | 280-213056 | Instrument ID: | WC_SHI2 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 021314.txt |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/14/2014 0155 | | | Final Weight/Volume: | 50 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | MS | MSD | Limit | RPD | RPD Limit | MS Qual | MSD Qual |
| Total Organic Carbon - Average | 97 | 98 | 88 - 112 | 1 | 15 | | |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-213100**

**Method: SM 2320B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-213100/33 | Analysis Batch: | 280-213100 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 021314a.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/13/2014 2029 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Total Alkalinity | ND | | 5.0 |
| Bicarbonate Alkalinity | ND | | 5.0 |
| Carbonate Alkalinity | ND | | 5.0 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-213100**

**Method: SM 2320B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-213100/31 | Analysis Batch: | 280-213100 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 021314a.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/13/2014 2021 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-213100/32 | Analysis Batch: | 280-213100 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 021314a.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/13/2014 2025 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Total Alkalinity | 100 | 98 | 90 - 110 | 1 | 10 | | |

**Duplicate - Batch: 280-213100**

**Method: SM 2320B**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-52082-C-5 DU | Analysis Batch: | 280-213100 | Instrument ID: | WC-AT3 |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | 021314a.TXT |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | |
| Analysis Date: | 02/13/2014 2037 | Units: | mg/L | Final Weight/Volume: | |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Total Alkalinity | 130 | 138 | 5 | 10 | |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-212751**

**Method: SM 2540C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-212751/1 | Analysis Batch: | 280-212751 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/12/2014 1918 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Total Dissolved Solids | ND | | 10 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-212751**

**Method: SM 2540C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-212751/2 | Analysis Batch: | 280-212751 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/12/2014 1918 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-212751/3 | Analysis Batch: | 280-212751 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/12/2014 1918 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Total Dissolved Solids | 98 | 99 | 86 - 110 | 1 | 20 | | |

**Duplicate - Batch: 280-212751**

**Method: SM 2540C**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-52060-1 | Analysis Batch: | 280-212751 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/12/2014 1918 | Units: | mg/L | Final Weight/Volume: | 100 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Total Dissolved Solids | 170 | 166 | 0 | 10 | |

Client: Waste Management

Job Number: 280-52060-1

**Method Blank - Batch: 280-212951**

**Method: SM 2540D**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | MB 280-212951/1 | Analysis Batch: | 280-212951 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 02/13/2014 1711 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Result | Qual | RL |
|---|---|---|---|
| Total Suspended Solids | ND | | 4.0 |

**Lab Control Sample/**
**Lab Control Sample Duplicate Recovery Report - Batch: 280-212951**

**Method: SM 2540D**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| LCS Lab Sample ID: | LCS 280-212951/2 | Analysis Batch: | 280-212951 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/13/2014 1711 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | | | | | |
|---|---|---|---|---|---|
| LCSD Lab Sample ID: | LCSD 280-212951/3 | Analysis Batch: | 280-212951 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 100 mL |
| Analysis Date: | 02/13/2014 1711 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| | % Rec. | | | | | | |
|---|---|---|---|---|---|---|---|
| Analyte | LCS | LCSD | Limit | RPD | RPD Limit | LCS Qual | LCSD Qual |
| Total Suspended Solids | 88 | 90 | 86 - 114 | 2 | 20 | | |

**Duplicate - Batch: 280-212951**

**Method: SM 2540D**
**Preparation: N/A**

| | | | | | |
|---|---|---|---|---|---|
| Lab Sample ID: | 280-52028-B-1 DU | Analysis Batch: | 280-212951 | Instrument ID: | No Equipment Assigned |
| Client Matrix: | Water | Prep Batch: | N/A | Lab File ID: | N/A |
| Dilution: | 1.0 | Leach Batch: | N/A | Initial Weight/Volume: | 250 mL |
| Analysis Date: | 02/13/2014 1711 | Units: | mg/L | Final Weight/Volume: | 250 mL |
| Prep Date: | N/A | | | | |
| Leach Date: | N/A | | | | |

| Analyte | Sample Result/Qual | Result | RPD | Limit | Qual |
|---|---|---|---|---|---|
| Total Suspended Solids | 17 | 18.4 | 9 | 10 | |

# Login Sample Receipt Checklist

Client: Waste Management

Job Number: 280-52060-1

**Login Number: 52060**

**List Source: TestAmerica Denver**

**List Number: 1**

**Creator: Knauf, James R**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity either was not measured or, if measured, is at or below background | True | |
| The cooler's custody seal, if present, is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable. | True | |
| Cooler Temperature is recorded. | True | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | False | FIELD LEFT BLANK |
| Is the Field Sampler's name present on COC? | True | |
| There are no discrepancies between the sample IDs on the containers and the COC. | True | |
| Samples are received within Holding Time. | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| Sample Preservation Verified | N/A | |
| There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs | True | |
| VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter. | True | |
| If necessary, staff have been informed of any short hold time or quick TAT needs | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | True | |
| Sampling Company provided. | True | |
| Samples received within 48 hours of sampling. | True | |
| Samples requiring field filtration have been filtered in the field. | True | |
| Chlorine Residual checked. | N/A | |

# ANALYTICAL REPORT

For:

**WM RBLF Aquatic Resource Study - Waste Management**

ASL Report #: N1327

Project ID: 488936.02.01

**Attn: Mike Stanaway/CVO**

Authorized and Released By:

Laboratory Project Manager
Mike Stanaway
*(541) 758-0235 ext.23161*
*March 05, 2014*

All analyses performed by CH2M HILL are clearly indicated. Any subcontracted analyses are included as appended reports as received from the subcontracted laboratory. The results included in this report only relate to the samples listed on the following Sample Cross-Reference page. This report shall not be reproduced except in full, without the written approval of the laboratory.

Any unusual difficulties encountered during the analysis of your samples are discussed in the attached case narratives.

Accredited in accordance with NELAP:
Oregon (100022)
Arizona (0771)
Louisiana (05031)

## Sample Receipt Comments

We certify that the test results meet all NELAP requirements.

## Sample Cross-Reference

| ASL Sample ID | Client Sample ID | Date/Time Collected | Date Received |
|---|---|---|---|
| N132701 | SP3-DS-2-21-14 | 02/21/14 15:32 | 02/24/14 |
| N132702 | SP2-DS-2-21-14 | 02/21/14 13:32 | 02/24/14 |
| N132703 | SP2-YM-UP-2-21-14 | 02/21/14 15:07 | 02/24/14 |
| N132704 | SP1-UP-2-21-14 | 02/21/14 12:50 | 02/24/14 |

CH2MHILL
Applied Sciences Laboratory (ASL)

1100 NE Circle Blvd., Suite 300
Corvallis, OR 97330
Tel 541-768-3120 Fax 541-752-0276

# CASE NARRATIVE
# GC/MS VOLATILES ANALYSIS

**Lab Name:** CH2M HILL ASL **ASL SDG#:** N1327

**Project:** WM RBLF Aquatic Resource **Project #:** 488936.02.01

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

**Method(s):**
SW8260B: SW5030

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** SP3-DS-2-21-14

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 15:32
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** N132701

Date Received: 02/24/14
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloromethane | 74-87-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Vinyl Chloride | 75-01-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromomethane | 74-83-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroethane | 75-00-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichlorofluoromethane | 75-69-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Acetone | 67-64-1 | 0.50 | 2.00 | 4.51 | | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethene | 75-35-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methylene chloride | 75-09-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,2-Dichloroethene | 156-60-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methyl tert-butyl ether (MTBE) | 1634-04-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethane | 75-34-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Butanone (MEK) | 78-93-3 | 0.50 | 2.00 | 3.62 | | ug/L | SW8260B | 02/26/14 |
| cis-1,2-Dichloroethene | 156-59-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromochloromethane | 74-97-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroform | 67-66-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2,2-Dichloropropane | 594-20-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloroethane | 107-06-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1-Trichloroethane | 71-55-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloropropene | 563-58-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Carbon tetrachloride | 56-23-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Benzene | 71-43-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromomethane | 74-95-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloropropane | 78-87-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichloroethene (TCE) | 79-01-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromodichloromethane | 75-27-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| cis-1,3-Dichloropropene | 10061-01-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,3-Dichloropropene | 10061-02-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,2-Trichloroethane | 79-00-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Toluene | 108-88-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichloropropane | 142-28-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromochloromethane | 124-48-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Tetrachloroethene (PCE) | 127-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1-Chlorohexane | 544-10-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chlorobenzene | 108-90-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Ethylbenzene | 100-41-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| m,p-Xylene | 108-38-3/1 | 0.30 | 1.00 | 0.30 | U | ug/L | SW8260B | 02/26/14 |
| Bromoform | 75-25-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Styrene | 100-42-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** SP3-DS-2-21-14

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 15:32
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** N132701

Date Received: 02/24/14
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| o-Xylene | 95-47-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichloropropane | 96-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Isopropylbenzene | 98-82-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromobenzene | 108-86-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Propylbenzene | 103-65-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Chlorotoluene | 95-49-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Chlorotoluene | 106-43-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3,5-Trimethylbenzene | 108-67-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| tert-Butylbenzene | 98-06-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trimethylbenzene | 95-63-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| sec-Butylbenzene | 135-98-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichlorobenzene | 541-73-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,4-Dichlorobenzene | 106-46-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| p-Isopropyltoluene | 99-87-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichlorobenzene | 95-50-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Butylbenzene | 104-51-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Naphthalene | 91-20-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Hexachlorobutadiene | 87-68-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichlorobenzene | 87-61-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

| Surrogate | % Recovery | Control Limits | Qualifier |
|---|---|---|---|
| Dibromofluoromethane | 93 | 70-130 | |
| 1,2-Dichloroethane-d4 | 91 | 70-130 | |
| Toluene-d8 | 95 | 70-130 | |
| 4-Bromofluorobenzene | 93 | 70-130 | |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** SP2-DS-2-21-14

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 13:32
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** N132702

Date Received: 02/24/14
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloromethane | 74-87-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Vinyl Chloride | 75-01-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromomethane | 74-83-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroethane | 75-00-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichlorofluoromethane | 75-69-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Acetone | 67-64-1 | 0.50 | 2.00 | 3.00 | | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethene | 75-35-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methylene chloride | 75-09-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,2-Dichloroethene | 156-60-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methyl tert-butyl ether (MTBE) | 1634-04-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethane | 75-34-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Butanone (MEK) | 78-93-3 | 0.50 | 2.00 | 2.53 | | ug/L | SW8260B | 02/26/14 |
| cis-1,2-Dichloroethene | 156-59-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromochloromethane | 74-97-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroform | 67-66-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2,2-Dichloropropane | 594-20-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloroethane | 107-06-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1-Trichloroethane | 71-55-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloropropene | 563-58-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Carbon tetrachloride | 56-23-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Benzene | 71-43-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromomethane | 74-95-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloropropane | 78-87-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichloroethene (TCE) | 79-01-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromodichloromethane | 75-27-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| cis-1,3-Dichloropropene | 10061-01-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,3-Dichloropropene | 10061-02-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,2-Trichloroethane | 79-00-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Toluene | 108-88-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichloropropane | 142-28-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromochloromethane | 124-48-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Tetrachloroethene (PCE) | 127-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1-Chlorohexane | 544-10-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chlorobenzene | 108-90-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Ethylbenzene | 100-41-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| m,p-Xylene | 108-38-3/1 | 0.30 | 1.00 | 0.30 | U | ug/L | SW8260B | 02/26/14 |
| Bromoform | 75-25-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Styrene | 100-42-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** SP2-DS-2-21-14

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 13:32
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** N132702

Date Received: 02/24/14
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| o-Xylene | 95-47-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichloropropane | 96-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Isopropylbenzene | 98-82-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromobenzene | 108-86-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Propylbenzene | 103-65-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Chlorotoluene | 95-49-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Chlorotoluene | 106-43-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3,5-Trimethylbenzene | 108-67-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| tert-Butylbenzene | 98-06-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trimethylbenzene | 95-63-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| sec-Butylbenzene | 135-98-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichlorobenzene | 541-73-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,4-Dichlorobenzene | 106-46-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| p-Isopropyltoluene | 99-87-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichlorobenzene | 95-50-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Butylbenzene | 104-51-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Naphthalene | 91-20-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Hexachlorobutadiene | 87-68-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichlorobenzene | 87-61-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

| Surrogate | % Recovery | Control Limits | Qualifier |
|---|---|---|---|
| Dibromofluoromethane | 94 | 70-130 | |
| 1,2-Dichloroethane-d4 | 94 | 70-130 | |
| Toluene-d8 | 96 | 70-130 | |
| 4-Bromofluorobenzene | 95 | 70-130 | |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** SP2-YM-UP-2-21-14

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 15:07
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** N132703

Date Received: 02/24/14
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloromethane | 74-87-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Vinyl Chloride | 75-01-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromomethane | 74-83-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroethane | 75-00-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichlorofluoromethane | 75-69-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Acetone | 67-64-1 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethene | 75-35-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methylene chloride | 75-09-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,2-Dichloroethene | 156-60-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methyl tert-butyl ether (MTBE) | 1634-04-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethane | 75-34-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Butanone (MEK) | 78-93-3 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| cis-1,2-Dichloroethene | 156-59-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromochloromethane | 74-97-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroform | 67-66-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2,2-Dichloropropane | 594-20-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloroethane | 107-06-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1-Trichloroethane | 71-55-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloropropene | 563-58-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Carbon tetrachloride | 56-23-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Benzene | 71-43-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromomethane | 74-95-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloropropane | 78-87-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichloroethene (TCE) | 79-01-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromodichloromethane | 75-27-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| cis-1,3-Dichloropropene | 10061-01-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,3-Dichloropropene | 10061-02-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,2-Trichloroethane | 79-00-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Toluene | 108-88-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichloropropane | 142-28-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromochloromethane | 124-48-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Tetrachloroethene (PCE) | 127-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1-Chlorohexane | 544-10-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chlorobenzene | 108-90-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Ethylbenzene | 100-41-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| m,p-Xylene | 108-38-3/1 | 0.30 | 1.00 | 0.30 | U | ug/L | SW8260B | 02/26/14 |
| Bromoform | 75-25-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Styrene | 100-42-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** SP2-YM-UP-2-21-14

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 15:07
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** N132703

Date Received: 02/24/14
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| o-Xylene | 95-47-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichloropropane | 96-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Isopropylbenzene | 98-82-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromobenzene | 108-86-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Propylbenzene | 103-65-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Chlorotoluene | 95-49-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Chlorotoluene | 106-43-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3,5-Trimethylbenzene | 108-67-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| tert-Butylbenzene | 98-06-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trimethylbenzene | 95-63-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| sec-Butylbenzene | 135-98-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichlorobenzene | 541-73-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,4-Dichlorobenzene | 106-46-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| p-Isopropyltoluene | 99-87-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichlorobenzene | 95-50-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Butylbenzene | 104-51-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Naphthalene | 91-20-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Hexachlorobutadiene | 87-68-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichlorobenzene | 87-61-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

| Surrogate | % Recovery | Control Limits | Qualifier |
|---|---|---|---|
| Dibromofluoromethane | 97 | 70-130 | |
| 1,2-Dichloroethane-d4 | 97 | 70-130 | |
| Toluene-d8 | 97 | 70-130 | |
| 4-Bromofluorobenzene | 96 | 70-130 | |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** SP1-UP-2-21-14

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 12:50
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** N132704

Date Received: 02/24/14
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloromethane | 74-87-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Vinyl Chloride | 75-01-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromomethane | 74-83-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroethane | 75-00-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichlorofluoromethane | 75-69-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Acetone | 67-64-1 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethene | 75-35-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methylene chloride | 75-09-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,2-Dichloroethene | 156-60-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methyl tert-butyl ether (MTBE) | 1634-04-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethane | 75-34-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Butanone (MEK) | 78-93-3 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| cis-1,2-Dichloroethene | 156-59-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromochloromethane | 74-97-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroform | 67-66-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2,2-Dichloropropane | 594-20-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloroethane | 107-06-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1-Trichloroethane | 71-55-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloropropene | 563-58-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Carbon tetrachloride | 56-23-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Benzene | 71-43-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromomethane | 74-95-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloropropane | 78-87-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichloroethene (TCE) | 79-01-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromodichloromethane | 75-27-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| cis-1,3-Dichloropropene | 10061-01-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,3-Dichloropropene | 10061-02-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,2-Trichloroethane | 79-00-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Toluene | 108-88-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichloropropane | 142-28-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromochloromethane | 124-48-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Tetrachloroethene (PCE) | 127-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1-Chlorohexane | 544-10-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chlorobenzene | 108-90-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Ethylbenzene | 100-41-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| m,p-Xylene | 108-38-3/1 | 0.30 | 1.00 | 0.30 | U | ug/L | SW8260B | 02/26/14 |
| Bromoform | 75-25-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Styrene | 100-42-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** SP1-UP-2-21-14

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 12:50
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** N132704

Date Received: 02/24/14
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| o-Xylene | 95-47-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichloropropane | 96-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Isopropylbenzene | 98-82-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromobenzene | 108-86-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Propylbenzene | 103-65-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Chlorotoluene | 95-49-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Chlorotoluene | 106-43-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3,5-Trimethylbenzene | 108-67-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| tert-Butylbenzene | 98-06-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trimethylbenzene | 95-63-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| sec-Butylbenzene | 135-98-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichlorobenzene | 541-73-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,4-Dichlorobenzene | 106-46-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| p-Isopropyltoluene | 99-87-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichlorobenzene | 95-50-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Butylbenzene | 104-51-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Naphthalene | 91-20-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Hexachlorobutadiene | 87-68-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichlorobenzene | 87-61-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

| Surrogate | % Recovery | Control Limits | Qualifier |
|---|---|---|---|
| Dibromofluoromethane | 97 | 70-130 | |
| 1,2-Dichloroethane-d4 | 99 | 70-130 | |
| Toluene-d8 | 95 | 70-130 | |
| 4-Bromofluorobenzene | 97 | 70-130 | |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** **WB1-0226**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: N/A
Sample Time: N/A
Type: QC
Matrix: Water

**Lab Information**

**Lab Sample ID:** **WB1-0226**

Date Received: N/A
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloromethane | 74-87-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Vinyl Chloride | 75-01-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromomethane | 74-83-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroethane | 75-00-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichlorofluoromethane | 75-69-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Acetone | 67-64-1 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethene | 75-35-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methylene chloride | 75-09-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,2-Dichloroethene | 156-60-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Methyl tert-butyl ether (MTBE) | 1634-04-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloroethane | 75-34-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Butanone (MEK) | 78-93-3 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| cis-1,2-Dichloroethene | 156-59-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromochloromethane | 74-97-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chloroform | 67-66-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2,2-Dichloropropane | 594-20-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloroethane | 107-06-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1-Trichloroethane | 71-55-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1-Dichloropropene | 563-58-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Carbon tetrachloride | 56-23-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Benzene | 71-43-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromomethane | 74-95-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichloropropane | 78-87-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Trichloroethene (TCE) | 79-01-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromodichloromethane | 75-27-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| cis-1,3-Dichloropropene | 10061-01-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 0.50 | 2.00 | 0.50 | U | ug/L | SW8260B | 02/26/14 |
| trans-1,3-Dichloropropene | 10061-02-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,2-Trichloroethane | 79-00-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Toluene | 108-88-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichloropropane | 142-28-9 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Dibromochloromethane | 124-48-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Tetrachloroethene (PCE) | 127-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1-Chlorohexane | 544-10-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Chlorobenzene | 108-90-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Ethylbenzene | 100-41-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| m,p-Xylene | 108-38-3/1 | 0.30 | 1.00 | 0.30 | U | ug/L | SW8260B | 02/26/14 |
| Bromoform | 75-25-2 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Styrene | 100-42-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** **WB1-0226**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: N/A
Sample Time: N/A
Type: QC
Matrix: Water

**Lab Information**

**Lab Sample ID:** **WB1-0226**

Date Received: N/A
Dilution Factor: 1
Report Revision No.: 0

| Analyte | CAS# | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| o-Xylene | 95-47-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichloropropane | 96-18-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Isopropylbenzene | 98-82-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Bromobenzene | 108-86-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Propylbenzene | 103-65-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 2-Chlorotoluene | 95-49-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 4-Chlorotoluene | 106-43-4 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3,5-Trimethylbenzene | 108-67-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| tert-Butylbenzene | 98-06-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trimethylbenzene | 95-63-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| sec-Butylbenzene | 135-98-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,3-Dichlorobenzene | 541-73-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,4-Dichlorobenzene | 106-46-7 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| p-Isopropyltoluene | 99-87-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dichlorobenzene | 95-50-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| n-Butylbenzene | 104-51-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Naphthalene | 91-20-3 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |
| Hexachlorobutadiene | 87-68-3 | 0.15 | 0.50 | 0.18 | J | ug/L | SW8260B | 02/26/14 |
| 1,2,3-Trichlorobenzene | 87-61-6 | 0.15 | 0.50 | 0.15 | U | ug/L | SW8260B | 02/26/14 |

| Surrogate | % Recovery | Control Limits | Qualifier |
|---|---|---|---|
| Dibromofluoromethane | 90 | 70-130 | |
| 1,2-Dichloroethane-d4 | 84 | 70-130 | |
| Toluene-d8 | 95 | 70-130 | |
| 4-Bromofluorobenzene | 94 | 70-130 | |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

Project Name: WM RBLF Aquatic Resource Study
Type: QC
Matrix: Water

**Lab Information**

**LCS ID: BS1W0226**

Report Revision No.: 0
Dilution Factor: 1

| Analyte | CAS# | Spike Amount | Sample Result | Units | %Recovery | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | |
| Dichlorodifluoromethane | 75-71-8 | 20.0 | 16.0 | ug/L | 80 | SW8260B | 02/26/14 |
| Chloromethane | 74-87-3 | 20.0 | 22.8 | ug/L | 114 | SW8260B | 02/26/14 |
| Vinyl Chloride | 75-01-4 | 20.0 | 20.9 | ug/L | 105 | SW8260B | 02/26/14 |
| Bromomethane | 74-83-9 | 20.0 | 22.2 | ug/L | 111 | SW8260B | 02/26/14 |
| Chloroethane | 75-00-3 | 20.0 | 24.6 | ug/L | 123 | SW8260B | 02/26/14 |
| Trichlorofluoromethane | 75-69-4 | 20.0 | 17.6 | ug/L | 88 | SW8260B | 02/26/14 |
| Acetone | 67-64-1 | 20.0 | 18.3 | ug/L | 91 | SW8260B | 02/26/14 |
| 1,1-Dichloroethene | 75-35-4 | 20.0 | 17.1 | ug/L | 86 | SW8260B | 02/26/14 |
| Methylene chloride | 75-09-2 | 20.0 | 18.1 | ug/L | 91 | SW8260B | 02/26/14 |
| trans-1,2-Dichloroethene | 156-60-5 | 20.0 | 18.2 | ug/L | 91 | SW8260B | 02/26/14 |
| Methyl tert-butyl ether (MTBE) | 1634-04-4 | 20.0 | 18.3 | ug/L | 92 | SW8260B | 02/26/14 |
| 1,1-Dichloroethane | 75-34-3 | 20.0 | 18.2 | ug/L | 91 | SW8260B | 02/26/14 |
| 2-Butanone (MEK) | 78-93-3 | 20.0 | 21.6 | ug/L | 108 | SW8260B | 02/26/14 |
| cis-1,2-Dichloroethene | 156-59-2 | 20.0 | 18.4 | ug/L | 92 | SW8260B | 02/26/14 |
| Bromochloromethane | 74-97-5 | 20.0 | 19.3 | ug/L | 97 | SW8260B | 02/26/14 |
| Chloroform | 67-66-3 | 20.0 | 18.1 | ug/L | 91 | SW8260B | 02/26/14 |
| 2,2-Dichloropropane | 594-20-7 | 20.0 | 20.4 | ug/L | 102 | SW8260B | 02/26/14 |
| 1,2-Dichloroethane | 107-06-2 | 20.0 | 17.1 | ug/L | 85 | SW8260B | 02/26/14 |
| 1,1,1-Trichloroethane | 71-55-6 | 20.0 | 18.9 | ug/L | 94 | SW8260B | 02/26/14 |
| 1,1-Dichloropropene | 563-58-6 | 20.0 | 18.9 | ug/L | 95 | SW8260B | 02/26/14 |
| Carbon tetrachloride | 56-23-5 | 20.0 | 21.6 | ug/L | 108 | SW8260B | 02/26/14 |
| Benzene | 71-43-2 | 20.0 | 19.2 | ug/L | 96 | SW8260B | 02/26/14 |
| Dibromomethane | 74-95-3 | 20.0 | 18.4 | ug/L | 92 | SW8260B | 02/26/14 |
| 1,2-Dichloropropane | 78-87-5 | 20.0 | 19.8 | ug/L | 99 | SW8260B | 02/26/14 |
| Trichloroethene (TCE) | 79-01-6 | 20.0 | 19.4 | ug/L | 97 | SW8260B | 02/26/14 |
| Bromodichloromethane | 75-27-4 | 20.0 | 19.2 | ug/L | 96 | SW8260B | 02/26/14 |
| cis-1,3-Dichloropropene | 10061-01-5 | 20.0 | 21.9 | ug/L | 110 | SW8260B | 02/26/14 |
| 4-Methyl-2-pentanone (MIBK) | 108-10-1 | 20.0 | 20.2 | ug/L | 101 | SW8260B | 02/26/14 |
| trans-1,3-Dichloropropene | 10061-02-6 | 20.0 | 20.8 | ug/L | 104 | SW8260B | 02/26/14 |
| 1,1,2-Trichloroethane | 79-00-5 | 20.0 | 19.6 | ug/L | 98 | SW8260B | 02/26/14 |
| Toluene | 108-88-3 | 20.0 | 19.3 | ug/L | 97 | SW8260B | 02/26/14 |
| 1,3-Dichloropropane | 142-28-9 | 20.0 | 19.4 | ug/L | 97 | SW8260B | 02/26/14 |
| Dibromochloromethane | 124-48-1 | 20.0 | 21.3 | ug/L | 107 | SW8260B | 02/26/14 |
| 1,2-Dibromoethane (EDB) | 106-93-4 | 20.0 | 19.4 | ug/L | 97 | SW8260B | 02/26/14 |
| Tetrachloroethene (PCE) | 127-18-4 | 20.0 | 18.1 | ug/L | 91 | SW8260B | 02/26/14 |
| 1-Chlorohexane | 544-10-5 | 20.0 | 20.0 | ug/L | 100 | SW8260B | 02/26/14 |
| 1,1,1,2-Tetrachloroethane | 630-20-6 | 20.0 | 22.2 | ug/L | 111 | SW8260B | 02/26/14 |
| Chlorobenzene | 108-90-7 | 20.0 | 17.8 | ug/L | 89 | SW8260B | 02/26/14 |
| Ethylbenzene | 100-41-4 | 20.0 | 19.7 | ug/L | 98 | SW8260B | 02/26/14 |
| m,p-Xylene | 108-38-3/1 | 40.0 | 38.1 | ug/L | 95 | SW8260B | 02/26/14 |
| Bromoform | 75-25-2 | 20.0 | 24.5 | ug/L | 123 | SW8260B | 02/26/14 |
| Styrene | 100-42-5 | 20.0 | 21.3 | ug/L | 107 | SW8260B | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

Project Name: WM RBLF Aquatic Resource Study
Type: QC
Matrix: Water

**Lab Information**

**LCS ID: BS1W0226**

Report Revision No.: 0
Dilution Factor: 1

| Analyte | CAS# | Spike Amount | Sample Result | Units | %Recovery | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **GC/MS Volatiles** | | | | | | | |
| 1,1,2,2-Tetrachloroethane | 79-34-5 | 20.0 | 19.7 | ug/L | 99 | SW8260B | 02/26/14 |
| o-Xylene | 95-47-6 | 20.0 | 17.9 | ug/L | 89 | SW8260B | 02/26/14 |
| 1,2,3-Trichloropropane | 96-18-4 | 20.0 | 18.3 | ug/L | 92 | SW8260B | 02/26/14 |
| Isopropylbenzene | 98-82-8 | 20.0 | 18.2 | ug/L | 91 | SW8260B | 02/26/14 |
| Bromobenzene | 108-86-1 | 20.0 | 18.4 | ug/L | 92 | SW8260B | 02/26/14 |
| n-Propylbenzene | 103-65-1 | 20.0 | 18.1 | ug/L | 90 | SW8260B | 02/26/14 |
| 2-Chlorotoluene | 95-49-8 | 20.0 | 17.9 | ug/L | 89 | SW8260B | 02/26/14 |
| 4-Chlorotoluene | 106-43-4 | 20.0 | 17.2 | ug/L | 86 | SW8260B | 02/26/14 |
| 1,3,5-Trimethylbenzene | 108-67-8 | 20.0 | 20.1 | ug/L | 100 | SW8260B | 02/26/14 |
| tert-Butylbenzene | 98-06-6 | 20.0 | 18.2 | ug/L | 91 | SW8260B | 02/26/14 |
| 1,2,4-Trimethylbenzene | 95-63-6 | 20.0 | 20.0 | ug/L | 100 | SW8260B | 02/26/14 |
| sec-Butylbenzene | 135-98-8 | 20.0 | 17.8 | ug/L | 89 | SW8260B | 02/26/14 |
| 1,3-Dichlorobenzene | 541-73-1 | 20.0 | 16.8 | ug/L | 84 | SW8260B | 02/26/14 |
| 1,4-Dichlorobenzene | 106-46-7 | 20.0 | 18.9 | ug/L | 95 | SW8260B | 02/26/14 |
| p-Isopropyltoluene | 99-87-6 | 20.0 | 19.4 | ug/L | 97 | SW8260B | 02/26/14 |
| 1,2-Dichlorobenzene | 95-50-1 | 20.0 | 18.1 | ug/L | 91 | SW8260B | 02/26/14 |
| n-Butylbenzene | 104-51-8 | 20.0 | 20.7 | ug/L | 104 | SW8260B | 02/26/14 |
| 1,2-Dibromo-3-chloropropane | 96-12-8 | 20.0 | 23.6 | ug/L | 118 | SW8260B | 02/26/14 |
| 1,2,4-Trichlorobenzene | 120-82-1 | 20.0 | 19.6 | ug/L | 98 | SW8260B | 02/26/14 |
| Naphthalene | 91-20-3 | 20.0 | 18.1 | ug/L | 90 | SW8260B | 02/26/14 |
| Hexachlorobutadiene | 87-68-3 | 20.0 | 21.4 | ug/L | 107 | SW8260B | 02/26/14 |
| 1,2,3-Trichlorobenzene | 87-61-6 | 20.0 | 17.8 | ug/L | 89 | SW8260B | 02/26/14 |

| Surrogate | % Recovery | Control Limits | Qualifier |
|---|---|---|---|
| Dibromofluoromethane | 95 | 70-130 | |
| 1,2-Dichloroethane-d4 | 86 | 70-130 | |
| Toluene-d8 | 98 | 70-130 | |
| 4-Bromofluorobenzene | 100 | 70-130 | |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit

CH2MHILL
Applied Sciences Laboratory (ASL)

1100 NE Circle Blvd., Suite 300
Corvallis, OR 97330
Tel 541-768-3120 Fax 541-752-0276

# CASE NARRATIVE
# METALS ANALYSIS

**Lab Name:** CH2M HILL ASL **ASL SDG#:** N1327

**Project:** WM RBLF Aquatic Resource **Project #:** 488936.02.01

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

**Method(s):**
E200.8: E200.2
E245.1

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID: SP3-DS-2-21-14**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 15:32
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID: N132701**

Date Received: 02/24/14
Report Revision No: 0

| Analyte | Dilution Factor | DL | RL | Result | Qual | Units | Analysis Method | Prep Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | | | |
| Arsenic | 1 | 0.030 | 0.50 | 0.68 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Barium | 1 | 0.010 | 0.50 | 36.9 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Cadmium | 1 | 0.030 | 0.50 | 0.030 | U | ug/L | E200.8 | E200.2 | 02/25/14 |
| Chromium | 1 | 0.044 | 0.50 | 2.61 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Lead | 1 | 0.041 | 0.50 | 0.48 | J | ug/L | E200.8 | E200.2 | 02/25/14 |
| Mercury | 1 | 0.015 | 0.10 | 0.015 | U | ug/L | E245.1 | METHOD | 02/26/14 |
| Selenium | 1 | 0.069 | 0.50 | 0.36 | J | ug/L | E200.8 | E200.2 | 02/25/14 |
| Silver | 1 | 0.0093 | 0.50 | 0.013 | J | ug/L | E200.8 | E200.2 | 02/25/14 |

U=Not detected at specified detection limit
J=Estimated value below reporting limit
E=Estimated value above calibration range
*=See case narrative



*1100 NE Circle Blvd., Suite 300*
*Corvallis, OR 97330*
*Tel 541-768-3120 Fax 541-752-0276*

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID: SP2-DS-2-21-14**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 13:32
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID: N132702**

Date Received: 02/24/14
Report Revision No: 0

| Analyte | Dilution Factor | DL | RL | Result | Qual | Units | Analysis Method | Prep Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | | | |
| Arsenic | 1 | 0.030 | 0.50 | 0.70 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Barium | 1 | 0.010 | 0.50 | 38.1 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Cadmium | 1 | 0.030 | 0.50 | 0.030 | U | ug/L | E200.8 | E200.2 | 02/25/14 |
| Chromium | 1 | 0.044 | 0.50 | 2.92 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Lead | 1 | 0.041 | 0.50 | 0.57 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Mercury | 1 | 0.015 | 0.10 | 0.015 | U | ug/L | E245.1 | METHOD | 02/26/14 |
| Selenium | 1 | 0.069 | 0.50 | 0.37 | J | ug/L | E200.8 | E200.2 | 02/25/14 |
| Silver | 1 | 0.0093 | 0.50 | 0.012 | J | ug/L | E200.8 | E200.2 | 02/25/14 |

U=Not detected at specified detection limit
J=Estimated value below reporting limit
E=Estimated value above calibration range
*=See case narrative

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID: SP2-YM-UP-2-21-14**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 15:07
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID: N132703**

Date Received: 02/24/14
Report Revision No: 0

| Analyte | Dilution Factor | DL | RL | Result | Qual | Units | Analysis Method | Prep Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | | | |
| Arsenic | 1 | 0.030 | 0.50 | 0.43 | J | ug/L | E200.8 | E200.2 | 02/25/14 |
| Barium | 1 | 0.010 | 0.50 | 20.1 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Cadmium | 1 | 0.030 | 0.50 | 0.030 | U | ug/L | E200.8 | E200.2 | 02/25/14 |
| Chromium | 1 | 0.044 | 0.50 | 2.69 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Lead | 1 | 0.041 | 0.50 | 0.50 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Mercury | 1 | 0.015 | 0.10 | 0.015 | U | ug/L | E245.1 | METHOD | 02/26/14 |
| Selenium | 1 | 0.069 | 0.50 | 0.30 | J | ug/L | E200.8 | E200.2 | 02/25/14 |
| Silver | 1 | 0.0093 | 0.50 | 0.0098 | J | ug/L | E200.8 | E200.2 | 02/25/14 |

U=Not detected at specified detection limit
J=Estimated value below reporting limit
E=Estimated value above calibration range
*=See case narrative



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# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID: SP1-UP-2-21-14**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 12:50
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID: N132704**

Date Received: 02/24/14
Report Revision No: 0

| Analyte | Dilution Factor | DL | RL | Result | Qual | Units | Analysis Method | Prep Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | | | |
| Arsenic | 1 | 0.030 | 0.50 | 0.54 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Barium | 1 | 0.010 | 0.50 | 31.4 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Cadmium | 1 | 0.030 | 0.50 | 0.030 | U | ug/L | E200.8 | E200.2 | 02/25/14 |
| Chromium | 1 | 0.044 | 0.50 | 2.78 | | ug/L | E200.8 | E200.2 | 02/25/14 |
| Lead | 1 | 0.041 | 0.50 | 0.44 | J | ug/L | E200.8 | E200.2 | 02/25/14 |
| Mercury | 1 | 0.015 | 0.10 | 0.015 | U | ug/L | E245.1 | METHOD | 02/26/14 |
| Selenium | 1 | 0.069 | 0.50 | 0.29 | J | ug/L | E200.8 | E200.2 | 02/25/14 |
| Silver | 1 | 0.0093 | 0.50 | 0.011 | J | ug/L | E200.8 | E200.2 | 02/25/14 |

U=Not detected at specified detection limit
J=Estimated value below reporting limit
E=Estimated value above calibration range
*=See case narrative



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# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Lab Information**

**Method Blank ID: WB1-0225**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: N/A
Sample Time: N/A
Type: QC
Matrix: Water

Date Received: N/A
Report Revision No: 0

| Analyte | Dilution Factor | DL | RL | Result | Qual | Units | Analysis Method | Prep Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | | | |
| Arsenic | 1 | 0.030 | 0.50 | 0.030 | U | ug/L | E200.8 | E200.2 | 02/25/14 |
| Barium | 1 | 0.010 | 0.50 | 0.015 | J | ug/L | E200.8 | E200.2 | 02/25/14 |
| Cadmium | 1 | 0.030 | 0.50 | 0.030 | U | ug/L | E200.8 | E200.2 | 02/25/14 |
| Chromium | 1 | 0.044 | 0.50 | 0.044 | U | ug/L | E200.8 | E200.2 | 02/25/14 |
| Lead | 1 | 0.041 | 0.50 | 0.041 | U | ug/L | E200.8 | E200.2 | 02/25/14 |
| Mercury | 1 | 0.015 | 0.10 | 0.015 | U | ug/L | E245.1 | METHOD | 02/26/14 |
| Selenium | 1 | 0.069 | 0.50 | 0.069 | U | ug/L | E200.8 | E200.2 | 02/25/14 |
| Silver | 1 | 0.0093 | 0.50 | 0.0093 | U | ug/L | E200.8 | E200.2 | 02/25/14 |

U=Not detected at specified detection limit
J=Estimated value below reporting limit
E=Estimated value above calibration range
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# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

Project Name: WM RBLF Aquatic Resource Study
Type: QC
Matrix: Water

**Lab Information**

**Blank Spike ID: BS1W0225**

Report Revision No: 0
Dilution Factor: 1

| Analyte | Spike Amount | Result | Units | %Recovery | Analysis Method | Prep Method | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **Metals** | | | | | | | |
| Arsenic | 50.0 | 50.3 | ug/L | 101 | E200.8 | E200.2 | 02/25/14 |
| Barium | 50.0 | 52.0 | ug/L | 104 | E200.8 | E200.2 | 02/25/14 |
| Cadmium | 50.0 | 50.9 | ug/L | 102 | E200.8 | E200.2 | 02/25/14 |
| Chromium | 50.0 | 49.5 | ug/L | 99 | E200.8 | E200.2 | 02/25/14 |
| Lead | 50.0 | 49.2 | ug/L | 98 | E200.8 | E200.2 | 02/25/14 |
| Mercury | 1.00 | 0.96 | ug/L | 96 | E245.1 | METHOD | 02/26/14 |
| Selenium | 50.0 | 50.3 | ug/L | 101 | E200.8 | E200.2 | 02/25/14 |
| Silver | 25.0 | 24.5 | ug/L | 98 | E200.8 | E200.2 | 02/25/14 |

*=See case narrative
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E=Estimated value above calibration range
J=Estimated value below reporting limit

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# CASE NARRATIVE
# GENERAL CHEMISTRY ANALYSIS

**Lab Name:** CH2M HILL ASL **ASL SDG#:** N1327

**Project:** WM RBLF Aquatic Resource **Project #:** 488936.01.02

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

**Method(s):**
E130.1

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Project Name: WM RBLF Aquatic Resource Study**

Date Received: 02/24/14
Type: See C.O.C.
Matrix: Water

**Lab Information**

**Lab Batch ID: N1327**

Analysis Method: E130.1
Units: mg/L
Report Revision No.: 0

| Client Sample ID | Lab Sample ID | Dilution Factor | DL | Hardness, Total as CaCO3 RL | Result | Qualifier | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **General Chemistry** | | | | | | | |
| SP3-DS-2-21-14 | N132701 | 1 | 1.94 | 4.00 | 70.5 | | 03/03/14 |
| SP2-DS-2-21-14 | N132702 | 1 | 1.94 | 4.00 | 70.4 | | 03/03/14 |
| SP2-YM-UP-2-21-14 | N132703 | 1 | 1.94 | 4.00 | 27.2 | | 03/03/14 |
| SP1-UP-2-21-14 | N132704 | 1 | 1.94 | 4.00 | 60.5 | | 03/03/14 |
| WB1-030314 | WB1-030314 | 1 | 1.94 | 4.00 | 1.94 | U | 03/03/14 |

U=Not detected at specified detection limit
J=Estimated value below reporting limit
E=Estimated value above calibration range
*=See case narrative



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# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Lab Information**

**Lab Batch ID: N1327**

Project Name: WM RBLF Aquatic Resource Study
Type: QC
Matrix: Water

Report Revision No.: 0

| LCS ID | Analyte | Spike Amount | Sample Result | Units | % Recovery | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **General Chemistry** | | | | | | | |
| BS1W0303 | Hardness, Total as CaCO3 | 56.6 | 53.9 | mg/L | 95 | E130.1 | 03/03/14 |

*=See case narrative
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J=Estimated value below reporting limit



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# CASE NARRATIVE
# GENERAL CHEMISTRY ANALYSIS

**Lab Name:** CH2M HILL ASL **ASL SDG#:** N1327

**Project:** WM RBLF Aquatic Resource **Project #:** 488936.02.01

With the exceptions noted as flags, footnotes, or detailed in the section below; standard operating procedures were followed in the analysis of the samples and no problems were encountered or anomalies observed.

All laboratory quality control samples were within established control limits, with any exceptions noted below, or in the associated QC summary forms.

Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. For diluted samples, the reporting limits are adjusted for the dilution required.

Calculations are performed before rounding to minimize errors in calculated values.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the section below, or in the sample receipt documentation.

**Method(s):**
E350.1
E351.2
E353.2
E365.4
E300.0A
SM2540C
SM2540D

# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** **SP3-DS-2-21-14**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 15:32
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** **N132701**

Date Received: 02/24/14
Report Revision No.: 0

| Analyte | Dilution Factor | DL | RL | Sample Result | Qual | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **General Chemistry** | | | | | | | | |
| Ammonia-N | 1 | 0.014 | 0.10 | 0.014 | U | mg/L | E350.1 | 02/25/14 |
| Chloride | 1 | 0.044 | 0.10 | 9.81 | | mg/L | E300.0A | 02/26/14 |
| Nitrate/Nitrite-N | 10 | 0.028 | 0.10 | 5.20 | | mg/L | E353.2 | 02/26/14 |
| Phosphate, Total as P | 1 | 0.022 | 0.050 | 0.14 | | mg/L | E365.4 | 02/27/14 |
| Total Dissolved Solids (TDS) | 1 | 4.2 | 25.0 | 141 | | mg/L | SM2540C | 02/25/14 |
| Total Kjeldahl Nitrogen as N | 1 | 0.051 | 0.20 | 0.15 | J | mg/L | E351.2 | 02/27/14 |
| Total Suspended Solids (TSS) | 1 | 0.6 | 5.0 | 14.6 | | mg/L | SM2540D | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit


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# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** **SP2-DS-2-21-14**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 13:32
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** **N132702**

Date Received: 02/24/14
Report Revision No.: 0

| Analyte | Dilution Factor | DL | RL | Sample Result | Qual | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **General Chemistry** | | | | | | | | |
| Ammonia-N | 1 | 0.014 | 0.10 | 0.014 | U | mg/L | E350.1 | 02/25/14 |
| Chloride | 1 | 0.044 | 0.10 | 9.83 | | mg/L | E300.0A | 02/26/14 |
| Nitrate/Nitrite-N | 10 | 0.028 | 0.10 | 5.32 | | mg/L | E353.2 | 02/26/14 |
| Phosphate, Total as P | 1 | 0.022 | 0.050 | 0.17 | | mg/L | E365.4 | 02/27/14 |
| Total Dissolved Solids (TDS) | 1 | 4.2 | 25.0 | 101 | | mg/L | SM2540C | 02/25/14 |
| Total Kjeldahl Nitrogen as N | 1 | 0.051 | 0.20 | 0.22 | | mg/L | E351.2 | 02/27/14 |
| Total Suspended Solids (TSS) | 1 | 0.6 | 5.0 | 23.2 | | mg/L | SM2540D | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit


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# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** **SP2-YM-UP-2-21-14**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 15:07
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** **N132703**

Date Received: 02/24/14
Report Revision No.: 0

| Analyte | Dilution Factor | DL | RL | Sample Result | Qual | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **General Chemistry** | | | | | | | | |
| Ammonia-N | 1 | 0.014 | 0.10 | 0.014 | U | mg/L | E350.1 | 02/25/14 |
| Chloride | 1 | 0.044 | 0.10 | 4.72 | | mg/L | E300.0A | 02/26/14 |
| Nitrate/Nitrite-N | 1 | 0.0028 | 0.010 | 0.86 | | mg/L | E353.2 | 02/26/14 |
| Phosphate, Total as P | 1 | 0.022 | 0.050 | 0.11 | | mg/L | E365.4 | 02/27/14 |
| Total Dissolved Solids (TDS) | 1 | 4.2 | 25.0 | 25.0 | | mg/L | SM2540C | 02/25/14 |
| Total Kjeldahl Nitrogen as N | 1 | 0.051 | 0.20 | 0.21 | | mg/L | E351.2 | 02/27/14 |
| Total Suspended Solids (TSS) | 1 | 0.6 | 5.0 | 36.0 | | mg/L | SM2540D | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit


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# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Client Sample ID:** **SP1-UP-2-21-14**

Project Name: WM RBLF Aquatic Resource Study
Sample Date: 02/21/14
Sample Time: 12:50
Type: Grab
Matrix: Water

**Lab Information**

**Lab Sample ID:** **N132704**

Date Received: 02/24/14
Report Revision No.: 0

| Analyte | Dilution Factor | DL | RL | Sample Result | Qual | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **General Chemistry** | | | | | | | | |
| Ammonia-N | 1 | 0.014 | 0.10 | 0.014 | U | mg/L | E350.1 | 02/25/14 |
| Chloride | 1 | 0.044 | 0.10 | 9.12 | | mg/L | E300.0A | 02/26/14 |
| Nitrate/Nitrite-N | 10 | 0.028 | 0.10 | 3.98 | | mg/L | E353.2 | 02/26/14 |
| Phosphate, Total as P | 1 | 0.022 | 0.050 | 0.16 | | mg/L | E365.4 | 02/27/14 |
| Total Dissolved Solids (TDS) | 1 | 4.2 | 25.0 | 102 | | mg/L | SM2540C | 02/25/14 |
| Total Kjeldahl Nitrogen as N | 1 | 0.051 | 0.20 | 0.43 | | mg/L | E351.2 | 02/27/14 |
| Total Suspended Solids (TSS) | 1 | 0.6 | 5.0 | 9.2 | | mg/L | SM2540D | 02/26/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit


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# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Project Name: WM RBLF Aquatic Resource Study**

Type: QC
Matrix: Water

**Lab Information**

**Lab Batch ID: N1327**

Date Received: N/A
Report Revision No.: 0

| Blank ID | Analyte | DL | RL | Sample Result | Qualifier | Units | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|---|
| **General Chemistry** | | | | | | | | |
| WB1-0225 | Total Dissolved Solids (TDS) | 4.2 | 25.0 | 4.2 | U | mg/L | SM2540C | 02/25/14 |
| WB1-0226 | Chloride | 0.044 | 0.10 | 0.044 | U | mg/L | E300.0A | 02/26/14 |
| WB1-0226 | Total Suspended Solids (TSS) | 0.6 | 5.0 | 0.6 | U | mg/L | SM2540D | 02/26/14 |
| WB1-022614 | Nitrate/Nitrite-N | 0.0028 | 0.010 | 0.0028 | U | mg/L | E353.2 | 02/26/14 |
| WB1-022614 | Phosphate, Total as P | 0.022 | 0.050 | 0.026 | J | mg/L | E365.4 | 02/27/14 |
| WB1-022614 | Total Kjeldahl Nitrogen as N | 0.051 | 0.20 | 0.051 | U | mg/L | E351.2 | 02/27/14 |
| WB3-0225 | Ammonia-N | 0.014 | 0.10 | 0.014 | U | mg/L | E350.1 | 02/25/14 |
| WB6-022614 | Nitrate/Nitrite-N | 0.0028 | 0.010 | 0.0028 | U | mg/L | E353.2 | 02/26/14 |

*=See case narrative
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E=Estimated value above calibration range
J=Estimated value below reporting limit


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# CH2M HILL Applied Sciences Laboratory (ASL)

**Client Information**

**Lab Information**

**Lab Batch ID: N1327**

Project Name: WM RBLF Aquatic Resource Study
Type: QC
Matrix: Water

Report Revision No.: 0

| LCS ID | Analyte | Spike Amount | Sample Result | Units | % Recovery | Analysis Method | Date Analyzed |
|---|---|---|---|---|---|---|---|
| **General Chemistry** | | | | | | | |
| BS3W0225 | Ammonia-N | 0.89 | 0.98 | mg/L | 110 | E350.1 | 02/25/14 |
| BS1W0225 | Total Dissolved Solids (TDS) | 1000 | 978 | mg/L | 98 | SM2540C | 02/25/14 |
| BS1W0226 | Nitrate/Nitrite-N | 0.48 | 0.48 | mg/L | 101 | E353.2 | 02/26/14 |
| BS4W0226 | Nitrate/Nitrite-N | 0.48 | 0.47 | mg/L | 99 | E353.2 | 02/26/14 |
| BS1W0226 | Chloride | 3.00 | 2.95 | mg/L | 98 | E300.0A | 02/26/14 |
| BS1W0226 | Total Suspended Solids (TSS) | 100 | 92.0 | mg/L | 92 | SM2540D | 02/26/14 |
| BS1W0226 | Total Kjeldahl Nitrogen as N | 8.68 | 8.36 | mg/L | 96 | E351.2 | 02/27/14 |
| BS1W0226 | Phosphate, Total as P | 2.40 | 2.39 | mg/L | 100 | E365.4 | 02/27/14 |

*=See case narrative
U=Not detected at specified detection limit
E=Estimated value above calibration range
J=Estimated value below reporting limit



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**CH2MHILL Applied Sciences Lab**
*CHAIN OF CUSTODY RECORD*
*AND AGREEMENT TO PERFORM SERVICES*

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Corvallis, OR 97330
(541) 768-3120 FAX (541) 752-0276

COC #

**Project # or Purchase Order #**
488936. ~~03.35.33~~ 01.01.02 MS 2-24-14

**Project Name**
WM RBLF Aquatic Resource Study

**Company Name or Home Address/Phone Number**
Waste Management

**Email Address for Reporting**

**Report Copy to:**

**Turnaround Time**
☐24 hours ☐48 hours ☐72 hours
☐7 days ☐14 days ☐21 days (STD)

**Drinking Water?** Yes ☐ No ☑

**Sample Disposal:** Dispose ☑ Return ☐

**Requested Analytical Method #** 2/24/14

| Sampling Date | Sampling Time | Type COMP | Type GRAB | Matrix WATER | Matrix SOIL | Matrix AIR | CLIENT SAMPLE ID | TOTAL # OF CONTAINERS | Cl- | $NO_3/NO_4$ | As, Ba, Cd, Cr Pb, Se, Hg, RCRA 8 metals | 8260B-Vocs | TPS, TSS Added by H. Stenaman | Ammonia Total P&SS, TKN | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Preservative: | UNPRES | $H_2SO_4$ | $HNO_3$ | HCl | ~~NaOH~~ | ~~ZnAcNaOH~~ $H_2SO_4$ | | | |
| 2-21-14 | 15:32 | | X | | | | SP3-DS-2-21-14 | 6 | X | X | X | X | | X | | | |
| 2-21-14 | 13:32 | | X | | | | SP2-DS-2-21-14 | 6 | X | X | X | X | | X | | | |
| 2-21-14 | 15:07 | | X | | | | SP2-YM-UP-2-21-14 | 6 | X | X | X | X | | X | | | |
| 2-21-14 | 12:50 | | X | | | | SP1-UP-2-21-14 | 6 | X | X | X | X | | X | | | |

THIS AREA FOR LAB USE ONLY

Lab # N1327 | Page | of

**EPA Tier QC Level**
1 (Screening) 2 3 4

| Canister ID | Lab ID |
|---|---|
| | 1 |
| | 2 |
| | 3 |
| | 4 |

**Possible Hazard Identification:** ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☑ Unknown ☐ Volatile Contaminants/Odorous ☐ Biohazard ☐ Other _____

| | | | |
|---|---|---|---|
| **Relinquished By** Bruce Pratt | Bruce Pratt | **Date/Time** 2-21-14 18:05 | **Received By:** Clara Thomann Clara Thomann | **Date/Time** 2/24/14 1015 |
| **Sampled By and Title** Bruce Pratt | (Please sign and print name) Bruce Pratt | **Date/Time** 2-21-14 18:05 | **Relinquished By** (Please sign and print name) | **Date/Time** |
| **Received By** | (Please sign and print name) | **Date/Time** | **Relinquished By** (Please sign and print name) | **Date/Time** |
| **Received By** | (Please sign and print name) | **Date/Time** | **Shipped Via** UPS Fed-Ex Other_____ | **Tracking #** |

**Special Instructions**

*Instructions and Agreement Provisions on Reverse Side*

*DISTRIBUTION: Original – LAB, Yellow – LAB, Pink – Client*
Rev 09/2010 LAB FORM 340

CH2MHILL
Applied Sciences Laboratory (ASL)

# Sample Receipt Record

SDG ID: N1327 Date Received: 2/24/2014

Client/Project: WM RBLF Aquatic Resource Study Received By: CT

| | | | | |
|---|---|---|---|---|
| Were custody seals intact and on the outside of the cooler? | | ☐ Yes | ☐ No | ☑ N/A |
| Shipping Record: | ☑ Hand Delivered | ☐ On File | ☐ COC | |
| Radiological Screening for DoD | | ☐ Yes | ☐ No | ☑ N/A |
| Packing Material: | ☑ Hand Delivered | ☐ Ice | ☐ Blue Ice | ☐ Box |
| Temp OK? (<6C) Therm ID__TH173__ Exp. ___ **14-Mar** | 2.6°C | ☑ Yes | ☐ No | ☐ N/A |
| Was a Chain of Custody (CoC) Provided? | | ☑ Yes | ☐ No | ☐ N/A |
| Was the CoC correctly filled out (If No, document below) | | ☑ Yes | ☐ No | ☐ N/A |
| Did sample labels agree with COC? (If No, document below) | | ☐ Yes | ☑ No | ☐ N/A |
| Did the CoC list a correct bottle count and the preservative types (Y=OK, N=Corrected on CoC) | | ☑ Yes | ☐ No | ☐ N/A |
| Were the sample containers in good condition (broken or leaking)? | | ☑ Yes | ☐ No | ☐ N/A |
| Was enough sample volume provided for analysis? (If No, document below) | | ☑ Yes | ☐ No | ☐ N/A |
| Containers supplied by ASL? | | ☑ Yes | ☐ No | ☐ N/A |
| Any sample with < 1/2 holding time remaining? If so contact LPM | | ☐ Yes | ☑ No | ☐ N/A |
| Samples have multi-phase? If yes, document on SRER | | ☐ Yes | ☑ No | ☐ N/A |
| All water VOCs free of air bubbles? No, document on SRER | | ☑ Yes | ☐ No | ☐ N/A |
| pH of all samples met criteria on receipt? If "No", preserve and document below. | | ☐ Yes | ☑ No | ☐ N/A |
| Dissolved/Soluble metals filtered in the field? | | ☐ Yes | ☐ No | ☑ N/A |
| Dissolved/Soluble metals have sediment in bottom of container? If so document below. | | ☐ Yes | ☐ No | ☑ N/A |

## Preservation Adjustment

| Sample ID | Reagent | Reagent Lot Number | Volume Added | Initials |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |

## Sample Exception Report (The following exceptions were noted)

N132702-VOC3 pH>2. Did not verify other vials.
Label discrepancy: COC - SP2-YM-UP-2-21-14
label - SP YM UP 2-21-14

Client was notified on: Client contact:

Resolution to Exception: