Cottonwood Sand Mine
Water Quality Evaluation Report
Jamacha, California

Submitted to

Helix Environmental Planning
7578 El Cajon Boulevard
La Mesa, California 91942

Prepared by

Geo-Logic ASSOCIATES

11415 West Bernardo Court, #200
San Diego, California 92127
www.geo-logic.com
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Certification

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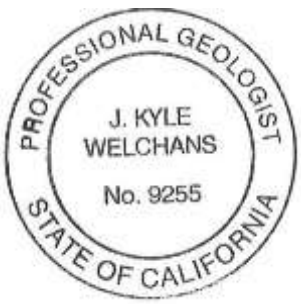
GEO-LOGIC ASSOCIATES

Kyle Welchans, PG
Project Geologist
kwelchans@geo-logic.com
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Sarah J. Battelle, CHG
Principal Geologist
sjbattelle@geo-logic.com
11415 West Bernardo Court, Suite 200
San Diego, CA 92127



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Acronyms and Abbreviations

Afy	Acre-feet of water per year
Amsl	Above Mean Sea Level
ARAR	Applicable or Relevant and Appropriate Requirements
BMP	Best Management Practice
bgs	Below Ground Surface
CEQA	California Environmental Quality Act
COC	Chain-of-Custody
DEH	Department of Environmental Health
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
GLA	Geo-Logic Associates
HASP	Health and Safety Plan
MCL	Maximum Contaminant Level
MDL	Method Detection Limit
mg/Kg	Milligram per Kilogram
mg/L	Milligram per Liter
MPN	Most Probable Number
mS/cm	Milli Siemens Per Centimeter
MUP	Major Use Permit
N	Nitrogen
NTU	Nephelometric Turbidity Unit
ORP	Oxidation-Reduction Potential
PCB	Polychlorinated Biphenyl
PDS	County Department of Planning and Development Services
SMCL	California Secondary Maximum Contaminant Level
SVOC	Semi-Volatile Organic Compound
SWA	Sweetwater Authority
SWPPP	Storm Water Pollution Prevention Plan
TDS	Total Dissolved Solids
TKN	Total Kjeldahl Nitrogen
TOC	Total Organic Carbon
TPY	Tons per Year
TTLC	Total Threshold Limit Concentration
USGS	United States Geological Survey
VOC	Volatile Organic Compound
WQO	Water Quality Objective

Executive Summary

The Cottonwood Sand Mine is to be located on the current Cottonwood Golf Club property (replacing the two 18-hole golf courses) in Jamacha Valley at 3121 Willow Glen Drive near the communities of Rancho San Diego and Jamacha, in southern San Diego County, California. The site is situated within the Sweetwater River watershed, downstream of the Loveland Reservoir, and upstream of the Sweetwater Reservoir (Figure 1). The project proposes to mine areas of the Property over a period of 10 years, reclaiming the excavated areas with wash fines and stockpiled topsoil, and revegetating the site with native plant species and erosion control seed mix following the conclusion of mining operations. The project proposes to use on-site groundwater from up to eight existing groundwater supply wells as a source of supply to meet the operational and landscape irrigation requirements of the project. At the conclusion of the project, when the plant community is established within the reclaimed area, no groundwater will be used on the project site.

The purpose of this report is to evaluate the existing water quality conditions of the Project site associated with the current golf courses. Samples of the surface water, groundwater and soil were collected at top, middle and bottom site locations and tested for a range of analytes to assess the current water quality and soil conditions related to the golf course operations. Results of the soil, surface water, and groundwater sampling indicate water quality at the Project site generally meet water quality objectives and Federal and State Maximum Contaminant Levels (MCLs), with the exception of exceedances of some State secondary MCLs, which relate to aesthetics of the water quality. Based on these results, generally the water quality related to dissolved content (as monitored by specific conductance and TDS concentrations) and iron and manganese is relatively poor, most likely associated with naturally occurring metals from the surrounding bedrock, while all other constituents appear to meet drinking water standards. With the exception of some very low estimated trace level pesticides in the uppermost soil samples, not measured in water quality samples, there is little evidence of anthropogenic impacts from the Project site.

Mining operations and initial reclamation activities have the potential to create temporary impacts to water quality. Ground disturbance may release particulates into the receiving water and into stormwater. However, compliance with current federal, State and local Clean Water regulations, including the Industrial General Permit, which requires implementation of an approved Stormwater Pollution Prevention Plan (SWPPP), will reduce impacts to the water quality.

The project proposes to work in phases, limiting the area of ground disturbance, and not mining within the existing Sweetwater River channel. Once an area has been mined, it will be planted and irrigated to establish a native plant community. The established reclamation areas will capture runoff, allowing the water to infiltrate back into the ground, decreasing the discharge from the project site and improving water quality. At the completion of the project the site will be reclaimed and revegetated to a riparian corridor with adjacent upland plant community with trails for public use. Potential impacts to the water quality after completion will be less than significant.

1. Introduction

1.1 Purpose of the Report

Geo-Logic Associates (GLA) has prepared this water quality investigation report for the Cottonwood Sand Mine Project (Project) Environmental Impact Report (EIR) as part of the requirements for obtaining a Major Use Permit (MUP) for the extraction of aggregate on the existing Cottonwood Golf Club property. The purpose of this report is to document the existing water quality conditions of the Project site and to evaluate potential impacts to groundwater and surface water quality as a result of the sand mining operations. Additionally, this report presents recommended measures to avoid, minimize, and/or mitigate significant impacts consistent with federal, state, and local rules and regulations including California Environmental Quality Act (CEQA), and San Diego County Groundwater Ordinance, as applicable.

As part of the MUP process, the Sweetwater Authority (SWA) and the local Valle de Oro Planning Group reviewed the initial Project Description (EnviroMine, 2018). The SWA issued comment letters dated December 13, 2018, and November 21, 2019, and the Valle De Oro Community Planning Group issued comments dated November 22, 2019. Both of these groups expressed concerns regarding potential impacts to water quality by the proposed Project. The SWA's primary concern is that the mining operation may impact water quality in the Sweetwater River, which passes through the Project site before it flows three miles downstream to the Sweetwater Reservoir - a drinking water source for about 200,000 people in San Diego County.

GLA prepared a Water Quality Evaluation Work Plan (GLA, 2020), to collect samples of soil, surface water, and groundwater for testing to address the agency and planning group concerns. The subsequent sampling program was completed generally in accordance with the additional comments received from the County Department of Planning and Development Services (PDS), and the SWA as much as feasible, noting that comments from the SWA were not received prior to the start of the soil sampling portion of the program. This report presents the test results of select surface water, groundwater, and soil samples collected from within the Project area and assesses the existing water quality associated with the current golf course with comparisons to State and local, basin-specific water quality objectives (WQOs).

1.2 Project Location and Description

The Cottonwood Sand Mine Project is to be located on the current Cottonwood Golf Club property, replacing the two 18-hole golf courses (referred to as the Lakes and Ivanhoe courses). Specifically, the Project is located in Jamacha Valley at 3121 Willow Glen Drive near the

communities of Rancho San Diego and Jamacha, in southern San Diego County, California (Figure 1). The approximately 280-acre site is situated within the Sweetwater River valley and in the floodplain of the Sweetwater River, which flows in a northeast-to-southwest direction through the site. Elevations on the project site range from approximately 320 feet above mean sea level (amsl) to 380 feet amsl. The area to the south consists of rugged terrain rising quickly to elevations over 800 feet amsl, and continuing to rise to San Miguel Mountain, at over 2,500 feet amsl, approximately three miles to the south. Land uses in the project vicinity include residential and rural residential development to the north and south, extractive operations to the east, and an adjacent golf course to the southeast. Open space is present in the hills south, east, and west of the site. A National Wildlife Refuge abuts the western end of the property along the river. Some areas of the Property will not be mined, but may be disturbed as part of the reclamation effort for the property.

The project's mining operations would extract, process, and transport sand using conventional earth moving and processing equipment. Approximately 4.3 million cy (CY; 6.40 million tons) of material are proposed to be extracted. Mining and extraction activities are expected to produce approximately 3.8 million cy (5.7 million tons) of sand and gravel for market use, with a 10 percent waste factor from the total amount extracted that includes wash fines and materials undesirable for processing. Material extracted and processed at the site would be suitable for construction uses and would be available to customers in San Diego County. Approximately 214 acres of the approximately 280-acre Project site are proposed for extractive use under a phased extraction program. Surface areas not disturbed by mining would be subject to removal of invasive species in the river channel on the southwest portion of the site or be left in their current condition. The existing Sweetwater River channel and the majority of native habitat that currently exists on the site would be retained.

Working from southwest to northeast, the project would be mined in three continuous phases, with sub-phases in each major phase. In addition, a fourth phase of reclamation would follow the mining phases on the processing plant site. The Project will be fully completed with vegetation established in 12 years. Native habitat will be planted within the channel and slopes. Vegetation monitoring will continue for a minimum of two years and until performance standards are met. There will be no human intervention; including, irrigation, fertilization, or weeding after project completion.

Although the Otay Water District provides potable water to the area, the Project proposes to use on-site groundwater from up to eight existing groundwater supply wells to meet the operational and landscape irrigation requirements of the Project. No new groundwater wells will be constructed and no borings will be converted to groundwater monitoring wells. Based on the

information contained in the project description, Project components that will require water include dust suppression, aggregate processing/surface watering of outgoing loads, and native plant irrigation. At a process rate of 570,000 TPY, an estimated 84.3 acre-feet of water would be used per year (afy), including evaporative loss. Landscape irrigation is estimated to require an average of 55.6 afy, resulting in an average total groundwater demand of 139.9 afy over the Project duration. By comparison, an estimated 804 afy of groundwater was applied to the existing Cottonwood Golf Club property for irrigation (EnviroMine, 2020). At the conclusion of the project, when the plant community is established within the reclaimed area (two years after mining operations are complete), no groundwater will be used on the project site. The property will become open space along the Sweetwater channel, with remaining land suitable for land uses allowed by the existing zoning classifications.

1.3 Existing Site Conditions

The Project is located along the Sweetwater River within the Jamacha Hydrologic Subarea of the Middle Sweetwater Hydrologic Area, which is within the Sweetwater Hydrologic Unit. It is situated within the Peninsular Range Province of California, which comprises granitic rocks of the Cretaceous Southern California Batholith. The granitic rocks in the vicinity of the site are predominantly gabbro, monzogranite, tonalite and granitoid rocks that are exposed on the hillslopes. Generally, the granitic bedrock is most weathered near ground surface becoming less weathered with depth. In the floodplain of the Sweetwater River within the Project site, based on limited available boring/well logs, these granitic rocks underly a relatively thin veneer (about 30 to 60 feet thick) of Quaternary alluvium in the floodplain of the Sweetwater River. The alluvium is predominantly composed of unconsolidated fine- to coarse-grained sand with varying amounts of silt/clay and rounded granitic and metavolcanic gravel and cobbles.

Two wells on the golf course property have been monitored by the SWA between January 2007 and February 2019. They include Ivanhoe #11 on the northeast, upgradient end of the site and Lakes #11 on the southwest downgradient end of the site. These two wells located on either end of the property will remain available for monitoring by the SWA during and after the project. The average groundwater elevation at up-gradient Ivanhoe #11, is about 339 ft-above mean seal level (msl), while that at downgradient Lakes #11 is about 315 ft-msl. Groundwater levels, on average, are deeper below ground surface (bgs) at Ivanhoe #11 (about 26 ft bgs) than down-gradient at Lakes #11 (about 12 ft bgs).

Based on San Diego County Department of Environmental Health (DEH) records, there are 114 permitted groundwater wells within approximately one mile of the site. Most of the wells are in two areas within large-lot, residential parcels on the southern side of the Project site. Since this

area is covered by the Otay Water District, which is responsible for providing potable water to these residences, the wells in these two areas (Steele Canyon Estates and properties near Par 4 Drive) are believed to provide additional landscape irrigation water for these properties.

2. Sampling and Analysis Procedures

Sampling and analyses were performed in general accordance with the sampling and analytical procedures described in the Site Water Quality Evaluation Work Plan (GLA, 2020). A project Health & Safety Plan (HASP) was also prepared for the work. The HASP identifies minimum procedures to be taken to protect workers during the field activities. A completed chain of custody (COC) form, detailing the sample I.D. numbers, date and time collected, analyses requested, and other project information accompanied each sample to the laboratory. The COC forms were signed and dated by all personnel retaining custody of the samples. Field notes and analytical reports are included in Appendix B.

2.1 Drilling and Soil Sampling Procedures

Soil borings and associated soil sampling at the Project site was completed by GLA on March 6 and 20, 2020. GLA selected ABC Liovin a California State C-57 licensed drilling contractor to perform the drilling and soil sampling using a hollow stem auger drilling rig. A summary of the protocols used for drilling, sample collection and analysis are presented below.

2.1.1 Soil Sampling Procedures

Before field work was initiated, drilling permits were obtained from San Diego County DEH. In addition, GLA coordinated with Underground Service Alert prior to the drilling program to verify that there were no underground utilities near the planned drilling locations.

All drilling and sampling equipment was decontaminated before being transported to the Project and between boring locations. Decontamination was achieved by using hot water, high-pressure sprayers and/or by scrubbing with clean water and mild soap followed by rinsing with clean water. Water used for decontamination was collected from a potable water source and transported to the Project. Since significant chemicals were not anticipated to be encountered during drilling activities at the Project site, spent wash and rinse waters were broadcast to the ground, avoiding discharge to the Sweetwater River drainage. Drill cuttings generated at the boring locations were spread out at the drilling location.

As shown on Figure 2, a total of three borings, one in each of the proposed extraction phases, were advanced on the golf course property. The boring locations included a boring near the western and eastern boundaries of the golf course (PH-1 and PH-3, respectively), and one within the middle section (PH-2); near the Steele Canyon bridge. Because the mining operations plan may excavate to a depth of up to 40 feet, each boring was advanced to a maximum of 40 feet; one in each of the three Project Phase areas. Each boring was drilled using 8-inch hollow stem auger, and was sampled using conventional 2.5-inch California modified split-spoon sampler at depth to obtain relatively undisturbed samples of fill and native materials encountered in the boreholes. Soil sample lithology was logged and described per ASTM D 2488. The boring logs are included in Appendix A.

From 6-inches to 1.5 feet bulk grab samples were collected using a hand auger. Beginning at five feet, 2.5-inch drive samples were collected every five feet to the bottom of the boring and at the soil-water interface. The samples were contained within 6-inch long, decontaminated stainless steel tubes and Teflon caps were placed on the tubes. Three samples from each boring were collected and submitted to BC Laboratories (BC Labs) in Bakersfield, CA under COC to evaluate the chemistry of the soils. Samples analyzed from each boring included two shallow samples at 0.5 ft bgs and 1.5 ft bgs and a third sample that was deeper than five feet (selected based on geological sample analysis). The three selected samples from the first two borings (PH-1 and PH-3) were tested by BC Labs for analytes listed at the top of Table 1. Following a request for an expanded list of analytical testing by SWA, soil samples from PH-2, which was drilled at a later date, were tested for additional analytes (Table 1). Of note, work plan comments from SWA regarding the expanded list of analytes were received after drilling, sampling, and analysis of soils from borings PH-1 and PH-3. Table 2 presents a summary of the analytical results.

2.2 Water Quality Sampling Procedures

Because there is typically no flow within the Sweetwater River unless the SWA releases water from the Loveland Reservoir, or during a prolonged period of heavy rain. Surface water samples were obtained during heavy rain events on April 10 and 14, 2020. The project was put on hiatus with the onset of isolation protocols instituted by the COVID pandemic and it was not re-started until the end of September. Therefore, groundwater sampling was not completed until October 1, 2020. The following sections present the methods used to collect surface water and groundwater samples at the Cottonwood Golf Club.

2.2.1 Surface Water

Review of available records indicated few recent groundwater or surface water samples have been collected within the Project area. A study by NBS Lowry (1990) evaluated groundwater and surface water quality within the Middle Sweetwater River area between 1979 and 1990, finding slightly elevated total dissolved solids (TDS) downstream. Nitrate concentrations reported were generally within acceptable limits in the Sweetwater river valley. Recognizing that these results are 30 years old, to support the proposed Project additional data was collected to evaluate the existing water quality at the Project site.

To obtain representative surface water samples, GLA collected upstream (background), mid-site, and downstream samples from the Sweetwater River channel during a week of heavy rain which generated sufficient flow within the Sweetwater drainage[1i]. The sample locations are presented in Figure 2. Samples were collected at the upstream and mid-site locations on April 10, 2020, though, staff vehicle issues prevented collection of the downstream sample. Therefore, a second sampling event was conducted on April 14, 2020 to obtain a representative downstream sample. Initially, grab samples were collected at each sample location to test field water quality parameters. Surface water samples for laboratory analyses were collected by submerging laboratory-supplied sample containers or a decontaminated sampling dipper into the surface water channel at the designated sampling locations. Surface water samples were submitted for analyses of the parameters listed on Table 1 and a summary of the analytical results are presented in Table 3.

2.2.2 Groundwater

Three groundwater production wells - Lakes #11, Ivanhoe #8 and Ivanhoe #11 (Figure 2) were sampled on October 1, 2020. The Ivanhoe #11 well is located on the eastern property boundary and represents the most upgradient groundwater monitoring point, while the Lakes #11, located on the western property boundary represents the downgradient groundwater monitoring point. Because both of the Ivanhoe course wells are active (equipped with electrical submersible pumps and level switches), grab samples were collected at a sampling valve on piping from the well head after a minimum of10 gallons were pumped from each well and field water quality parameters had stabilized. However, the Lakes #11 well does not contain a dedicated pump and therefore an electrical submersible pump was placed in the well to remove a minimum of three

[1] Surface water flow on the property only occurs during major storm events and when water is released by the SWA from Loveland Reservoir to the Sweetwater Reservoir. As a result, collection of surface water samples is limited to these events. The sampling event occurred during the only major storm event that occurred during the investigation period.

casing volumes from the well. The purge water was routed through a sampling chamber equipped with probes to measure dissolved oxygen, specific conductance, pH, oxidation-reduction potential, and temperature. When three consecutive readings of these field parameters had stabilized, the water quality was determined to be stable and samples were collected. Turbidity was also measured and recorded, but is not included as a stabilization criterion.

2.2.3 Sampling and Sample Handling

Liquid samples were collected in approved sample containers provided by the analytical laboratory, and filled based on decreasing volatility, beginning with containers used for VOCs, then other organic analyses, followed by general chemistry constituents, and so forth. Each sample container was filled completely and immediately capped, labelled, and placed in a cooler. Samples for VOC analysis were filled by pouring the sample down the sides of the container to minimize aeration and capped with no headspace. The samples were packaged in an ice-filled cooler for transport and shipped to BC Labs (or delivered to EnviroMatrix Analytical, Inc for surface water samples with short hold times). Completed COC forms, detailing the sample I.D. numbers, date and time collected, analyses requested, and other project information, accompanied the samples to the laboratories. The samples were analyzed for the analytical parameters listed in Table 1 and a summary of the analytical results is presented in Table 4.

3. Water Quality Investigation Results

The water quality investigation entailed sampling soil, surface water (from the Sweetwater River), and groundwater from one location within each of the three Project phase areas (Figure 2). Full analytical reports are provided in Appendices C and the results are summarized in Tables 2 through 4.

3.1 Soil Sample Results

Unconsolidated sand and clay were encountered to depths in the range of 30 to 40 ft bgs during drilling and sampling. Refusal was encountered at 30 ft bgs at the Phase 1 boring (PH-1) after encountering large gravels consisting of metavolcanics and tonalite. These gravels were also encountered at the bottom (40 ft bgs) of the Phase 2 boring (PH-2). Boring logs are provided in Appendix A.

The analytical results for the soil samples collected from the Phase 1, Phase 2 and Phase 3 borings (PH-1, PH-2, and PH-3) are presented in Table 2, along with any applicable total

threshold limit concentrations (TTLCs) for comparison with hazardous waste characterization standards. Statistics including median, average, standard deviation, minimum and maximum are also presented for each constituent. Laboratory analytical reports are provided in Appendix B.

As indicated in Table 1, soil samples from each boring were tested for chlorinated herbicides, organochlorine pesticides, VOCs, and TOC. As summarized in Table 2, very low and estimated trace concentrations of one or more organochlorine pesticides (4'4-DDD, 4,4'-DDE, and 4,4'-DDT) were measured in samples from PH-1 and PH-3. Organochlorine pesticides were only detected in near-surface samples (0.5-foot and 1.5-foot sample depths) and no organochlorine pesticides were detected in samples from PH-2. Generally, TOC concentrations decreased with sample depth, as expected with typical soil development. Lead results were similar in all samples.

Samples from the PH-2 boring were also tested for additional general chemistry parameters, metals, and SVOCs (Table 1). As shown in Table 2, no SVOCs were detected and results for general chemistry and metals were typically similar with no discernible trends associated with sample depth. No soil sample results exceeded TTLC hazardous waste criteria (Table 2).

3.2 Surface Water Sample Results

Field parameters and analytical results from the surface water samples are presented in Table 3 alongside any applicable or relevant and appropriate requirements (ARARs). ARARs consist of State and/or Federal drinking water standards, as well as water quality objectives (WQOs) set in the RWQCB- San Diego Region Basin Plan for the Middle Sweetwater Hydrologic Area in which the site is located. Field notes and laboratory analytical reports from the surface water sampling events are provided in Appendix B.

As indicated on the field notes in Appendix B, the upstream and downstream surface water monitoring locations were noted as having laminar flow with clear water, while the midstream monitoring location was noted as having turbid flow with brown water. The difference in stream observations at the midstream location compared to upstream and downstream locations is the product of several factors:

- The upstream location and midstream samples were collected on the same day (April 10, 2020) during heavy precipitation. During the event, drainage from Mexican Canyon was flowing turbidly into Sweetwater River approximately 2,000 feet upgradient from the midstream monitoring location. Mexican Canyon drains residential areas and a golf course to the south. This would have only affected the midstream sampling location because the upstream location is upgradient of where Mexican Canyon discharges into Sweetwater River

and the downstream sampling location was sampled on a different day (April 14, 2020) when there was no inflow from Mexican Canyon.

- The upstream sampling location is downgradient of a heavily vegetated portion of Sweetwater River. This setting is expected to provide a filtering effect on surface water flows. Between the upstream and midstream monitoring locations there is little to no vegetation within the Sweetwater River. Therefore, fast-moving water is likely to put solids into suspension between the upstream and midstream monitoring points. Between the midstream and downstream monitoring locations, Sweetwater River widens and energy within the stream is reduced, allowing solids to settle.
- Flow rates for the Sweetwater River were high during sampling of the upstream and midstream monitoring locations, as sampling was conducted during a storm event (April 10, 2020). Flow rates in the Sweetwater River were lower during sampling of the downstream monitoring location, as sampling was performed after the storm event had occurred (April 14, 2020).

As shown on Table 3, water chemistry between the upstream and downstream monitoring points is generally consistent, while several results were elevated for the midstream monitoring point. Elevated monitoring parameters at the midstream monitoring location are associated with the aforementioned bulleted points regarding stream conditions during sampling. For example, turbidity was relatively low at the upstream and downstream monitoring locations (6 to 20 NTU), while it was out of range (>800 NTU) for the midstream monitoring location.

Similarly, TSS concentrations were relatively low and ranged from 8.2 to 14 mg/L in upstream and downstream samples, but these concentrations were significantly elevated (2400 mg/L) at the midstream monitoring location. Furthermore, since metals are analyzed as total, elevated metals concentrations at the midstream monitoring location (typically elevated by an order of magnitude compared to the other surface water samples) reflect elevated sediment loads in the midstream sample. Nutrients were also typically slightly elevated in the midstream sample relative to upstream and downstream samples. The results obtained generally characterize surface water chemistry for two scenarios:

1. Surface water chemistry of laminar flow within Sweetwater River;
2. Surface water chemistry of turbulent flow within Sweetwater River, including influences from Mexican Canyon, which flows across Phase 2 prior to discharging into Sweetwater River.

Regardless of flow scenarios listed above, surface water chemistry in samples collected from the Sweetwater River (Table 3) within the project area is characterized as follows:

- High concentrations of coliform (all samples measured at maximum reporting limit), including E. Coli.
  - E. Coli is elevated at the upstream monitoring location (>2.5 times higher) compared to midstream and downstream monitoring locations.
- Absent of several anthropogenic and/or organic compounds, including: chlorinated herbicides, organochlorine pesticides, polychlorinated biphenyls (PCBs), SVOCs, and VOCs.
- Metals concentrations that are typically below MCLs and WQOs, except for:
  - Iron results elevated above the State secondary MCL(SMCL) and WQO at upstream and midstream monitoring locations.
  - Lead results elevated above the primary State and federal MCL.
  - Manganese results elevated above the State SMCL and WQO at upstream and midstream monitoring locations.
- General chemistry concentrations that are typically below MCLs and WQOs, except for:
  - Phosphorous results elevated above WQO at upstream and midstream monitoring locations.
  - Ratios of nitrogen to phosphorous range from approximately 5:1 to 14:1.

3.3 Groundwater Sample Results

Existing groundwater wells at the golf course are not being used as a source of potable water and will not be used as a potable water source during mining operations and area reclamation. The County has mapped potential nitrate and radioactive element problem areas within the County and presented them on a map within the Guidelines for Determining Significance – Groundwater Resources. The project site does not fall within either problem area. This conclusion is supported by limited general chemistry water quality data that has been collected by the SWA at the Ivanhoe #11 and Lakes #11 wells between 1989 and 2017.

Field parameters and analytical results from the groundwater samples are presented in Table 4 alongside their ARARs. Field notes from the groundwater sampling event and laboratory analytical reports are provided in Appendix B.

As shown in Table 4, generally the analytical results are similar between groundwater samples, and few results exceeded ARARs. Groundwater chemistry in samples collected from groundwater wells within the project area is characterized as follows:

- Absent of several anthropogenic and/or organic compounds, including: chlorinated herbicides, organochlorine pesticides, PCBs, SVOCs, and VOCs.
- Absent of E. Coli.
- Varying presence of coliform, from non-detect (Ivanhoe #8), to 88 MPN/100mL (Ivanhoe #11), to greater than 2400 MPN/100mL (Lakes #11).
- Slightly elevated TDS concentrations that exceed the SMCL and WQO.
- Elevated manganese and iron concentrations that generally exceed the SMCL and WQO. However, iron was not detected at well Ivanhoe #8 and the manganese concentration at this well was an order of magnitude less than the other wells sampled.
- Slightly elevated chloride concentrations that exceeded the SMCL and WQO in the sample from Lakes #11. Chloride in the other two wells sampled was measured very close to the WQO.

No other laboratory-analyzed parameters exceeded ARARs. Inconsistencies in the groundwater sampling results include varying presence of coliform between all wells and elevated concentrations of total nitrogen, TKN, and chloride at Lakes #11 compared with Ivanhoe #8 and Ivanhoe #11. In addition, the Ivanhoe #11 sample contained higher concentrations of lead and zinc relative to the other two wells monitored.

3.4 Summary

Results of the soil, surface water, and groundwater sampling indicate water quality at the Project site generally meet WQO and Federal and State MCLs, with the exception of exceedances of some SMCLs for specific conductance, TDS, iron, and manganese and one exceedance of pH in surface water. Surface water pH was just under the federal MCL of 6.5 at the midstream surface water sample location. Based on these results, generally the water quality related to dissolved content (as monitored by specific conductance and TDS concentrations) and iron and manganese is relatively poor, most likely associated with naturally occurring metals from the surrounding bedrock, while all other constituents appear to meet drinking water standards.

4. Summary of Project Impacts and Mitigations

Mining operations and initial reclamation activities have the potential to create temporary impacts to water quality. Ground disturbance may release particulates into the receiving water and into stormwater. However, compliance with current federal, State and local Clean Water

regulations, including the Industrial General Permit, which requires implementation of an approved Stormwater Pollution Prevention Plan (SWPPP), will reduce impacts to the water quality. The industrial general permit will require stormwater analyses of pH, TSS, oil and grease, and nitrate+nitrite due to the SIC code associated with sand and gravel mining. Furthermore, the SWPPP will require implementing project-specific Best Management Practices (BMPs) to control erosion and mixing of sediment with stormwater. Source control and good housekeeping are also essential to reduce water quality impacts to less than significant levels.

The project proposes to work in phases, limiting the area of ground disturbance. The Cottonwood Sand Mine Project does not propose to use any hazardous products. With the exception of some petroleum products (e.g., fuels) for its equipment, few pollutants of concern will be required for the mining operation. Once an area has been mined, it will be reclaimed, revegetated, and irrigated to establish plant communities. The established reclamation areas will capture runoff, allowing the water to infiltrate back into the ground, decreasing the discharge from the project site and improving water quality.

At the completion of the project the project will be restored to a riparian corridor with adjacent upland areas with trails. Potential impacts to the water quality after completion will be less than significant.

5. References

ASTM D 2488. Standard Practice for Description and Identification of Soils (Visual-Manual Procedure).

Geo-Logic Associates, 2020, Site Water Quality Evaluation Work Plan, Cottonwood Sand Mine Environmental Impact Report (EIR), El Cajon, California, March.

NBS Lowry Engineers and Planners, 1990, Middle Sweetwater River System, Water Resources Management Study, Volume I, December.

Explanation

- Site location

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Miles

Geo-Logic ASSOCIATES

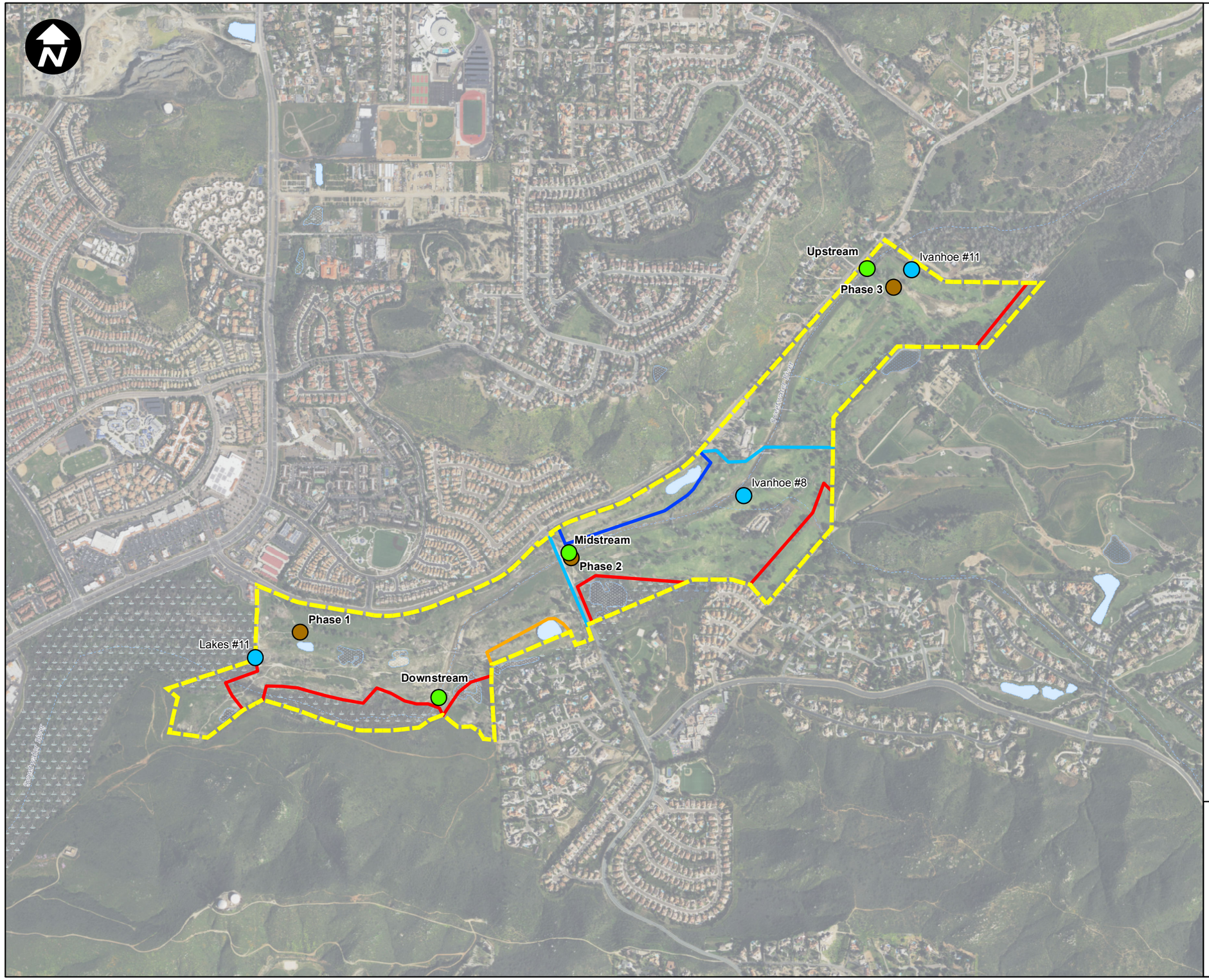
Figure 1

Site Location Map

Cottonwood Sand Mine

Path: K:\Projects\Water Resource Services\Private\SO20.1016 Cottonwood Mine\GIS\GIS_pjo_OneDrive\GLA_Figures\MXDs\F01_Site_Location_Map.mxd

November 05, 2020



Explanation

- Surface water sample
- Water well
- Soil boring

Project Areas

- No mining areas
- Mined prior to 1966
- Cottonwood Project boundary
- Project phasing lines
- Proposed plant location

0 1,000

Feet

Geo-Logic ASSOCIATES

Figure 2
Site Plan

Cottonwood Sand Mine

Path: K:\Projects\Water Resource Services\Private\SO20.1016 Cottonwood Mine\GIS\GIS_pjo_OneDrive\GLA_Figures\MXDs\WaterQuality\F02_Site_Plan.mxd

November 05, 2020

KEY TO TABLES
COTTONWOOD SAND MINE

- Value listed (right-justified) indicates analyte was detected above the Practical Quantitation Limit (PQL).

- Not detected above PQL; value listed is MDL (left-justified) or estimated trace concentration (right-justified; BOLDED).

NA - Sample was not analyzed for these parameters during the specified sampling round.

- Indicates exceeds Applicable or Relevant and Appropriate Requirement (ARAR).

(1) California Primary Drinking Water Standard.
(2) California Secondary Drinking Water Standard.
(3) Federal Primary Maximum Contaminant Limit (MCL).
(4) Federal Secondary MCL.
(5) Middle Sweetwater Hydrologic Unit Water Quality Objective
(6) Suspected Field/Laboratory Contaminant.
(e) Holding time exceeded.

NV = No Value

[A] = San Diego Basin Plan notes "A desired goal in order to prevent plant nuisances in streams and other flowing waters appears to be 0.1 mg/L total Phosphorous.

[B] = San Diego Basin Plan notes "Natural ratios of nitrogen to phosphorus are to be determined by surveillance and monitoring and upheld.

TABLE 1
ANALYTICAL METHODS
COTTONWOOD SAND MINE

SOIL MONITORING PARAMETERS - SAMPLES FROM ALL BORINGS (PH-1, PH-2, & PH-3	
PARAMETER	**TEST METHOD**
Chlorinated Herbicides	EPA 8151A
Lead	6010B
Organochlorine Pesticides	EPA 8081A
Total Organic Carbon	EPA 9060A
Volatile Organic Compounds (VOCs)	EPA 8260B
SOIL MONITORING PARAMETERS - SAMPLES FROM BORING PH-2	
PARAMETER	**TEST METHOD**
Iron	EPA 6010B
Manganese	EPA 6010B
Nitrate as Nitrogen	EPA 300.0
Oil and Grease	EPA 1664A HEM
Semi-Volatile Organic Compounds (SVOCs)	EPA 8270C
Title 22 Metals	EPA 6020 (EPA 7471A for Mercury)
Totak Kjeldahl Nitrogen	EPA 351.2
Total Nitrogen	Calculation
Total Organic Carbon	EPA 9060A
Total Phosphorous	EPA 365.4

GROUNDWATER & SURFACE WATER MONITORING PARAMETERS[1]	
PARAMETER	**TEST METHOD**
Chloride	EPA 300.0
Chlorinated Herbicides	EPA 515.1
Iron	EPA 200.7
Manganese	EPA 200.7
Methyl Blue Active Substance (MBAS)	EPA 6010B
Nitrate as Nitrogen	EPA 300.0[2]
Nitrite (as Nitrogen)	EPA 353.2[3]
Oil and Grease	EPA 1664
Organophosphorous Pesticides	EPA 508
Polychlorinated Byphenyls (PCBs)	EPA 508
Semi-Volatile Organic Compounds (SVOCs)	EPA 525.2
Sulfate	EPA 300.0
Title 22 Metals	EPA 200.8 (EPA 245.1 for Mercury)
Total Coliform & E. Coli	SM 9223
Total Dissolved Solids	EPA 160.1
Total Kjeldahl Nitrogen	EPA 351.2
Total Nitrogen	Calculation
Total Organic Carbon	EPA 415.1
Total Phosphorous	EPA 365.4
Total Suspended Solids	EPA 160.2
Volatile Organic Compounds (VOCs)	EPA 524.2

Notes:
1. Nitrite (as N) & Total Organic Carbon inadvertently not analyzed in Downstream surface water sample.
2. Also analyzed by EnviroMatrix Analytical, Inc. by EPA 353.2
3. Also analyzed by EnviroMatrix Analytical, Inc. by SM4500

Table 2
Cottonwood Sand Mine
Soil Sample Comparison Data

Analyte	Units	1-0.5 3/6/2020	1-1.5 3/6/2020	1-11 3/6/2020	2-0.5 3/20/2020	2-1.5 3/20/2020	2-6 3/20/2020	3-0.5 3/6/2020	3-1.5 3/6/2020	3-21 3/6/2020	TTLC	Median	Average	Stdev	Minimum	Maximum
General Chemistry																
Nitrate as N	mg/kg	NA	NA	NA	1.8	1.2	2.9	NA	NA	NA	NA	1.8	1.97	0.86	1.2	2.9
Total Kjeldahl Nitrogen	mg/kg	NA	NA	NA	200	190	200	NA	NA	NA	NA	200	196.67	5.77	190	200
Total Nitrogen	mg/kg	NA	NA	NA	200	190	210	NA	NA	NA	NA	200	200.00	10.00	190	210
Total Organic Carbon	mg/kg	8020	2000	1300	520	<500	770	5190	3050	<565	NA	2000	2978.57	2738.89	520	8020
Total Phosphorus	mg/kg	NA	NA	NA	230	370	340	NA	NA	NA	NA	340	313.33	73.71	230	370
Metals																
Antimony	mg/kg	NA	NA	NA	<0.080	<0.080	<0.080	NA	NA	NA	500	NC	NC	NC	NC	NC
Arsenic	mg/kg	NA	NA	NA	0.59	**0.38**	0.84	NA	NA	NA	500	0.59	0.60	0.23	0.38	0.84
Barium	mg/kg	NA	NA	NA	44	30	63	NA	NA	NA	10000	44	45.67	16.56	30	63
Beryllium	mg/kg	NA	NA	NA	**0.066**	<0.041	**0.094**	NA	NA	NA	75	0.08	0.08	0.02	0.066	0.094
Cadmium	mg/kg	NA	NA	NA	<0.048	<0.048	<0.048	NA	NA	NA	100	NC	NC	NC	NC	NC
Chromium	mg/kg	NA	NA	NA	8.3	5.5	9.6	NA	NA	NA	2500	8.3	7.80	2.10	5.5	9.6
Cobalt	mg/kg	NA	NA	NA	3.2	1.6	3.7	NA	NA	NA	8000	3.2	2.83	1.10	1.6	3.7
Copper	mg/kg	NA	NA	NA	7.3	3.4	8.0	NA	NA	NA	2500	7.3	6.23	2.48	3.4	8
Iron	mg/kg	NA	NA	NA	10000	9000	12000	NA	NA	NA	NA	10000	10333.33	1527.53	9000	12000
Lead	mg/kg	4.2	7.1	NA	1.7	0.73	1.3	6.7	3.4	NA	1000	3.4	3.59	2.56	0.73	7.1
Magnesium	mg/kg	NA	NA	NA	2000	1100	2100	NA	NA	NA	NA	2000	1733.33	550.76	1100	2100
Mercury	mg/kg	NA	NA	NA	<0.016	<0.016	<0.016	NA	NA	NA	20	NC	NC	NC	NC	NC
Molybdenum	mg/kg	NA	NA	NA	**0.13**	**0.096**	0.26	NA	NA	NA	3500	0.13	0.16	0.09	0.096	0.26
Nickel	mg/kg	NA	NA	NA	3.2	1.8	4.1	NA	NA	NA	2000	3.2	3.03	1.16	1.8	4.1
Selenium	mg/kg	NA	NA	NA	<0.11	<0.11	<0.11	NA	NA	NA	100	NC	NC	NC	NC	NC
Silver	mg/kg	NA	NA	NA	<0.051	<0.051	<0.051	NA	NA	NA	500	NC	NC	NC	NC	NC
Thallium	mg/kg	NA	NA	NA	**0.078**	<0.049	**0.11**	NA	NA	NA	700	0.094	0.09	0.02	0.078	0.11
Vanadium	mg/kg	NA	NA	NA	29	20	30	NA	NA	NA	2400	29	26.33	5.51	20	30
Zinc	mg/kg	NA	NA	NA	18	9.1	21	NA	NA	NA	5000	18	16.03	6.19	9.1	21
Chlorinated Herbicides (mg/kg) : ND																
Organochlorine Pesticides																
4,4'-DDD	mg/kg	<0.000064	<0.000064	<0.000064	<0.000064	<0.000064	<0.000064	**0.00037**	<0.000064	<0.000064	1.0	0.00037	0.00	NC	0.00037	0.00037
4,4'-DDE	mg/kg	<0.000095	**0.00039**	<0.000095	<0.000095	<0.000095	<0.000095	**0.0011**	**0.00020**	<0.000095	1.0	0.00039	0.0006	0.0005	0.0002	0.0011
4,4'-DDT	mg/kg	**0.00015**	0.00058	<0.00004	<0.00004	<0.00004	<0.00004	**0.0008**	**0.00023**	<0.00004	1.0	0.000405	0.0004	0.0003	0.00015	0.00076
Petroleum Hydrocarbons																
Oil and Grease	mg/kg	NA	NA	NA	**16**	<16	<16	NA	NA	NA	NA	16	16	NC	16	16
SVOC (mg/kg) : ND																
VOC (mg/kg) : ND																

Notes:

##	- No shading, right-justified: Value listed indicates analyte was detected above the Practical Quantitation Limit (PQL).
##	- Shaded, right justifed and bolded: value listed is an estimated trace concentration (measured between the method detection limit and PQL).
##	- Shaded, left-justifed: Not detected. Value listed is the method detection limit.

Table 3
Water Quality Comparison - Surface Water
Sweetwater River
Cottonwood Sand Mine

ANALYTE	Upstream		Midstream		Downstream	ARARs
	4/10/2020	04/14/20	4/10/2020	04/14/20	04/14/20	
FIELD PARAMETERS						
Oxygen, Dissolved (mg/L)	8.72	NA	10.00	NA	7.56	NV
ORP (MV)	163	NA	191	NA	165	NV
pH (units)	6.88	NA	6.38	NA	6.70	6-8 (4)
Specific Conductance (mS/cm)	3.71	NA	4.64	NA	1.10	1.6(2)
Temperature (°C)	14.79	NA	14.75	NA	19.07	NV
Turbidity (NTU)	20	NA	>800	NA	6.0	1(1,3) / 5(2) / 20(5)
GENERAL CHEMISTRY (mg/L):						
Chloride	50	NA	28	NA	150	250(5) / 500(2)
MBAS	<0.025[(e)]	NA	<0.025[(e)]	NA	**0.050**	0.5(2,4,5)
Nitrate (as N)	0.25[(e)]	0.30	0.99[(e)]	0.40	0.42 & 0.38	10(1,3)
Nitrite (as N)	<0.01[(e)]	**0.009**	<0.01[(e)]	**0.01**	NA	1(1,3)
Sulfate	47	NA	21	NA	58	250(5) / 500(2)
Total Nitrogen	0.97	NA	5.1	NA	1	NV[B]
Total Kjeldahl Nitrogen	0.73	NA	4.1	NA	0.6	NV
Total Organic Carbon	8.2	NA	33	NA	NA	NV
Total Phosphorus	0.12	NA	1.0	NA	0.069	0.1(5[A])
Total Suspended Solids (Glass Fiber)	14	NA	2400	NA	8.2	NV
Total Dissolved Solids (TDS)	350	NA	280	NA	570	500 (5) / 1000(2)
BACTERIOLOGICAL (MPN/100 mL):						
Total Coliform	>2400[(e)]	>24200	>2400[(e)]	>24200	>24200	NV
E. Coli	2000[(e)]	548	1100[(e)]	194	201	NV
METALS (mg/L):						
Total Recoverable Antimony	**0.00036**	NA	**0.00024**	NA	**0.00016**	0.006(1,3)
Total Recoverable Arsenic	<0.0007	NA	**0.0033**	NA	**0.0015**	0.01(1,3)
Total Recoverable Barium	0.032	NA	0.27	NA	0.062	1(1) / 2(3)
Total Recoverable Beryllium	<0.00014	NA	**0.00065**	NA	<0.00014	0.004(1,3)
Total Recoverable Cadmium	<0.00011	NA	**0.00044**	NA	<0.00011	0.005(1,3)
Total Recoverable Chromium	**0.00092**	NA	0.032	NA	<0.0005	0.05(1) / 0.1(3)
Total Recoverable Cobalt	**0.00071**	NA	0.026	NA	**0.00049**	NV
Total Recoverable Copper	0.0057	NA	0.085	NA	0.0025	1.3(1,3) / 1(2)
Total Recoverable Iron	0.8	NA	21	NA	0.24	0.3(2,5)
Total Recoverable Lead	**0.00066**	NA	0.023	NA	**0.00028**	0.015(1,3)
Total Recoverable Manganese	0.14	NA	0.91	NA	0.049	0.05(2,5)
Total Recoverable Mercury	**0.000035**	NA	<0.000022	NA	<0.000022	0.002(1,3)
Total Recoverable Molybdenum	0.0023	NA	**0.00077**	NA	0.0033	NV
Total Recoverable Nickel	**0.0018**	NA	0.024	NA	0.0021	0.1(1)
Total Recoverable Selenium	<0.00019	NA	<0.00038	NA	**0.0019**	0.05(1,3)
Total Recoverable Silver	<0.00010	NA	<0.00020	NA	<0.00010	0.1(2)
Total Recoverable Thallium	<0.00010	NA	**0.00050**	NA	<0.00010	0.002(1,3)
Total Recoverable Vanadium	0.0096	NA	0.12	NA	0.0063	NV
Total Recoverable Zinc	0.016	NA	0.17	NA	**0.003**	5(2)
CHLORINATED HERBICIDES (µg/L): ND						
ORGANOCHLORINE PESTICIDES AND PCB's (µg/L): ND						
SVOC (µg/L): ND						
VOC (µg/L): ND						

Notes:

- No shading, right-justified: Value listed indicates analyte was detected above the Practical Quantitation Limit (PQL).

- Shaded, right justifed and bolded: value listed is an estimated trace concentration (measured between the method detection limit and PQL).

- Shaded, left-justifed: Not detected. Value listed is the method detection limit.

TABLE 4
COTTONWOOD SAND MINE
GROUNDWATER QUALITY COMPARISON
COTTONWOOD GOLF COURSE

ANALYTE	IVANHOE GOLF COURSE		LAKES GOLF COURSE	ARARs
	IVANHOE #11 10/01/20	IVANHOE #8 10/01/20	LAKES #11 10/01/20	
FIELD PARAMETERS:				
Dissolved Oxygen (mg/L)	NA	NA	1.36	NV
pH (units)	7.07	6.56	7.71	6-8 (4)
ORP (MV)	213	244	-89	NV
Specific Conductance (µs/cm)	2450	2450	2920	1600(2)
Temperature (°C)	24.40	20.83	23.29	NV
Turbidity (NTU)	72	1.3	4.7	1(1,3) / 5(2,5)
GENERAL CHEMISTRY (mg/L):				
Chloride	390	380	630	400(5) / 500(2)
MBAS	<0.048	<0.024	**0.024**	0.5(2,4,5)
Nitrate (as N)	2.0	2.6	0.61	10(1,3)
Nitrite (as N)	<0.01	0.064	0.1	1(1,3)
Sulfate	410	400	310	500(2,5)
Total Kjeldahl Nitrogen	0.57	0.39	23	NV
Total Nitrogen	2.6	3.1	24	NV
Total Organic Carbon	4.2	3.9	8.4	NV
Total Phosphorus	0.12	<0.018	<0.090	NV
Total Suspended Solids (Glass Fiber)	6.0	<0.56	7.6	NV
Total Dissolved Solids (TDS)	1500	1600	1900	1000(2,5)
BACTERIOLOGICAL (MPN/100 mL):				
Total Coliform	88	<1	>2400	NV
E. Coli	<1	<1	<1	NV
METALS (mg/L):				
Total Recoverable Antimony	**0.00016**	<0.00011	**0.00013**	0.006(1,3)
Total Recoverable Arsenic	0.002	<0.0007	0.0024	0.01(1,3)
Total Recoverable Barium	0.18	0.14	0.12	1(1)/ 2(3)
Total Recoverable Beryllium	<0.00014	<0.00014	<0.00014	0.004(1,3)
Total Recoverable Cadmium	**0.00032**	**0.00015**	**0.00019**	0.005(1,3)
Total Recoverable Chromium	**0.0019**	<0.0005	<0.0005	0.05(1)/0.1(3)
Total Recoverable Cobalt	0.0053	0.0025	0.011	NV
Total Recoverable Copper	0.062	0.0037	0.0028	1.3(1,3) / 1(2)
Total Recoverable Iron	2.9	<0.030	1.1	0.3(2,5)
Total Recoverable Lead	0.0064	**0.00017**	**0.00016**	0.015(1,3)
Total Recoverable Manganese	1.7	0.14	1.2	0.05(2,5)
Total Recoverable Mercury	0.00040	**0.00013**	0.00020	0.002(1,3)
Total Recoverable Molybdenum	0.017	0.0095	0.31	NV
Total Recoverable Nickel	0.0058	0.0041	0.0048	0.1(1)
Total Recoverable Selenium	0.011	0.014	0.0022	0.05(1,3)
Total Recoverable Silver	<0.00010	<0.00010	<0.00010	0.1(2)
Total Recoverable Thallium	<0.00010	<0.00010	<0.00010	0.002(1,3)
Total Recoverable Vanadium	0.12	0.041	0.0036	NV
Total Recoverable Zinc	0.12	**0.0039**	0.019	5(2)
CHLORINATED HERBICIDES (µg/L): ND				
ORGANOCHLORINE PESTICIDES AND PCB's (µg/L): ND				
SVOC (µg/L): ND				
VOC (µg/L): ND				

Notes:

- No shading, right-justified: Value listed indicates analyte was detected above the Practical Quantitation Limit (PQL).

- Shaded, right justifed and bolded: value listed is an estimated trace concentration (measured between the method detection limit and PQL).

- Shaded, left-justifed: Not detected. Value listed is the method detection limit.

Appendix A

Boring Logs

Geo-Logic Associates
Boring Log

BORING NO.: PH-1

JOB NO.: SO20.1016
SITE LOCATION: COTTONWOOD GOLF COURSE
DRILLING METHOD: HOLLOW STEM AUGER
CONTRACTOR: ABC DRILLING
LOGGED BY: K. WELCHANS

DATE STARTED: 3/06/20
DATE FINISHED: 3/06/20
ESTIMATED ELEVATION: 330 feet
ESTIMATED LATITUDE: 32° 44' 32.02" N
ESTIMATED LONGITUDE: -116° 55' 37.01" W

GW DEPTH: 8 feet
TOTAL DEPTH: 30.5 feet

TIME	DRY DENSITY (LBS/CU. FT.)	MOISTURE (%)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
11:33				Bulk	1-0.5	0	SW	Brown (7.5YR 5/3), well-graded SAND.	...(0'-5') - cleared with hand tools. PVC line encountered and boring moved ~2' to the East.
				Bulk	1-1.5		SC	Strong brown (5YR 4/6), fine CLAYEY SAND.	
			18	2.5		5	SC	Strong brown (5YR 4/6), medium dense, fine to coarse, well-graded CLAYEY SAND with minor GRAVEL.	
							SC-CL	Black (5YR 2.5/1), fine CLAYEY SAND to SANDY CLAY.	...(7') - moist cuttings.
			16	2.5		10	SW	Dark reddish brown (5YR 2.5/2), medium dense, fine to coarse, well-graded SAND.	
					1-11		CL	Dark reddish brown (5YR 2.5/2), very stiff, fine SANDY CLAY.	
			21	2.5	1-16	15		...(15') - color change to very dary grayish brown (10YR 3/2).	
			23	2.5	1-21	20	CL	Dark brown (7.5YR 3/2), very stiff, fine SANDY CLAY.	
							SP	Brown (10YR 5/3), poorly graded, coarse SAND.	
			23	2.5	1-26	25			
								Tonalite and metavolcanic GRAVEL.	...(30') - poor sample recovery. ~1/2" to 3" gravel pulled out of auger and bit after auger was tripped out of boring.
12:30			50/6"	2.5		30	GP		
								Notes:	...(30.5') - refusal.
						35		1. Total depth of boring 30.5 feet below ground surface (bgs) due to refusal. 2. Groundwater measured at 8 feet (bgs). 3. Samples 1-0.5, 1-1.5, 1-11 submitted for laboratory analysis (environmental). 4. Borehole backfilled with grout slurry with 5% bentonite by weight.	
						40			
						45			
						50			

The data presented on this log is a simplification of actual conditions encountered and applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

V:\Dwgs\2020\SO 1016-Helix Cottonwood Sand Mine\Boring Logs\PH-1.dwg

Geo-Logic Associates
Boring Log

BORING NO.: PH–2

PAGE: 1 OF 1

JOB NO.: S020.1016
SITE LOCATION: COTTONWOOD GOLF COURSE
DRILLING METHOD: HOLLOW STEM AUGER
CONTRACTOR: ABC DRILLING
LOGGED BY: K. WELCHANS

DATE STARTED: 3/20/20
DATE FINISHED: 3/20/20
ESTIMATED ELEVATION: 341 feet
ESTIMATED LATITUDE: 32° 44' 40.52" N
ESTIMATED LONGITUDE: –116° 54' 59.36" W

GW DEPTH: 5 feet
TOTAL DEPTH: 40 feet

TIME	DRY DENSITY (LBS/CU. FT.)	MOISTURE (%)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
8:05				Bulk	2–0.5	0			SP	Very dark grayish brown (10YR 3/2), fine to coarse (mostly fine), poorly graded SAND.	...(0'–5') – cleared with hand tools.
				Bulk	2–1.5					...(1') – grades to mostly coarse SAND.	
									SC	Very dark grayish brown (10YR 3/2), fine to coarse CLAYEY SAND.	
			8	2.5	2–6	5			SM	Very dark grayish brown (10YR 3/2), loose SILTY SAND.	...(5') – wet cuttings.
										...(7') – plus CLAY.	
			38	2.5	2–11	10			SM	Very dark grayish brown (10YR 3/2), dense, fine to coarse, well–graded SILTY SAND.	
			36	2.5	2–16	15			SP	Brown (10YR 4/3), dense, fine to coarse (mostly coarse), poorly graded SAND.	
			53	2.5	2–21	20				...(20') – very dense, medium to coarse.	
			20	2.5	2–26	25				...(25') – medium dense.	
			30	2.5		30					...(30') – no sample recovered.
											...(33') – rig chatter and locking.
			50/4"	2.5	2–36	35			SW	Brown (10YR 4/3), very dense, fine to coarse, well–graded SAND.	...(36') – smooth drilling.
			50/5"	2.5	2–40	40			SW	Brown (10YR 4/3), very dense, fine to coarse SILTY SAND with tonalite GRAVEL up to 1.5" in size.	
						45				Notes: 1. Total depth of boring 40 feet below ground surface (bgs). 2. Groundwater measured at 5 feet (bgs). 3. Samples 2–0.5, 2–1.5, 2–6 submitted for laboratory analysis (environmental). 4. Borehole backfilled with grout slurry with 5% bentonite by weight.	
						50					

The data presented on this log is a simplification of actual conditions encountered and applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

V:\Dwgs\2020\S0 1016–Helix Cottonwood Sand Mine\Boring Logs\PH–2.dwg

Geo-Logic Associates
Boring Log

BORING NO.: PH–3

PAGE: 1 OF 1

JOB NO.: S020.1016
SITE LOCATION: COTTONWOOD GOLF COURSE
DRILLING METHOD: HOLLOW STEM AUGER
CONTRACTOR: ABC DRILLING
LOGGED BY: K. WELCHANS

DATE STARTED: 3/06/20
DATE FINISHED: 3/06/20
ESTIMATED ELEVATION: 369 feet
ESTIMATED LATITUDE: 32° 45' 11.37" N
ESTIMATED LONGITUDE: –116° 54' 17.35" W

GW DEPTH: 20 feet
TOTAL DEPTH: 40 feet

TIME	DRY DENSITY (LBS/CU. FT.)	MOISTURE (%)	BLOWS (COUNT/FT.)	SAMPLE SIZE (INCHES)	SAMPLE NO.	DEPTH IN FEET	ELEVATION IN FEET	MATERIAL SYMBOL	USCS/GEOLOGIC FORMATION	DESCRIPTION	COMMENTS
8:13				Bulk	3–0.5	0			SW	Dark brown (7.5YR 3/3), fine to coarse SAND with GRAVEL.	...(0'–5') – cleared with hand tools.
				Bulk	3–1.5					...(1') – color change to dark reddish brown (5YR 3/3).	
			28	2.5		5			CL	Dark reddish brown (5YR 2.5/2) SANDY CLAY. ...(5') – very stiff.	
			27	2.5		10			SW	Dark gray (5YR 4/1), fine to coarse, well–graded SAND with GRAVEL. ...(10') – medium dense. ...(11') – no GRAVEL.	
			24	2.5		15			CL	Very dark gray (5YR 3/1), very stiff, fine to medium SANDY CLAY.	
			30	2.5	3–21	20	▼		SW	Very dark gray (5YR 3/1), medium dense, fine to coarse, well–graded SAND.	...(20') – wet cuttings.
			21	2.5	3–26	25				...(25') – color change to dark gray (5YR 4/1) and increase in coarse SAND content.	
			21	2.5	3–31	30					
			25	2.5	3–36	35					
9:22			25	2.5	3–40	40					
						45				Notes: 1. Total depth of boring 40 feet below ground surface (bgs). 2. Groundwater measured at 20 feet (bgs). 3. Samples 3–0.5, 3–1.5, 3–21 submitted for laboratory analysis (environmental). 4. Borehole backfilled with grout slurry with 5% bentonite by weight.	
						50					

The data presented on this log is a simplification of actual conditions encountered and applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change with the passage of time.

V:\Dwgs\2020\S0 1016–Helix Cottonwood Sand Mine\Boring Logs\PH–3.dwg

Appendix B

Soil, Surface Water, and Groundwater Field Notes and Laboratory Reports

Date of Report: 05/05/2020

Sarah Battelle

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Client Project:	S020.1016
BCL Project:	Cottonwood
BCL Work Order:	2008288
Invoice ID:	B379135

Enclosed are the results of analyses for samples received by the laboratory on 3/17/2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Natalie Serda
Client Service Rep

Stuart Buttram
Technical Director

Table of Contents

BC LABORATORIES, INC.

Chain of Custody Form

Page 1 of 1

Report To: Client: GEO-LOGIC ASSOCIATES	Project #: SO20.1016
Attn: SARAH BATTELLE	Project Name: COTTONWOOD
Street Address: 1145 N. BERNARDO CT #200	
City, State, Zip: SAN DIEGO, CA 92704	Sampler(s): V. WYCHANS
Phone: 858-451-1136 Fax:	
Email: SBATTELLE@GEO-LOGIC.COM	
Work Order #: 20-08288	

Analysis Requested

Sample #	Description	Date Sampled	Time Sampled	Organochlorine Pesticides	Chlorinated Hydrocarbons	Benzene, Toluene	Ethylbenzene, Xylenes	Total Organic Carbon	Total Lead	Archive	Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Notes
-1	3-0.5	3/6/20	850	X	X	X	X	X	X	X	X						
-2	3-1.5	↓	805	X	X	X	X	X	X	X	X						
-3	3-21		900	X	X	X	X	X		X	X						
-4	3-26		905							X	X						
-5	3-31		910							X	X						
-6	3-36		915							X	X						
-7	3-40		920							X	X						
-8	1-0.5		1130	X	X	X	X	X	X	X							
-9	1-1.5		1135	X	X	X	X	X	X	X							
-10	1-11		1150	X	X	X	X	X		X							
-11	1-16		1155							X							
-12	1-21		1200							X							
-13	1-26	↓	1205							X							

Comments:

Result Request **Surcharge: ☐ STD (10 Days) ☐ 5 Day** ☐ 2 Day** ☐ 1 Day**

CHK BY: [signature] DISTRIBUTION: ☐ [signature] SUMMARY ☐ SUB OUT ☐

Billing ☒ Same as above

Client: ____
Address: ____
City: ____ State ____ Zip ____
Attn: ____
P.O. #: ____

EDF Required? Geotracker ☐ Yes ☐ No

Send Copy to State of CA? (EDT) ☐ Yes ☐ No

Global ID (Needed for EDF)

System # (Needed for EDT)

Relinquished By	Date	Time	Received By	Date	Time
1. [signature]	3/12/20	1300	1. [signature]	3-17-20	1215
2.			2. [signature]		
3.			3.		

BC Laboratories, Inc. – 4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody and Cooler Receipt Form for 2008288 Page 2 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 2

Submission #: 20-08288

SHIPPING INFORMATION
Fed Ex ☐ UPS ☑ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify)_____

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)_____

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments: NOT enough ice

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: .91 Container: Styrofoam Thermometer ID: 27H

Temperature: (A) 13.3 °C / (C) 13.2 °C 3/17/20 Date/Time 3-17-20 1215

Analyst Init TK

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40ml VOA VIAL-504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
3oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE	AB	AB	AB	AB	A	AB	AB	A	A	A
VOB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: GSP Date/Time: 3/17 1743

A = Actual / C = Corrected

Rev 21 05/23/2016

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Chain of Custody and Cooler Receipt Form for 2008288 Page 3 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 2 Of 2

Submission #: 2008288

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☑ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☐ (Specify)_____	Ice Chest ☑ None ☐ Box ☐ Other ☐ (Specify)_____	YES ☐ NO ☐ W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments: NOT enough ice

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: .91 Container: Soil sleeve Thermometer ID: 274

Temperature: (A) 13.3 °C / (C) 13.2 3/17/20 °C

Date/Time 3-17-20 1715

Analyst Init TKJ

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz CV*										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
VOA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
PT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40ml VOA VIAL-504										
PT EPA 508/608/8080										
PT EPA 515.1/8150										
PT EPA 525										
PT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
2 EPA 548										
PT EPA 549										
PT EPA 8015M										
PT EPA 8270										
4oz / 16oz / 32oz AMBER										
4oz / 16oz / 32oz JAR										
SOIL SLEEVE	A	A	A							
TB VIAL										
PLASTIC BAG										
DOLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
TEDLAR CANISTER										

Comments:

Sample Numbering Completed By: [illegible] Date/Time: 3/17 1743

Actual / C = Corrected

Rev 21 05/23/2016

S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 29I

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
2008288-01	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 08:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	3-0.5	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-02	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 08:05
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	3-1.5	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-03	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 09:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	3-21	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-04	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 09:05
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	3-26	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-05	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 09:10
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	3-31	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-06	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 09:15
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	3-36	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-07	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 09:20
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	3-40	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
2008288-08	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 11:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	1-0.5	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-09	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 11:35
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	1-1.5	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-10	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 11:50
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	1-11	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-11	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 11:55
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	1-16	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-12	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 12:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	1-21	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008288-13	**COC Number:**	---	**Receive Date:**	03/17/2020 12:15
	Project Number:	---	**Sampling Date:**	03/06/2020 12:05
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	1-26	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 2008288-01 | **Client Sample Name:** 3-0.5, 3/6/2020 8:00:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Aldrin	ND	mg/kg	0.0025	0.000090	EPA-8081A	1.4	A01	1
alpha-BHC	ND	mg/kg	0.0025	0.00019	EPA-8081A		A01	1
beta-BHC	ND	mg/kg	0.0025	0.00024	EPA-8081A		A01	1
delta-BHC	ND	mg/kg	0.0025	0.00018	EPA-8081A		A01	1
gamma-BHC (Lindane)	ND	mg/kg	0.0025	0.000090	EPA-8081A	4.0	A01	1
Chlordane (Technical)	ND	mg/kg	0.25	0.0050	EPA-8081A	2.5	A01	1
4,4'-DDD	**0.00037**	**mg/kg**	**0.0025**	**0.00032**	**EPA-8081A**	1.0	**J,A01**	1
4,4'-DDE	**0.0011**	**mg/kg**	**0.0025**	**0.00048**	**EPA-8081A**	1.0	**J,A01**	1
4,4'-DDT	**0.00076**	**mg/kg**	**0.0025**	**0.00020**	**EPA-8081A**	1.0	**J,A01**	1
Dieldrin	ND	mg/kg	0.0025	0.00018	EPA-8081A	8.0	A01	1
Endosulfan I	ND	mg/kg	0.0025	0.00010	EPA-8081A		A01	1
Endosulfan II	ND	mg/kg	0.0025	0.00017	EPA-8081A		A01	1
Endosulfan sulfate	ND	mg/kg	0.0025	0.00013	EPA-8081A		A01	1
Endrin	ND	mg/kg	0.0025	0.00032	EPA-8081A	0.2	A01	1
Endrin aldehyde	ND	mg/kg	0.0025	0.000090	EPA-8081A		A01	1
Heptachlor	ND	mg/kg	0.0025	0.00043	EPA-8081A	4.7	A01	1
Heptachlor epoxide	ND	mg/kg	0.0025	0.000085	EPA-8081A		A01	1
Methoxychlor	ND	mg/kg	0.0025	0.00047	EPA-8081A	100	A01	1
Toxaphene	ND	mg/kg	0.25	0.0070	EPA-8081A	5	A01	1
TCMX (Surrogate)	39.1	%	20 - 130 (LCL - UCL)		EPA-8081A		A01	1
Decachlorobiphenyl (Surrogate)	34.8	%	40 - 130 (LCL - UCL)		EPA-8081A		A01,A20	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8081A	03/20/20 10:30	03/20/20 21:19	HKS	GC-17	4.918	B073739	EPA 3550B

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Chlorinated Herbicides (EPA Method 8151A)

BCL Sample ID: 2008288-01 | **Client Sample Name:** 3-0.5, 3/6/2020 8:00:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
2,4-D	ND	mg/kg	0.020	0.0030	EPA-8151A	100		1
2,4-DB	ND	mg/kg	0.040	0.0067	EPA-8151A			1
Dalapon	ND	mg/kg	0.050	0.0068	EPA-8151A			1
Dicamba	ND	mg/kg	0.0020	0.00057	EPA-8151A			1
Dichloroprop	ND	mg/kg	0.020	0.0037	EPA-8151A			1
Dinoseb	ND	mg/kg	0.0070	0.0020	EPA-8151A			1
2,4,5-T	ND	mg/kg	0.0030	0.0011	EPA-8151A			1
2,4,5-TP (Silvex)	ND	mg/kg	0.0030	0.00073	EPA-8151A	10		1
2,4-Dichlorophenylacetic acid (Surrogate)	14.8	%	40 - 120 (LCL - UCL)		EPA-8151A		A20	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8151A	03/20/20 09:30	03/25/20 06:14	OLH	GC-8	1.017	B073747	EPA 3550B

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-01 | **Client Sample Name:** 3-0.5, 3/6/2020 8:00:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Bromobenzene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Bromochloromethane	ND	mg/kg	0.0050	0.0014	EPA-8260B			1
Bromodichloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Bromoform	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Bromomethane	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
n-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
sec-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
tert-Butylbenzene	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
Carbon tetrachloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Chloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chloroform	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Chloromethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
2-Chlorotoluene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
4-Chlorotoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Dibromochloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2-Dibromoethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Dibromomethane	ND	mg/kg	0.0050	0.0016	EPA-8260B			1
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Dichlorodifluoromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-01 | **Client Sample Name:** 3-0.5, 3/6/2020 8:00:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Ethylbenzene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Hexachlorobutadiene	ND	mg/kg	0.0050	0.0031	EPA-8260B			1
Isopropylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
p-Isopropyltoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Methylene chloride	ND	mg/kg	0.010	0.0015	EPA-8260B			1
Methyl t-butyl ether	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Naphthalene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
n-Propylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Styrene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Tetrachloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Toluene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0026	EPA-8260B			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0027	EPA-8260B			1
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Trichloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B	2040		1
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Vinyl chloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Total Xylenes	ND	mg/kg	0.010	0.0034	EPA-8260B			1
p- & m-Xylenes	ND	mg/kg	0.0050	0.0038	EPA-8260B			1
o-Xylene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	108	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	98.8	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	93.9	%	74 - 121 (LCL - UCL)		EPA-8260B			1

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-01 | **Client Sample Name:** 3-0.5, 3/6/2020 8:00:00AM

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8260B	03/17/20 10:20	03/18/20 19:28	BYM	MS-V2	1	B073253	EPA 5030 Soil MS

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Total Concentrations (TTLC)

BCL Sample ID: 2008288-01 | **Client Sample Name:** 3-0.5, 3/6/2020 8:00:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Lead	**6.7**	**mg/kg**	**2.5**	**0.28**	**EPA-6010B**	1000		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-6010B	03/19/20 08:08	03/19/20 18:55	KDF	PE-OP4	1	B073477	EPA 3050B

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 2008288-02 | **Client Sample Name:** 3-1.5, 3/6/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Aldrin	ND	mg/kg	0.00050	0.000018	EPA-8081A	1.4		1
alpha-BHC	ND	mg/kg	0.00050	0.000038	EPA-8081A			1
beta-BHC	ND	mg/kg	0.00050	0.000048	EPA-8081A			1
delta-BHC	ND	mg/kg	0.00050	0.000037	EPA-8081A			1
gamma-BHC (Lindane)	ND	mg/kg	0.00050	0.000018	EPA-8081A	4.0		1
Chlordane (Technical)	ND	mg/kg	0.050	0.0010	EPA-8081A	2.5		1
4,4'-DDD	ND	mg/kg	0.00050	0.000064	EPA-8081A	1.0		1
4,4'-DDE	**0.00020**	**mg/kg**	**0.00050**	**0.000095**	**EPA-8081A**	1.0	**J**	1
4,4'-DDT	**0.00023**	**mg/kg**	**0.00050**	**0.000040**	**EPA-8081A**	1.0	**J**	1
Dieldrin	ND	mg/kg	0.00050	0.000036	EPA-8081A	8.0		1
Endosulfan I	ND	mg/kg	0.00050	0.000020	EPA-8081A			1
Endosulfan II	ND	mg/kg	0.00050	0.000034	EPA-8081A			1
Endosulfan sulfate	ND	mg/kg	0.00050	0.000026	EPA-8081A			1
Endrin	ND	mg/kg	0.00050	0.000065	EPA-8081A	0.2		1
Endrin aldehyde	ND	mg/kg	0.00050	0.000018	EPA-8081A			1
Heptachlor	ND	mg/kg	0.00050	0.000086	EPA-8081A	4.7		1
Heptachlor epoxide	ND	mg/kg	0.00050	0.000017	EPA-8081A			1
Methoxychlor	ND	mg/kg	0.00050	0.000094	EPA-8081A	100		1
Toxaphene	ND	mg/kg	0.050	0.0014	EPA-8081A	5		1
TCMX (Surrogate)	26.1	%	20 - 130 (LCL - UCL)		EPA-8081A			1
Decachlorobiphenyl (Surrogate)	19.4	%	40 - 130 (LCL - UCL)		EPA-8081A		A20	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8081A	03/20/20 10:30	03/20/20 21:35	HKS	GC-17	1.014	B073739	EPA 3550B

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Chlorinated Herbicides (EPA Method 8151A)

BCL Sample ID: 2008288-02 | **Client Sample Name:** 3-1.5, 3/6/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
2,4-D	ND	mg/kg	0.020	0.0030	EPA-8151A	100		1
2,4-DB	ND	mg/kg	0.040	0.0067	EPA-8151A			1
Dalapon	ND	mg/kg	0.050	0.0068	EPA-8151A			1
Dicamba	ND	mg/kg	0.0020	0.00057	EPA-8151A			1
Dichloroprop	ND	mg/kg	0.020	0.0037	EPA-8151A			1
Dinoseb	ND	mg/kg	0.0070	0.0020	EPA-8151A			1
2,4,5-T	ND	mg/kg	0.0030	0.0011	EPA-8151A			1
2,4,5-TP (Silvex)	ND	mg/kg	0.0030	0.00073	EPA-8151A	10		1
2,4-Dichlorophenylacetic acid (Surrogate)	42.2	%	40 - 120 (LCL - UCL)		EPA-8151A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8151A	03/20/20 09:30	03/25/20 08:38	OLH	GC-8	0.993	B073747	EPA 3550B

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-02 | **Client Sample Name:** 3-1.5, 3/6/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Bromobenzene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Bromochloromethane	ND	mg/kg	0.0050	0.0014	EPA-8260B			1
Bromodichloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Bromoform	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Bromomethane	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
n-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
sec-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
tert-Butylbenzene	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
Carbon tetrachloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Chloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chloroform	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Chloromethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
2-Chlorotoluene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
4-Chlorotoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Dibromochloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2-Dibromoethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Dibromomethane	ND	mg/kg	0.0050	0.0016	EPA-8260B			1
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Dichlorodifluoromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-02 | **Client Sample Name:** 3-1.5, 3/6/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Ethylbenzene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Hexachlorobutadiene	ND	mg/kg	0.0050	0.0031	EPA-8260B			1
Isopropylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
p-Isopropyltoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Methylene chloride	ND	mg/kg	0.010	0.0015	EPA-8260B			1
Methyl t-butyl ether	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Naphthalene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
n-Propylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Styrene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Tetrachloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Toluene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0026	EPA-8260B			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0027	EPA-8260B			1
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Trichloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B	2040		1
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Vinyl chloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Total Xylenes	ND	mg/kg	0.010	0.0034	EPA-8260B			1
p- & m-Xylenes	ND	mg/kg	0.0050	0.0038	EPA-8260B			1
o-Xylene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	108	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	97.3	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	97.6	%	74 - 121 (LCL - UCL)		EPA-8260B			1

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-02 | **Client Sample Name:** 3-1.5, 3/6/2020 8:05:00AM

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8260B	03/17/20 10:20	03/18/20 19:54	BYM	MS-V2	1	B073253	EPA 5030 Soil MS

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Total Concentrations (TTLC)

BCL Sample ID: 2008288-02 | **Client Sample Name:** 3-1.5, 3/6/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Lead	**3.4**	**mg/kg**	**2.5**	**0.28**	**EPA-6010B**	1000		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-6010B	03/19/20 08:08	03/19/20 18:48	KDF	PE-OP4	1	B073477	EPA 3050B

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 2008288-03 | **Client Sample Name:** 3-21, 3/6/2020 9:00:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Aldrin	ND	mg/kg	0.00050	0.000018	EPA-8081A	1.4		1
alpha-BHC	ND	mg/kg	0.00050	0.000038	EPA-8081A			1
beta-BHC	ND	mg/kg	0.00050	0.000048	EPA-8081A			1
delta-BHC	ND	mg/kg	0.00050	0.000037	EPA-8081A			1
gamma-BHC (Lindane)	ND	mg/kg	0.00050	0.000018	EPA-8081A	4.0		1
Chlordane (Technical)	ND	mg/kg	0.050	0.0010	EPA-8081A	2.5		1
4,4'-DDD	ND	mg/kg	0.00050	0.000064	EPA-8081A	1.0		1
4,4'-DDE	ND	mg/kg	0.00050	0.000095	EPA-8081A	1.0		1
4,4'-DDT	ND	mg/kg	0.00050	0.000040	EPA-8081A	1.0		1
Dieldrin	ND	mg/kg	0.00050	0.000036	EPA-8081A	8.0		1
Endosulfan I	ND	mg/kg	0.00050	0.000020	EPA-8081A			1
Endosulfan II	ND	mg/kg	0.00050	0.000034	EPA-8081A			1
Endosulfan sulfate	ND	mg/kg	0.00050	0.000026	EPA-8081A			1
Endrin	ND	mg/kg	0.00050	0.000065	EPA-8081A	0.2		1
Endrin aldehyde	ND	mg/kg	0.00050	0.000018	EPA-8081A			1
Heptachlor	ND	mg/kg	0.00050	0.000086	EPA-8081A	4.7		1
Heptachlor epoxide	ND	mg/kg	0.00050	0.000017	EPA-8081A			1
Methoxychlor	ND	mg/kg	0.00050	0.000094	EPA-8081A	100		1
Toxaphene	ND	mg/kg	0.050	0.0014	EPA-8081A	5		1
TCMX (Surrogate)	40.1	%	20 - 130 (LCL - UCL)		EPA-8081A			1
Decachlorobiphenyl (Surrogate)	46.2	%	40 - 130 (LCL - UCL)		EPA-8081A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8081A	03/20/20 10:30	03/20/20 21:52	HKS	GC-17	1.010	B073739	EPA 3550B

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Chlorinated Herbicides (EPA Method 8151A)

BCL Sample ID: 2008288-03 | **Client Sample Name:** 3-21, 3/6/2020 9:00:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
2,4-D	ND	mg/kg	0.020	0.0030	EPA-8151A	100		1
2,4-DB	ND	mg/kg	0.040	0.0067	EPA-8151A			1
Dalapon	ND	mg/kg	0.050	0.0068	EPA-8151A			1
Dicamba	ND	mg/kg	0.0020	0.00057	EPA-8151A			1
Dichloroprop	ND	mg/kg	0.020	0.0037	EPA-8151A			1
Dinoseb	ND	mg/kg	0.0070	0.0020	EPA-8151A			1
2,4,5-T	ND	mg/kg	0.0030	0.0011	EPA-8151A			1
2,4,5-TP (Silvex)	ND	mg/kg	0.0030	0.00073	EPA-8151A	10		1
2,4-Dichlorophenylacetic acid (Surrogate)	72.0	%	40 - 120 (LCL - UCL)		EPA-8151A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8151A	03/20/20 09:30	03/25/20 08:58	OLH	GC-8	1.017	B073747	EPA 3550B

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-03 | **Client Sample Name:** 3-21, 3/6/2020 9:00:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Bromobenzene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Bromochloromethane	ND	mg/kg	0.0050	0.0014	EPA-8260B			1
Bromodichloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Bromoform	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Bromomethane	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
n-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
sec-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
tert-Butylbenzene	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
Carbon tetrachloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Chloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chloroform	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Chloromethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
2-Chlorotoluene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
4-Chlorotoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Dibromochloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2-Dibromoethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Dibromomethane	ND	mg/kg	0.0050	0.0016	EPA-8260B			1
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Dichlorodifluoromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-03 | **Client Sample Name:** 3-21, 3/6/2020 9:00:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Ethylbenzene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Hexachlorobutadiene	ND	mg/kg	0.0050	0.0031	EPA-8260B			1
Isopropylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
p-Isopropyltoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Methylene chloride	ND	mg/kg	0.010	0.0015	EPA-8260B			1
Methyl t-butyl ether	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Naphthalene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
n-Propylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Styrene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Tetrachloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Toluene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0026	EPA-8260B			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0027	EPA-8260B			1
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Trichloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B	2040		1
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Vinyl chloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Total Xylenes	ND	mg/kg	0.010	0.0034	EPA-8260B			1
p- & m-Xylenes	ND	mg/kg	0.0050	0.0038	EPA-8260B			1
o-Xylene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	109	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	100	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	95.9	%	74 - 121 (LCL - UCL)		EPA-8260B			1

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-03 | **Client Sample Name:** 3-21, 3/6/2020 9:00:00AM

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8260B	03/17/20 10:20	03/18/20 20:21	BYM	MS-V2	1	B073253	EPA 5030 Soil MS

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 2008288-08 | **Client Sample Name:** 1-0.5, 3/6/2020 11:30:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Aldrin	ND	mg/kg	0.00050	0.000018	EPA-8081A	1.4		1
alpha-BHC	ND	mg/kg	0.00050	0.000038	EPA-8081A			1
beta-BHC	ND	mg/kg	0.00050	0.000048	EPA-8081A			1
delta-BHC	ND	mg/kg	0.00050	0.000037	EPA-8081A			1
gamma-BHC (Lindane)	ND	mg/kg	0.00050	0.000018	EPA-8081A	4.0		1
Chlordane (Technical)	ND	mg/kg	0.050	0.0010	EPA-8081A	2.5		1
4,4'-DDD	ND	mg/kg	0.00050	0.000064	EPA-8081A	1.0		1
4,4'-DDE	ND	mg/kg	0.00050	0.000095	EPA-8081A	1.0		1
4,4'-DDT	**0.00015**	**mg/kg**	**0.00050**	**0.000040**	**EPA-8081A**	1.0	**J**	1
Dieldrin	ND	mg/kg	0.00050	0.000036	EPA-8081A	8.0		1
Endosulfan I	ND	mg/kg	0.00050	0.000020	EPA-8081A			1
Endosulfan II	ND	mg/kg	0.00050	0.000034	EPA-8081A			1
Endosulfan sulfate	ND	mg/kg	0.00050	0.000026	EPA-8081A			1
Endrin	ND	mg/kg	0.00050	0.000065	EPA-8081A	0.2		1
Endrin aldehyde	ND	mg/kg	0.00050	0.000018	EPA-8081A			1
Heptachlor	ND	mg/kg	0.00050	0.000086	EPA-8081A	4.7		1
Heptachlor epoxide	ND	mg/kg	0.00050	0.000017	EPA-8081A			1
Methoxychlor	ND	mg/kg	0.00050	0.000094	EPA-8081A	100		1
Toxaphene	ND	mg/kg	0.050	0.0014	EPA-8081A	5		1
TCMX (Surrogate)	15.9	%	20 - 130 (LCL - UCL)		EPA-8081A		A20	1
Decachlorobiphenyl (Surrogate)	11.8	%	40 - 130 (LCL - UCL)		EPA-8081A		A20	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8081A	03/20/20 10:30	03/20/20 22:08	HKS	GC-17	0.990	B073739	EPA 3550B

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Project Number: S020.1016
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Chlorinated Herbicides (EPA Method 8151A)

BCL Sample ID: 2008288-08 | **Client Sample Name:** 1-0.5, 3/6/2020 11:30:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
2,4-D	ND	mg/kg	0.020	0.0030	EPA-8151A	100		1
2,4-DB	ND	mg/kg	0.040	0.0067	EPA-8151A			1
Dalapon	ND	mg/kg	0.050	0.0068	EPA-8151A			1
Dicamba	ND	mg/kg	0.0020	0.00057	EPA-8151A			1
Dichloroprop	ND	mg/kg	0.020	0.0037	EPA-8151A			1
Dinoseb	ND	mg/kg	0.0070	0.0020	EPA-8151A			1
2,4,5-T	ND	mg/kg	0.0030	0.0011	EPA-8151A			1
2,4,5-TP (Silvex)	ND	mg/kg	0.0030	0.00073	EPA-8151A	10		1
2,4-Dichlorophenylacetic acid (Surrogate)	40.7	%	40 - 120 (LCL - UCL)		EPA-8151A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8151A	03/20/20 09:30	03/25/20 09:19	OLH	GC-8	1.007	B073747	EPA 3550B

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Project Number: S020.1016
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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-08 | **Client Sample Name:** 1-0.5, 3/6/2020 11:30:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Bromobenzene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Bromochloromethane	ND	mg/kg	0.0050	0.0014	EPA-8260B			1
Bromodichloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Bromoform	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Bromomethane	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
n-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
sec-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
tert-Butylbenzene	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
Carbon tetrachloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Chloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chloroform	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Chloromethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
2-Chlorotoluene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
4-Chlorotoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Dibromochloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2-Dibromoethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Dibromomethane	ND	mg/kg	0.0050	0.0016	EPA-8260B			1
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Dichlorodifluoromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1

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Project Number: S020.1016
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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-08 | **Client Sample Name:** 1-0.5, 3/6/2020 11:30:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Ethylbenzene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Hexachlorobutadiene	ND	mg/kg	0.0050	0.0031	EPA-8260B			1
Isopropylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
p-Isopropyltoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Methylene chloride	ND	mg/kg	0.010	0.0015	EPA-8260B			1
Methyl t-butyl ether	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Naphthalene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
n-Propylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Styrene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Tetrachloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Toluene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0026	EPA-8260B			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0027	EPA-8260B			1
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Trichloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B	2040		1
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Vinyl chloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Total Xylenes	ND	mg/kg	0.010	0.0034	EPA-8260B			1
p- & m-Xylenes	ND	mg/kg	0.0050	0.0038	EPA-8260B			1
o-Xylene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	112	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	99.1	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	88.3	%	74 - 121 (LCL - UCL)		EPA-8260B			1

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Project: Cottonwood
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Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-08 | **Client Sample Name:** 1-0.5, 3/6/2020 11:30:00AM

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8260B	03/17/20 10:20	03/18/20 20:47	BYM	MS-V2	1	B073253	EPA 5030 Soil MS

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Total Concentrations (TTLC)

BCL Sample ID: 2008288-08 | **Client Sample Name:** 1-0.5, 3/6/2020 11:30:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Lead	**4.2**	**mg/kg**	**2.5**	**0.28**	**EPA-6010B**	1000		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-6010B	03/19/20 08:08	03/19/20 18:59	KDF	PE-OP4	0.909	B073477	EPA 3050B

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Project: Cottonwood
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Project Manager: Sarah Battelle

Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 2008288-09 | **Client Sample Name:** 1-1.5, 3/6/2020 11:35:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Aldrin	ND	mg/kg	0.00050	0.000018	EPA-8081A	1.4		1
alpha-BHC	ND	mg/kg	0.00050	0.000038	EPA-8081A			1
beta-BHC	ND	mg/kg	0.00050	0.000048	EPA-8081A			1
delta-BHC	ND	mg/kg	0.00050	0.000037	EPA-8081A			1
gamma-BHC (Lindane)	ND	mg/kg	0.00050	0.000018	EPA-8081A	4.0		1
Chlordane (Technical)	ND	mg/kg	0.050	0.0010	EPA-8081A	2.5		1
4,4'-DDD	ND	mg/kg	0.00050	0.000064	EPA-8081A	1.0		1
4,4'-DDE	**0.00039**	**mg/kg**	**0.00050**	**0.000095**	**EPA-8081A**	1.0	**J**	1
4,4'-DDT	**0.00058**	**mg/kg**	**0.00050**	**0.000040**	**EPA-8081A**	1.0		1
Dieldrin	ND	mg/kg	0.00050	0.000036	EPA-8081A	8.0		1
Endosulfan I	ND	mg/kg	0.00050	0.000020	EPA-8081A			1
Endosulfan II	ND	mg/kg	0.00050	0.000034	EPA-8081A			1
Endosulfan sulfate	ND	mg/kg	0.00050	0.000026	EPA-8081A			1
Endrin	ND	mg/kg	0.00050	0.000065	EPA-8081A	0.2		1
Endrin aldehyde	ND	mg/kg	0.00050	0.000018	EPA-8081A			1
Heptachlor	ND	mg/kg	0.00050	0.000086	EPA-8081A	4.7		1
Heptachlor epoxide	ND	mg/kg	0.00050	0.000017	EPA-8081A			1
Methoxychlor	ND	mg/kg	0.00050	0.000094	EPA-8081A	100		1
Toxaphene	ND	mg/kg	0.050	0.0014	EPA-8081A	5		1
TCMX (Surrogate)	44.9	%	20 - 130 (LCL - UCL)		EPA-8081A			1
Decachlorobiphenyl (Surrogate)	48.4	%	40 - 130 (LCL - UCL)		EPA-8081A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8081A	03/20/20 10:30	03/20/20 22:24	HKS	GC-17	1.010	B073739	EPA 3550B

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Chlorinated Herbicides (EPA Method 8151A)

BCL Sample ID: 2008288-09 | **Client Sample Name:** 1-1.5, 3/6/2020 11:35:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
2,4-D	ND	mg/kg	0.020	0.0030	EPA-8151A	100		1
2,4-DB	ND	mg/kg	0.040	0.0067	EPA-8151A			1
Dalapon	ND	mg/kg	0.050	0.0068	EPA-8151A			1
Dicamba	ND	mg/kg	0.0020	0.00057	EPA-8151A			1
Dichloroprop	ND	mg/kg	0.020	0.0037	EPA-8151A			1
Dinoseb	ND	mg/kg	0.0070	0.0020	EPA-8151A			1
2,4,5-T	ND	mg/kg	0.0030	0.0011	EPA-8151A			1
2,4,5-TP (Silvex)	ND	mg/kg	0.0030	0.00073	EPA-8151A	10		1
2,4-Dichlorophenylacetic acid (Surrogate)	67.2	%	40 - 120 (LCL - UCL)		EPA-8151A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8151A	03/20/20 09:30	03/25/20 09:39	OLH	GC-8	0.984	B073747	EPA 3550B

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Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-09 | **Client Sample Name:** 1-1.5, 3/6/2020 11:35:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Bromobenzene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Bromochloromethane	ND	mg/kg	0.0050	0.0014	EPA-8260B			1
Bromodichloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Bromoform	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Bromomethane	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
n-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
sec-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
tert-Butylbenzene	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
Carbon tetrachloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Chloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chloroform	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Chloromethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
2-Chlorotoluene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
4-Chlorotoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Dibromochloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2-Dibromoethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Dibromomethane	ND	mg/kg	0.0050	0.0016	EPA-8260B			1
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Dichlorodifluoromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-09 | **Client Sample Name:** 1-1.5, 3/6/2020 11:35:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Ethylbenzene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Hexachlorobutadiene	ND	mg/kg	0.0050	0.0031	EPA-8260B			1
Isopropylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
p-Isopropyltoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Methylene chloride	ND	mg/kg	0.010	0.0015	EPA-8260B			1
Methyl t-butyl ether	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Naphthalene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
n-Propylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Styrene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Tetrachloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Toluene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0026	EPA-8260B			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0027	EPA-8260B			1
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Trichloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B	2040		1
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Vinyl chloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Total Xylenes	ND	mg/kg	0.010	0.0034	EPA-8260B			1
p- & m-Xylenes	ND	mg/kg	0.0050	0.0038	EPA-8260B			1
o-Xylene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	102	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	98.0	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	89.6	%	74 - 121 (LCL - UCL)		EPA-8260B			1

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Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-09 | **Client Sample Name:** 1-1.5, 3/6/2020 11:35:00AM

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8260B	03/18/20 10:00	03/19/20 16:54	BYM	MS-V2	1	B073304	EPA 5030 Soil MS

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Total Concentrations (TTLC)

BCL Sample ID: 2008288-09 | **Client Sample Name:** 1-1.5, 3/6/2020 11:35:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Lead	**7.1**	**mg/kg**	**2.5**	**0.28**	**EPA-6010B**	1000		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-6010B	03/19/20 08:08	03/19/20 19:00	KDF	PE-OP4	0.926	B073477	EPA 3050B

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Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 2008288-10 | **Client Sample Name:** 1-11, 3/6/2020 11:50:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Aldrin	ND	mg/kg	0.00050	0.000018	EPA-8081A	1.4		1
alpha-BHC	ND	mg/kg	0.00050	0.000038	EPA-8081A			1
beta-BHC	ND	mg/kg	0.00050	0.000048	EPA-8081A			1
delta-BHC	ND	mg/kg	0.00050	0.000037	EPA-8081A			1
gamma-BHC (Lindane)	ND	mg/kg	0.00050	0.000018	EPA-8081A	4.0		1
Chlordane (Technical)	ND	mg/kg	0.050	0.0010	EPA-8081A	2.5		1
4,4'-DDD	ND	mg/kg	0.00050	0.000064	EPA-8081A	1.0		1
4,4'-DDE	ND	mg/kg	0.00050	0.000095	EPA-8081A	1.0		1
4,4'-DDT	ND	mg/kg	0.00050	0.000040	EPA-8081A	1.0		1
Dieldrin	ND	mg/kg	0.00050	0.000036	EPA-8081A	8.0		1
Endosulfan I	ND	mg/kg	0.00050	0.000020	EPA-8081A			1
Endosulfan II	ND	mg/kg	0.00050	0.000034	EPA-8081A			1
Endosulfan sulfate	ND	mg/kg	0.00050	0.000026	EPA-8081A			1
Endrin	ND	mg/kg	0.00050	0.000065	EPA-8081A	0.2		1
Endrin aldehyde	ND	mg/kg	0.00050	0.000018	EPA-8081A			1
Heptachlor	ND	mg/kg	0.00050	0.000086	EPA-8081A	4.7		1
Heptachlor epoxide	ND	mg/kg	0.00050	0.000017	EPA-8081A			1
Methoxychlor	ND	mg/kg	0.00050	0.000094	EPA-8081A	100		1
Toxaphene	ND	mg/kg	0.050	0.0014	EPA-8081A	5		1
TCMX (Surrogate)	22.4	%	20 - 130 (LCL - UCL)		EPA-8081A			1
Decachlorobiphenyl (Surrogate)	46.9	%	40 - 130 (LCL - UCL)		EPA-8081A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8081A	03/20/20 10:30	03/20/20 22:41	HKS	GC-17	0.987	B073739	EPA 3550B

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Chlorinated Herbicides (EPA Method 8151A)

BCL Sample ID: 2008288-10 | **Client Sample Name:** 1-11, 3/6/2020 11:50:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
2,4-D	ND	mg/kg	0.020	0.0030	EPA-8151A	100		1
2,4-DB	ND	mg/kg	0.040	0.0067	EPA-8151A			1
Dalapon	ND	mg/kg	0.050	0.0068	EPA-8151A			1
Dicamba	ND	mg/kg	0.0020	0.00057	EPA-8151A			1
Dichloroprop	ND	mg/kg	0.020	0.0037	EPA-8151A			1
Dinoseb	ND	mg/kg	0.0070	0.0020	EPA-8151A			1
2,4,5-T	ND	mg/kg	0.0030	0.0011	EPA-8151A			1
2,4,5-TP (Silvex)	ND	mg/kg	0.0030	0.00073	EPA-8151A	10		1
2,4-Dichlorophenylacetic acid (Surrogate)	56.0	%	40 - 120 (LCL - UCL)		EPA-8151A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8151A	03/20/20 09:30	03/25/20 10:00	OLH	GC-8	1.007	B073747	EPA 3550B

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-10 | **Client Sample Name:** 1-11, 3/6/2020 11:50:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Bromobenzene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Bromochloromethane	ND	mg/kg	0.0050	0.0014	EPA-8260B			1
Bromodichloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Bromoform	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Bromomethane	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
n-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
sec-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
tert-Butylbenzene	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
Carbon tetrachloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Chloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chloroform	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Chloromethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
2-Chlorotoluene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
4-Chlorotoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Dibromochloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2-Dibromoethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Dibromomethane	ND	mg/kg	0.0050	0.0016	EPA-8260B			1
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Dichlorodifluoromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-10 | **Client Sample Name:** 1-11, 3/6/2020 11:50:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Ethylbenzene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Hexachlorobutadiene	ND	mg/kg	0.0050	0.0031	EPA-8260B			1
Isopropylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
p-Isopropyltoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Methylene chloride	ND	mg/kg	0.010	0.0015	EPA-8260B			1
Methyl t-butyl ether	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Naphthalene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
n-Propylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Styrene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Tetrachloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Toluene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0026	EPA-8260B			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0027	EPA-8260B			1
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Trichloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B	2040		1
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Vinyl chloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Total Xylenes	ND	mg/kg	0.010	0.0034	EPA-8260B			1
p- & m-Xylenes	ND	mg/kg	0.0050	0.0038	EPA-8260B			1
o-Xylene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	107	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	99.1	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	95.4	%	74 - 121 (LCL - UCL)		EPA-8260B			1

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008288-10 | **Client Sample Name:** 1-11, 3/6/2020 11:50:00AM

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8260B	03/18/20 10:00	03/19/20 17:20	BYM	MS-V2	1	B073304	EPA 5030 Soil MS

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Organochlorine Pesticides (EPA Method 8081A)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073739						
Aldrin	B073739-BLK1	ND	mg/kg	0.00050	0.000018	
alpha-BHC	B073739-BLK1	ND	mg/kg	0.00050	0.000038	
beta-BHC	B073739-BLK1	ND	mg/kg	0.00050	0.000048	
delta-BHC	B073739-BLK1	ND	mg/kg	0.00050	0.000037	
gamma-BHC (Lindane)	B073739-BLK1	ND	mg/kg	0.00050	0.000018	
Chlordane (Technical)	B073739-BLK1	ND	mg/kg	0.050	0.0010	
4,4'-DDD	B073739-BLK1	ND	mg/kg	0.00050	0.000064	
4,4'-DDE	B073739-BLK1	ND	mg/kg	0.00050	0.000095	
4,4'-DDT	B073739-BLK1	ND	mg/kg	0.00050	0.000040	
Dieldrin	B073739-BLK1	ND	mg/kg	0.00050	0.000036	
Endosulfan I	B073739-BLK1	ND	mg/kg	0.00050	0.000020	
Endosulfan II	B073739-BLK1	ND	mg/kg	0.00050	0.000034	
Endosulfan sulfate	B073739-BLK1	ND	mg/kg	0.00050	0.000026	
Endrin	B073739-BLK1	ND	mg/kg	0.00050	0.000065	
Endrin aldehyde	B073739-BLK1	ND	mg/kg	0.00050	0.000018	
Heptachlor	B073739-BLK1	ND	mg/kg	0.00050	0.000086	
Heptachlor epoxide	B073739-BLK1	ND	mg/kg	0.00050	0.000017	
Methoxychlor	B073739-BLK1	ND	mg/kg	0.00050	0.000094	
Toxaphene	B073739-BLK1	ND	mg/kg	0.050	0.0014	
TCMX (Surrogate)	**B073739-BLK1**	**99.8**	%	**20 - 130 (LCL - UCL)**		
Decachlorobiphenyl (Surrogate)	**B073739-BLK1**	**101**	%	**40 - 130 (LCL - UCL)**		

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Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides (EPA Method 8081A)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B073739										
Aldrin	B073739-BS1	LCS	0.0056663	0.0049505	mg/kg	114		70 - 130		
gamma-BHC (Lindane)	B073739-BS1	LCS	0.0054172	0.0049505	mg/kg	109		60 - 140		
4,4'-DDT	B073739-BS1	LCS	0.0069046	0.0049505	mg/kg	139		60 - 140		
Dieldrin	B073739-BS1	LCS	0.0056531	0.0049505	mg/kg	114		70 - 130		
Endrin	B073739-BS1	LCS	0.0059363	0.0049505	mg/kg	120		60 - 140		
Heptachlor	B073739-BS1	LCS	0.0055894	0.0049505	mg/kg	113		60 - 140		
TCMX (Surrogate)	B073739-BS1	LCS	0.010271	0.0099010	mg/kg	104		20 - 130		
Decachlorobiphenyl (Surrogate)	B073739-BS1	LCS	0.021476	0.019802	mg/kg	108		40 - 130		

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Organochlorine Pesticides (EPA Method 8081A)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073739	Used client sample: N										
Aldrin	MS	2005481-79	ND	0.0057186	0.0050676	mg/kg		113		50 - 140	
	MSD	2005481-79	ND	0.0057832	0.0050505	mg/kg	1.1	115	30	50 - 140	
gamma-BHC (Lindane)	MS	2005481-79	ND	0.0054480	0.0050676	mg/kg		108		50 - 140	
	MSD	2005481-79	ND	0.0054498	0.0050505	mg/kg	0.0	108	30	50 - 140	
4,4'-DDT	MS	**2005481-79**	**ND**	**0.0070611**	**0.0050676**	**mg/kg**		**139**		**50 - 140**	
	MSD	**2005481-79**	**ND**	**0.0071111**	**0.0050505**	**mg/kg**	**0.7**	**141**	**30**	**50 - 140**	**Q03**
Dieldrin	MS	2005481-79	ND	0.0057902	0.0050676	mg/kg		114		40 - 140	
	MSD	2005481-79	ND	0.0058229	0.0050505	mg/kg	0.6	115	30	40 - 140	
Endrin	MS	2005481-79	ND	0.0060422	0.0050676	mg/kg		119		50 - 150	
	MSD	2005481-79	ND	0.0059178	0.0050505	mg/kg	2.1	117	30	50 - 150	
Heptachlor	MS	2005481-79	ND	0.0057905	0.0050676	mg/kg		114		60 - 140	
	MSD	2005481-79	ND	0.0056943	0.0050505	mg/kg	1.7	113	30	60 - 140	
TCMX (Surrogate)	MS	2005481-79	ND	0.0096405	0.010135	mg/kg		95.1		20 - 130	
	MSD	2005481-79	ND	0.0096438	0.010101	mg/kg	0.0	95.5		20 - 130	
Decachlorobiphenyl (Surrogate)	MS	2005481-79	ND	0.021968	0.020270	mg/kg		108		40 - 130	
	MSD	2005481-79	ND	0.022023	0.020202	mg/kg	0.2	109		40 - 130	

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Chlorinated Herbicides (EPA Method 8151A)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073747						
2,4-D	B073747-BLK1	ND	mg/kg	0.020	0.0030	
2,4-DB	B073747-BLK1	ND	mg/kg	0.040	0.0067	
Dalapon	B073747-BLK1	ND	mg/kg	0.050	0.0068	
Dicamba	B073747-BLK1	ND	mg/kg	0.0020	0.00057	
Dichloroprop	B073747-BLK1	ND	mg/kg	0.020	0.0037	
Dinoseb	B073747-BLK1	ND	mg/kg	0.0070	0.0020	
2,4,5-T	B073747-BLK1	ND	mg/kg	0.0030	0.0011	
2,4,5-TP (Silvex)	B073747-BLK1	ND	mg/kg	0.0030	0.00073	
2,4-Dichlorophenylacetic acid (Surrogate)	**B073747-BLK1**	**72.5**	%	**40 - 120 (LCL - UCL)**		

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Chlorinated Herbicides (EPA Method 8151A)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B073747										
2,4-D	B073747-BS1	LCS	0.070432	0.079734	mg/kg	88.3		50 - 120		
2,4-DB	B073747-BS1	LCS	0.16312	0.17940	mg/kg	90.9		50 - 120		
Dicamba	B073747-BS1	LCS	0.014618	0.019934	mg/kg	73.3		50 - 120		
Dichloroprop	B073747-BS1	LCS	0.061462	0.079734	mg/kg	77.1		50 - 120		
Dinoseb	B073747-BS1	LCS	0.027575	0.039867	mg/kg	69.2		50 - 120		
2,4,5-T	B073747-BS1	LCS	0.018937	0.019934	mg/kg	95.0		30 - 120		
2,4,5-TP (Silvex)	B073747-BS1	LCS	0.018272	0.019934	mg/kg	91.7		50 - 120		
2,4-Dichlorophenylacetic acid (Surrogate)	B073747-BS1	LCS	0.093023	0.13289	mg/kg	70.0		40 - 120		

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Chlorinated Herbicides (EPA Method 8151A)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073747	Used client sample: N										
2,4-D	MS	2005481-75	ND	0.079672	0.078689	mg/kg		101		40 - 120	
	MSD	2005481-75	ND	0.067333	0.080000	mg/kg	16.8	84.2	30	40 - 120	
2,4-DB	MS	2005481-75	ND	0.16230	0.17705	mg/kg		91.7		50 - 120	
	MSD	2005481-75	ND	0.16867	0.18000	mg/kg	3.9	93.7	30	50 - 120	
Dicamba	MS	2005481-75	ND	0.016393	0.019672	mg/kg		83.3		50 - 120	
	MSD	2005481-75	ND	0.014333	0.020000	mg/kg	13.4	71.7	30	50 - 120	
Dichloroprop	MS	2005481-75	ND	0.069836	0.078689	mg/kg		88.8		40 - 120	
	MSD	2005481-75	ND	0.059333	0.080000	mg/kg	16.3	74.2	30	40 - 120	
Dinoseb	MS	2005481-75	ND	0.027869	0.039344	mg/kg		70.8		40 - 130	
	MSD	2005481-75	ND	0.026667	0.040000	mg/kg	4.4	66.7	30	40 - 130	
2,4,5-T	MS	2005481-75	ND	0.019344	0.019672	mg/kg		98.3		30 - 120	
	MSD	2005481-75	ND	0.019333	0.020000	mg/kg	0.1	96.7	30	30 - 120	
2,4,5-TP (Silvex)	MS	2005481-75	ND	0.018689	0.019672	mg/kg		95.0		40 - 120	
	MSD	2005481-75	ND	0.019667	0.020000	mg/kg	5.1	98.3	30	40 - 120	
2,4-Dichlorophenylacetic acid (Surrogate	MS	2005481-75	ND	0.10721	0.13115	mg/kg		81.7		40 - 120	
	MSD	2005481-75	ND	0.095667	0.13333	mg/kg	11.4	71.8		40 - 120	

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073253						
Benzene	B073253-BLK1	ND	mg/kg	0.0050	0.0018	
Bromobenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
Bromochloromethane	B073253-BLK1	ND	mg/kg	0.0050	0.0014	
Bromodichloromethane	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
Bromoform	B073253-BLK1	ND	mg/kg	0.0050	0.0023	
Bromomethane	B073253-BLK1	ND	mg/kg	0.0050	0.0024	
n-Butylbenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
sec-Butylbenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
tert-Butylbenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0024	
Carbon tetrachloride	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
Chlorobenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
Chloroethane	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
Chloroform	B073253-BLK1	ND	mg/kg	0.0050	0.0017	
Chloromethane	B073253-BLK1	ND	mg/kg	0.0050	0.0017	
2-Chlorotoluene	B073253-BLK1	ND	mg/kg	0.0050	0.0018	
4-Chlorotoluene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
Dibromochloromethane	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
1,2-Dibromo-3-chloropropane	B073253-BLK1	ND	mg/kg	0.0050	0.0023	
1,2-Dibromoethane	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
Dibromomethane	B073253-BLK1	ND	mg/kg	0.0050	0.0016	
1,2-Dichlorobenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0023	
1,3-Dichlorobenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
1,4-Dichlorobenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0023	
Dichlorodifluoromethane	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
1,1-Dichloroethane	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
1,2-Dichloroethane	B073253-BLK1	ND	mg/kg	0.0050	0.0017	
1,1-Dichloroethene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
cis-1,2-Dichloroethene	B073253-BLK1	ND	mg/kg	0.0050	0.0018	
trans-1,2-Dichloroethene	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
1,2-Dichloropropane	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
1,3-Dichloropropane	B073253-BLK1	ND	mg/kg	0.0050	0.0022	
2,2-Dichloropropane	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
1,1-Dichloropropene	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
cis-1,3-Dichloropropene	B073253-BLK1	ND	mg/kg	0.0050	0.0017	

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073253						
trans-1,3-Dichloropropene	B073253-BLK1	ND	mg/kg	0.0050	0.0018	
Ethylbenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0022	
Hexachlorobutadiene	B073253-BLK1	ND	mg/kg	0.0050	0.0031	
Isopropylbenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
p-Isopropyltoluene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
Methylene chloride	B073253-BLK1	ND	mg/kg	0.010	0.0015	
Methyl t-butyl ether	B073253-BLK1	ND	mg/kg	0.0050	0.0017	
Naphthalene	B073253-BLK1	ND	mg/kg	0.0050	0.0023	
n-Propylbenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
Styrene	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
1,1,1,2-Tetrachloroethane	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
1,1,2,2-Tetrachloroethane	B073253-BLK1	ND	mg/kg	0.0050	0.0022	
Tetrachloroethene	B073253-BLK1	ND	mg/kg	0.0050	0.0022	
Toluene	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
1,2,3-Trichlorobenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0026	
1,2,4-Trichlorobenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0027	
1,1,1-Trichloroethane	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
1,1,2-Trichloroethane	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
Trichloroethene	B073253-BLK1	ND	mg/kg	0.0050	0.0022	
Trichlorofluoromethane	B073253-BLK1	ND	mg/kg	0.0050	0.0023	
1,2,3-Trichloropropane	B073253-BLK1	ND	mg/kg	0.0050	0.0023	
1,1,2-Trichloro-1,2,2-trifluoroethane	B073253-BLK1	ND	mg/kg	0.0050	0.0020	
1,2,4-Trimethylbenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
1,3,5-Trimethylbenzene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
Vinyl chloride	B073253-BLK1	ND	mg/kg	0.0050	0.0019	
Total Xylenes	B073253-BLK1	ND	mg/kg	0.010	0.0034	
p- & m-Xylenes	B073253-BLK1	ND	mg/kg	0.0050	0.0038	
o-Xylene	B073253-BLK1	ND	mg/kg	0.0050	0.0021	
1,2-Dichloroethane-d4 (Surrogate)	**B073253-BLK1**	**96.6**	%	**70 - 121 (LCL - UCL)**		
Toluene-d8 (Surrogate)	**B073253-BLK1**	**96.5**	%	**81 - 117 (LCL - UCL)**		
4-Bromofluorobenzene (Surrogate)	**B073253-BLK1**	**91.1**	%	**74 - 121 (LCL - UCL)**		
QC Batch ID: B073304						
Benzene	B073304-BLK1	ND	mg/kg	0.0050	0.0018	

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073304						
Bromobenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
Bromochloromethane	B073304-BLK1	ND	mg/kg	0.0050	0.0014	
Bromodichloromethane	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
Bromoform	B073304-BLK1	ND	mg/kg	0.0050	0.0023	
Bromomethane	B073304-BLK1	ND	mg/kg	0.0050	0.0024	
n-Butylbenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
sec-Butylbenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
tert-Butylbenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0024	
Carbon tetrachloride	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
Chlorobenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
Chloroethane	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
Chloroform	B073304-BLK1	ND	mg/kg	0.0050	0.0017	
Chloromethane	B073304-BLK1	ND	mg/kg	0.0050	0.0017	
2-Chlorotoluene	B073304-BLK1	ND	mg/kg	0.0050	0.0018	
4-Chlorotoluene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
Dibromochloromethane	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
1,2-Dibromo-3-chloropropane	B073304-BLK1	ND	mg/kg	0.0050	0.0023	
1,2-Dibromoethane	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
Dibromomethane	B073304-BLK1	ND	mg/kg	0.0050	0.0016	
1,2-Dichlorobenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0023	
1,3-Dichlorobenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
1,4-Dichlorobenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0023	
Dichlorodifluoromethane	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
1,1-Dichloroethane	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
1,2-Dichloroethane	B073304-BLK1	ND	mg/kg	0.0050	0.0017	
1,1-Dichloroethene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
cis-1,2-Dichloroethene	B073304-BLK1	ND	mg/kg	0.0050	0.0018	
trans-1,2-Dichloroethene	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
1,2-Dichloropropane	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
1,3-Dichloropropane	B073304-BLK1	ND	mg/kg	0.0050	0.0022	
2,2-Dichloropropane	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
1,1-Dichloropropene	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
cis-1,3-Dichloropropene	B073304-BLK1	ND	mg/kg	0.0050	0.0017	
trans-1,3-Dichloropropene	B073304-BLK1	ND	mg/kg	0.0050	0.0018	

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073304						
Ethylbenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0022	
Hexachlorobutadiene	B073304-BLK1	ND	mg/kg	0.0050	0.0031	
Isopropylbenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
p-Isopropyltoluene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
Methylene chloride	B073304-BLK1	ND	mg/kg	0.010	0.0015	
Methyl t-butyl ether	B073304-BLK1	ND	mg/kg	0.0050	0.0017	
Naphthalene	B073304-BLK1	ND	mg/kg	0.0050	0.0023	
n-Propylbenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
Styrene	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
1,1,1,2-Tetrachloroethane	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
1,1,2,2-Tetrachloroethane	B073304-BLK1	ND	mg/kg	0.0050	0.0022	
Tetrachloroethene	B073304-BLK1	ND	mg/kg	0.0050	0.0022	
Toluene	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
1,2,3-Trichlorobenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0026	
1,2,4-Trichlorobenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0027	
1,1,1-Trichloroethane	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
1,1,2-Trichloroethane	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
Trichloroethene	B073304-BLK1	ND	mg/kg	0.0050	0.0022	
Trichlorofluoromethane	B073304-BLK1	ND	mg/kg	0.0050	0.0023	
1,2,3-Trichloropropane	B073304-BLK1	ND	mg/kg	0.0050	0.0023	
1,1,2-Trichloro-1,2,2-trifluoroethane	B073304-BLK1	ND	mg/kg	0.0050	0.0020	
1,2,4-Trimethylbenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
1,3,5-Trimethylbenzene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
Vinyl chloride	B073304-BLK1	ND	mg/kg	0.0050	0.0019	
Total Xylenes	B073304-BLK1	ND	mg/kg	0.010	0.0034	
p- & m-Xylenes	B073304-BLK1	ND	mg/kg	0.0050	0.0038	
o-Xylene	B073304-BLK1	ND	mg/kg	0.0050	0.0021	
1,2-Dichloroethane-d4 (Surrogate)	**B073304-BLK1**	**96.9**	%	**70 - 121 (LCL - UCL)**		
Toluene-d8 (Surrogate)	**B073304-BLK1**	**99.3**	%	**81 - 117 (LCL - UCL)**		
4-Bromofluorobenzene (Surrogate)	**B073304-BLK1**	**91.8**	%	**74 - 121 (LCL - UCL)**		

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B073253										
Benzene	B073253-BS1	LCS	0.12641	0.12500	mg/kg	101		70 - 130		
Bromodichloromethane	B073253-BS1	LCS	0.11595	0.12500	mg/kg	92.8		70 - 130		
Chlorobenzene	B073253-BS1	LCS	0.12029	0.12500	mg/kg	96.2		70 - 130		
Chloroethane	B073253-BS1	LCS	0.14037	0.12500	mg/kg	112		70 - 130		
1,4-Dichlorobenzene	B073253-BS1	LCS	0.11665	0.12500	mg/kg	93.3		70 - 130		
1,1-Dichloroethane	B073253-BS1	LCS	0.11689	0.12500	mg/kg	93.5		70 - 130		
1,1-Dichloroethene	B073253-BS1	LCS	0.11310	0.12500	mg/kg	90.5		70 - 130		
Toluene	B073253-BS1	LCS	0.11550	0.12500	mg/kg	92.4		70 - 130		
Trichloroethene	B073253-BS1	LCS	0.10899	0.12500	mg/kg	87.2		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	B073253-BS1	LCS	0.048670	0.050000	mg/kg	97.3		70 - 121		
Toluene-d8 (Surrogate)	B073253-BS1	LCS	0.047950	0.050000	mg/kg	95.9		81 - 117		
4-Bromofluorobenzene (Surrogate)	B073253-BS1	LCS	0.048260	0.050000	mg/kg	96.5		74 - 121		
QC Batch ID: B073304										
Benzene	B073304-BS1	LCS	0.12753	0.12500	mg/kg	102		70 - 130		
Bromodichloromethane	B073304-BS1	LCS	0.11804	0.12500	mg/kg	94.4		70 - 130		
Chlorobenzene	B073304-BS1	LCS	0.11837	0.12500	mg/kg	94.7		70 - 130		
Chloroethane	B073304-BS1	LCS	0.14536	0.12500	mg/kg	116		70 - 130		
1,4-Dichlorobenzene	B073304-BS1	LCS	0.11361	0.12500	mg/kg	90.9		70 - 130		
1,1-Dichloroethane	B073304-BS1	LCS	0.11961	0.12500	mg/kg	95.7		70 - 130		
1,1-Dichloroethene	B073304-BS1	LCS	0.11293	0.12500	mg/kg	90.3		70 - 130		
Toluene	B073304-BS1	LCS	0.11691	0.12500	mg/kg	93.5		70 - 130		
Trichloroethene	B073304-BS1	LCS	0.11036	0.12500	mg/kg	88.3		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	B073304-BS1	LCS	0.047670	0.050000	mg/kg	95.3		70 - 121		
Toluene-d8 (Surrogate)	B073304-BS1	LCS	0.048830	0.050000	mg/kg	97.7		81 - 117		
4-Bromofluorobenzene (Surrogate)	B073304-BS1	LCS	0.046700	0.050000	mg/kg	93.4		74 - 121		

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073253	Used client sample: N										
Benzene	MS	2005481-67	ND	0.13928	0.12500	mg/kg		111		70 - 130	
	MSD	2005481-67	ND	0.13749	0.12500	mg/kg	1.3	110	20	70 - 130	
Bromodichloromethane	MS	2005481-67	ND	0.13209	0.12500	mg/kg		106		70 - 130	
	MSD	2005481-67	ND	0.13126	0.12500	mg/kg	0.6	105	20	70 - 130	
Chlorobenzene	MS	2005481-67	ND	0.13270	0.12500	mg/kg		106		70 - 130	
	MSD	2005481-67	ND	0.13217	0.12500	mg/kg	0.4	106	20	70 - 130	
Chloroethane	MS	**2005481-67**	**ND**	**0.11631**	**0.12500**	**mg/kg**		**93.0**		**70 - 130**	
	MSD	**2005481-67**	**ND**	**0.16271**	**0.12500**	**mg/kg**	**33.3**	**130**	**20**	**70 - 130**	**Q02**
1,4-Dichlorobenzene	MS	2005481-67	ND	0.12897	0.12500	mg/kg		103		70 - 130	
	MSD	2005481-67	ND	0.12349	0.12500	mg/kg	4.3	98.8	20	70 - 130	
1,1-Dichloroethane	MS	2005481-67	ND	0.13150	0.12500	mg/kg		105		70 - 130	
	MSD	2005481-67	ND	0.13033	0.12500	mg/kg	0.9	104	20	70 - 130	
1,1-Dichloroethene	MS	2005481-67	ND	0.12613	0.12500	mg/kg		101		70 - 130	
	MSD	2005481-67	ND	0.12477	0.12500	mg/kg	1.1	99.8	20	70 - 130	
Toluene	MS	2005481-67	ND	0.13486	0.12500	mg/kg		108		70 - 130	
	MSD	2005481-67	ND	0.13196	0.12500	mg/kg	2.2	106	20	70 - 130	
Trichloroethene	MS	2005481-67	ND	0.12977	0.12500	mg/kg		104		70 - 130	
	MSD	2005481-67	ND	0.12676	0.12500	mg/kg	2.3	101	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	2005481-67	ND	0.049450	0.050000	mg/kg		98.9		70 - 121	
	MSD	2005481-67	ND	0.048020	0.050000	mg/kg	2.9	96.0		70 - 121	
Toluene-d8 (Surrogate)	MS	2005481-67	ND	0.050680	0.050000	mg/kg		101		81 - 117	
	MSD	2005481-67	ND	0.048830	0.050000	mg/kg	3.7	97.7		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	2005481-67	ND	0.048400	0.050000	mg/kg		96.8		74 - 121	
	MSD	2005481-67	ND	0.047040	0.050000	mg/kg	2.8	94.1		74 - 121	
QC Batch ID: B073304	Used client sample: N										
Benzene	MS	2005481-69	ND	0.13884	0.12500	mg/kg		111		70 - 130	
	MSD	2005481-69	ND	0.13341	0.12500	mg/kg	4.0	107	20	70 - 130	
Bromodichloromethane	MS	2005481-69	ND	0.12672	0.12500	mg/kg		101		70 - 130	
	MSD	2005481-69	ND	0.13020	0.12500	mg/kg	2.7	104	20	70 - 130	
Chlorobenzene	MS	2005481-69	ND	0.12717	0.12500	mg/kg		102		70 - 130	
	MSD	2005481-69	ND	0.12738	0.12500	mg/kg	0.2	102	20	70 - 130	
Chloroethane	MS	2005481-69	ND	0.12534	0.12500	mg/kg		100		70 - 130	
	MSD	2005481-69	ND	0.11968	0.12500	mg/kg	4.6	95.7	20	70 - 130	
1,4-Dichlorobenzene	MS	2005481-69	ND	0.11993	0.12500	mg/kg		95.9		70 - 130	
	MSD	2005481-69	ND	0.11773	0.12500	mg/kg	1.9	94.2	20	70 - 130	
1,1-Dichloroethane	MS	2005481-69	ND	0.13056	0.12500	mg/kg		104		70 - 130	
	MSD	2005481-69	ND	0.12634	0.12500	mg/kg	3.3	101	20	70 - 130	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073304	Used client sample: N										
1,1-Dichloroethene	MS	2005481-69	ND	0.12293	0.12500	mg/kg		98.3		70 - 130	
	MSD	2005481-69	ND	0.11572	0.12500	mg/kg	6.0	92.6	20	70 - 130	
Toluene	MS	2005481-69	ND	0.12753	0.12500	mg/kg		102		70 - 130	
	MSD	2005481-69	ND	0.12661	0.12500	mg/kg	0.7	101	20	70 - 130	
Trichloroethene	MS	2005481-69	ND	0.11979	0.12500	mg/kg		95.8		70 - 130	
	MSD	2005481-69	ND	0.12041	0.12500	mg/kg	0.5	96.3	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	2005481-69	ND	0.049830	0.050000	mg/kg		99.7		70 - 121	
	MSD	2005481-69	ND	0.046810	0.050000	mg/kg	6.2	93.6		70 - 121	
Toluene-d8 (Surrogate)	MS	2005481-69	ND	0.049300	0.050000	mg/kg		98.6		81 - 117	
	MSD	2005481-69	ND	0.049510	0.050000	mg/kg	0.4	99.0		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	2005481-69	ND	0.047630	0.050000	mg/kg		95.3		74 - 121	
	MSD	2005481-69	ND	0.047110	0.050000	mg/kg	1.1	94.2		74 - 121	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Total Concentrations (TTLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073477						
Lead	B073477-BLK1	ND	mg/kg	2.5	0.28	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Total Concentrations (TTLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B073477										
Lead	B073477-BS1	LCS	102.88	100.00	mg/kg	103		75 - 125		

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073477	Used client sample: Y - Description: 3-1.5, 03/06/2020 08:05										
Lead	DUP	2008288-02	3.3689	2.8969		mg/kg	15.1		20		
	MS	2008288-02	3.3689	91.443	100.00	mg/kg		88.1		75 - 125	
	MSD	2008288-02	3.3689	89.746	100.00	mg/kg	1.9	86.4	20	75 - 125	

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ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-27008-1
Client Project/Site: 2008288

For:
BC Laboratories
4100 Atlas Court
Bakersfield, California 93308

Attn: Natalie Serda

Authorized for release by:
5/4/2020 6:53:03 PM

Terri Chang, Project Manager I
(714)895-5494
terrichang@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: BC Laboratories
Project/Site: 2008288

Laboratory Job ID: 570-27008-1

Table of Contents

Definitions/Glossary

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time
H3	Sample was received and analyzed past holding time.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Eurofins Calscience LLC

Case Narrative

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

Job ID: 570-27008-1

Laboratory: Eurofins Calscience LLC

Narrative

Job Narrative
570-27008-1

Comments
No additional comments.

Receipt
The samples were received on 4/30/2020 10:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.9° C.

General Chemistry
Method 9060A: The following samples were received outside of holding time: 2008288-01 (570-27008-1), 2008288-02 (570-27008-2), 2008288-03 (570-27008-3), 2008288-08 (570-27008-4), 2008288-09 (570-27008-5) and 2008288-10 (570-27008-6).

Method Moisture: The following samples were received outside of holding time: 2008288-01 (570-27008-1), 2008288-02 (570-27008-2), 2008288-03 (570-27008-3), 2008288-08 (570-27008-4), 2008288-09 (570-27008-5) and 2008288-10 (570-27008-6).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Detection Summary

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

Client Sample ID: 2008288-01 — Lab Sample ID: 570-27008-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon, Total Organic	5190	H H3	585	mg/Kg	1		9060A	Total/NA

Client Sample ID: 2008288-02 — Lab Sample ID: 570-27008-2

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon, Total Organic	3050	H H3	580	mg/Kg	1		9060A	Total/NA

Client Sample ID: 2008288-03 — Lab Sample ID: 570-27008-3

No Detections.

Client Sample ID: 2008288-08 — Lab Sample ID: 570-27008-4

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon, Total Organic	8020	H H3	606	mg/Kg	1		9060A	Total/NA

Client Sample ID: 2008288-09 — Lab Sample ID: 570-27008-5

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon, Total Organic	2000	H H3	607	mg/Kg	1		9060A	Total/NA

Client Sample ID: 2008288-10 — Lab Sample ID: 570-27008-6

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon, Total Organic	1300	H H3	606	mg/Kg	1		9060A	Total/NA

This Detection Summary does not include radiochemical test results.

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Page 5 of 15

5/4/2020

Client Sample Results

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

General Chemistry

Client Sample ID: 2008288-01
Date Collected: 03/06/20 08:00
Date Received: 04/30/20 10:30
Lab Sample ID: 570-27008-1
Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	5190	H H3	585	mg/Kg	☼		05/01/20 17:00	1
Percent Moisture	14.5	H H3	0.1	%			04/30/20 11:10	1

Client Sample ID: 2008288-02
Date Collected: 03/06/20 08:05
Date Received: 04/30/20 10:30
Lab Sample ID: 570-27008-2
Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	3050	H H3	580	mg/Kg	☼		05/01/20 17:00	1
Percent Moisture	13.8	H H3	0.1	%			04/30/20 11:10	1

Client Sample ID: 2008288-03
Date Collected: 03/06/20 09:00
Date Received: 04/30/20 10:30
Lab Sample ID: 570-27008-3
Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	ND	H H3	565	mg/Kg	☼		05/01/20 17:00	1
Percent Moisture	11.5	H H3	0.1	%			04/30/20 11:10	1

Client Sample ID: 2008288-08
Date Collected: 03/06/20 11:30
Date Received: 04/30/20 10:30
Lab Sample ID: 570-27008-4
Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	8020	H H3	606	mg/Kg	☼		05/01/20 17:00	1
Percent Moisture	17.5	H H3	0.1	%			04/30/20 11:10	1

Client Sample ID: 2008288-09
Date Collected: 03/06/20 11:35
Date Received: 04/30/20 10:30
Lab Sample ID: 570-27008-5
Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	2000	H H3	607	mg/Kg	☼		05/01/20 17:00	1
Percent Moisture	17.6	H H3	0.1	%			04/30/20 11:10	1

Client Sample ID: 2008288-10
Date Collected: 03/06/20 11:50
Date Received: 04/30/20 10:30
Lab Sample ID: 570-27008-6
Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	1300	H H3	606	mg/Kg	☼		05/01/20 17:00	1
Percent Moisture	17.5	H H3	0.1	%			04/30/20 11:10	1

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QC Sample Results

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 570-66919/4
Matrix: Solid
Analysis Batch: 66919

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	ND		500	mg/Kg			05/01/20 17:00	1

Lab Sample ID: LCS 570-66919/5
Matrix: Solid
Analysis Batch: 66919

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	29900	29340		mg/Kg		98	80 - 120

Lab Sample ID: LCSD 570-66919/6
Matrix: Solid
Analysis Batch: 66919

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	30000	27980		mg/Kg		93	80 - 120	5	20

Lab Sample ID: 570-25872-A-8-B MS
Matrix: Solid
Analysis Batch: 66919

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	2190		36100	35820		mg/Kg	☼	93	75 - 125

Lab Sample ID: 570-25872-A-8-C MSD
Matrix: Solid
Analysis Batch: 66919

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	2190		36400	38450		mg/Kg	☼	100	75 - 125	7	25

Method: Moisture - Percent Moisture

Lab Sample ID: 570-27008-1 DU
Matrix: Solid
Analysis Batch: 66254

Client Sample ID: 2008288-01
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	14.5	H H3	14.9		%		3	10

Eurofins Calscience LLC

QC Association Summary

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

General Chemistry

Cleanup Batch: 63844

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-25872-A-8-B MS	Matrix Spike	Total/NA	Solid	Homogenize	
				Prep	
570-25872-A-8-C MSD	Matrix Spike Duplicate	Total/NA	Solid	Homogenize	
				Prep	

Analysis Batch: 66254

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27008-1	2008288-01	Total/NA	Solid	Moisture	
570-27008-2	2008288-02	Total/NA	Solid	Moisture	
570-27008-3	2008288-03	Total/NA	Solid	Moisture	
570-27008-4	2008288-08	Total/NA	Solid	Moisture	
570-27008-5	2008288-09	Total/NA	Solid	Moisture	
570-27008-6	2008288-10	Total/NA	Solid	Moisture	
570-27008-1 DU	2008288-01	Total/NA	Solid	Moisture	

Analysis Batch: 66919

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-27008-1	2008288-01	Total/NA	Solid	9060A	
570-27008-2	2008288-02	Total/NA	Solid	9060A	
570-27008-3	2008288-03	Total/NA	Solid	9060A	
570-27008-4	2008288-08	Total/NA	Solid	9060A	
570-27008-5	2008288-09	Total/NA	Solid	9060A	
570-27008-6	2008288-10	Total/NA	Solid	9060A	
MB 570-66919/4	Method Blank	Total/NA	Solid	9060A	
LCS 570-66919/5	Lab Control Sample	Total/NA	Solid	9060A	
LCSD 570-66919/6	Lab Control Sample Dup	Total/NA	Solid	9060A	
570-25872-A-8-B MS	Matrix Spike	Total/NA	Solid	9060A	63844
570-25872-A-8-C MSD	Matrix Spike Duplicate	Total/NA	Solid	9060A	63844

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Lab Chronicle

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

Client Sample ID: 2008288-01
Date Collected: 03/06/20 08:00
Date Received: 04/30/20 10:30

Lab Sample ID: 570-27008-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	207.8 mg	207.8 mg	66919	05/01/20 17:00	UAPD	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			66254	04/30/20 11:10	YR9U	ECL 2
	Instrument ID: NOEQUIP									

Client Sample ID: 2008288-02
Date Collected: 03/06/20 08:05
Date Received: 04/30/20 10:30

Lab Sample ID: 570-27008-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	208.9 mg	208.9 mg	66919	05/01/20 17:00	UAPD	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			66254	04/30/20 11:10	YR9U	ECL 2
	Instrument ID: NOEQUIP									

Client Sample ID: 2008288-03
Date Collected: 03/06/20 09:00
Date Received: 04/30/20 10:30

Lab Sample ID: 570-27008-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	207.5 mg	207.5 mg	66919	05/01/20 17:00	UAPD	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			66254	04/30/20 11:10	YR9U	ECL 2
	Instrument ID: NOEQUIP									

Client Sample ID: 2008288-08
Date Collected: 03/06/20 11:30
Date Received: 04/30/20 10:30

Lab Sample ID: 570-27008-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	207.7 mg	207.7 mg	66919	05/01/20 17:00	UAPD	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			66254	04/30/20 11:10	YR9U	ECL 2
	Instrument ID: NOEQUIP									

Client Sample ID: 2008288-09
Date Collected: 03/06/20 11:35
Date Received: 04/30/20 10:30

Lab Sample ID: 570-27008-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	209.6 mg	209.6 mg	66919	05/01/20 17:00	UAPD	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			66254	04/30/20 11:10	YR9U	ECL 2
	Instrument ID: NOEQUIP									

Eurofins Calscience LLC

Lab Chronicle

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

Client Sample ID: 2008288-10
Date Collected: 03/06/20 11:50
Date Received: 04/30/20 10:30

Lab Sample ID: 570-27008-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	207.9 mg	207.9 mg	66919	05/01/20 17:00	UAPD	ECL 1
	Instrument ID: TOC10									
Total/NA	Analysis	Moisture		1			66254	04/30/20 11:10	YR9U	ECL 2
	Instrument ID: NOEQUIP									

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Eurofins Calscience LLC

Accreditation/Certification Summary

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	Los Angeles County Sanitation Districts	10109	09-29-20
California	SCAQMD LAP	17LA0919	11-30-20
California	State	2944	09-29-20
Guam	State	20-003R	10-31-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-21
USDA	US Federal Programs	P330-20-00034	02-10-23
Washington	State	C916-18	10-11-20

Eurofins Calscience LLC

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5/4/2020

Method Summary

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

Method	Method Description	Protocol	Laboratory
9060A	Organic Carbon, Total (TOC)	SW846	ECL 1
Moisture	Percent Moisture	EPA	ECL 2

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Eurofins Calscience LLC

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5/4/2020

Sample Summary

Client: BC Laboratories
Project/Site: 2008288

Job ID: 570-27008-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-27008-1	2008288-01	Solid	03/06/20 08:00	04/30/20 10:30	
570-27008-2	2008288-02	Solid	03/06/20 08:05	04/30/20 10:30	
570-27008-3	2008288-03	Solid	03/06/20 09:00	04/30/20 10:30	
570-27008-4	2008288-08	Solid	03/06/20 11:30	04/30/20 10:30	
570-27008-5	2008288-09	Solid	03/06/20 11:35	04/30/20 10:30	
570-27008-6	2008288-10	Solid	03/06/20 11:50	04/30/20 10:30	

Eurofins Calscience LLC

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5/4/2020

27008

SUBCONTRACT ORDER

BC Laboratories

2008288

RUSH!

SENDING LABORATORY:

BC Laboratories
4100 Atlas Ct
Bakersfield, CA 93308
Phone: 661-327-4911
Fax: 661-327-1918
Project Manager: Natalie Serda

RECEIVING LABORATORY:

Eurofins Calscience- Garden Grove $CLSCC-EINV
7440 Lincoln Way
Garden Grove, CA 92841-1427
Phone :(714) 895-5494
Fax: (714) 894-7501

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 2008288-01	**Solids**	**Sampled:03/06/20 08:00**	1	Per Sarah Berun standard 8260 list instead of c
oi9060s TOC CLSCC	04/24/20 17:00	04/03/20 08:00		
Containers Supplied:				
Sample ID: 2008288-02	**Solids**	**Sampled:03/06/20 08:05**	2	
oi9060s TOC CLSCC	04/24/20 17:00	04/03/20 08:05		
Containers Supplied:				
Sample ID: 2008288-03	**Solids**	**Sampled:03/06/20 09:00**	3	
oi9060s TOC CLSCC	04/24/20 17:00	04/03/20 09:00		
Containers Supplied:				
Sample ID: 2008288-08	**Solids**	**Sampled:03/06/20 11:30**	4	
oi9060s TOC CLSCC	04/24/20 17:00	04/03/20 11:30		
Containers Supplied:				
Sample ID: 2008288-09	**Solids**	**Sampled:03/06/20 11:35**	5	
oi9060s TOC CLSCC	04/24/20 17:00	04/03/20 11:35		
Containers Supplied:				
Sample ID: 2008288-10	**Solids**	**Sampled:03/06/20 11:50**	6	
oi9060s TOC CLSCC	04/24/20 17:00	04/03/20 11:50		
Containers Supplied:				

570-27008 Chain of Custody

* Rush ASAP with no Surcharge

Released By	Date	Received By	Date
			1030
Released By	Date	Received By	Date
		4/30/20	

3.8 | 2-9 | 5C

Page 1 of 1

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5/4/2020

Login Sample Receipt Checklist

Client: BC Laboratories — Job Number: 570-27008-1

Login Number: 27008
List Number: 1
Creator: Soriano, Precy

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are 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.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	False	Refer to Job Narrative for details.
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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Eurofins Calscience

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5/4/2020

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/05/2020 9:35
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Notes And Definitions

J	Estimated Value (CLP Flag)
MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A01	Detection and quantitation limits are raised due to sample dilution.
A20	Surrogate is low due to matrix interference. Interference verified through second extraction/analysis.
Q02	Matrix spike precision is not within the control limits.
Q03	Matrix spike recovery(s) was(were) not within the control limits.

Date of Report: 04/17/2020

Sarah Battelle

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Client Project:	S020.1016
BCL Project:	Cottonwood
BCL Work Order:	2008795
Invoice ID:	B377494

Enclosed are the results of analyses for samples received by the laboratory on 3/23/2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Natalie Serda
Client Service Rep

Stuart Buttram
Technical Director

Table of Contents

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Geo-Logic ASSOCIATES 20-08795 8240

CHAIN OF CUSTODY

DATE: 820 PAGE 1 OF 1

PROJECT INFORMATION

PROJECT NAME: COTTONWOOD SAND JOB#: S020.1016
BILLING NUMBER: S020.1016
PROJECT MANAGER: SARAH BATTELLE
LABORATORY: BC
SHIPMENT METHOD: FED EX
TURN AROUND TIME: 24 hr. 48 hr. NORMAL (circled)
DISPOSAL: Lab Disposal (✓) Return ( ) Pick Up ( )
SAMPLER'S SIGNATURE: [signature]

ANALYSES

Petroleum Hydrocarbons (418.1) (crossed out); Volatile Organics (624/8240/524.2) 8260; Semi-Volatile Organics (625/8270); Pesticides and PCB's (608/8080); CCR Metals (crossed out); OIL & GREASE; TITLE 22 METALS 200.8; Fe & Mg 200.8; ORGANOCHLORINE PESTICIDES; TOTAL NITROGEN AS N; CHLORINATED HERBICIDES; TOTAL ORGANIC CARBON; TOTAL PHOSPHORUS AS P; ARCHIVE

SAMPLE I.D.	LAB I.D.	DATE	TIME	MATRIX	Volatile Organics 8260	Semi-Volatile Organics	Oil & Grease	Title 22 Metals 200.8	Fe & Mg 200.8	Organochlorine Pesticides	Total Nitrogen as N	Chlorinated Herbicides	Total Organic Carbon	Total Phosphorus as P	Archive	NUMBER OF CONTAINERS
Z-0.5	-1	8/20/20	805		X	X	X	X	X	X	X	X	X	X		2
Z-1.5	-2		810		X	X	X	X	X	X	X	X	X	X		2
Z-6	-3		820		X	X	X	X	X	X	X	X	X	X		2
Z-11	-4		830												X	2
Z-16	-5		840												X	2
Z-21	-6		850												X	2
Z-26	-7		900												X	2
Z-30	-8		910												X	2
Z-40	-9	↓	920												X	2

CHK BY: GSA DISTRIBUTION: SM MAIN / SUB OUT

1. RELINQUISHED BY:		2. RELINQUISHED BY:		3. RELINQUISHED BY:	
SIGNATURE: [signature]	DATE: 8/20/20	SIGNATURE:	DATE:	SIGNATURE:	DATE:
PRINTED NAME: KYLE WELCHANS	TIME: 1315	PRINTED NAME:	TIME:	PRINTED NAME:	TIME:
COMPANY: GLA		COMPANY:		COMPANY:	

1. RECEIVED BY:		2. RECEIVED BY:		3. RECEIVED BY:	
SIGNATURE: [signature]	DATE: 8/23 8/20	SIGNATURE:	DATE:	SIGNATURE:	DATE:
PRINTED NAME: Kristina Gamboa	TIME: 1540	PRINTED NAME:	TIME:	PRINTED NAME:	TIME:
COMPANY: BCL		COMPANY:		COMPANY:	

COMMENTS

White - Original to accompany lab report
Yellow - Lab Copy
Pink - Originator

250 W. 1st Street, Suite 228, Claremont, CA 91711 Phone: (909) 626-2282 Fax: (909) 626-1233

(MISC:CHAIN:6-1-92)

Chain of Custody and Cooler Receipt Form for 2008795 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 2008795

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☑ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☑ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☐ Other ☐ (Specify)_____	Other ☐ (Specify)_____	W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments: Not enough ice

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 0.95 Container: Soil Sleeve Thermometer ID: 274 Date/Time 3/23/20 1546

Temperature: (A) 11.6 °C / (C) 11.6 °C Analyst Init: KJG

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE	AB	AB	AB	AB	AB	AB	AB	AB	AB	
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: GA Date/Time: 3/23 1722

A = Actual / C = Corrected

Rev 21 05/23/2016

S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC.rev 20

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
2008795-01	**COC Number:**	---	**Receive Date:**	03/23/2020 15:40
	Project Number:	---	**Sampling Date:**	03/20/2020 08:05
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	2-0.5	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008795-02	**COC Number:**	---	**Receive Date:**	03/23/2020 15:40
	Project Number:	---	**Sampling Date:**	03/20/2020 08:10
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	2-1.5	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008795-03	**COC Number:**	---	**Receive Date:**	03/23/2020 15:40
	Project Number:	---	**Sampling Date:**	03/20/2020 08:20
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	2-6	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008795-04	**COC Number:**	---	**Receive Date:**	03/23/2020 15:40
	Project Number:	---	**Sampling Date:**	03/20/2020 08:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	2-11	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008795-05	**COC Number:**	---	**Receive Date:**	03/23/2020 15:40
	Project Number:	---	**Sampling Date:**	03/20/2020 08:40
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	2-16	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008795-06	**COC Number:**	---	**Receive Date:**	03/23/2020 15:40
	Project Number:	---	**Sampling Date:**	03/20/2020 08:50
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	2-21	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008795-07	**COC Number:**	---	**Receive Date:**	03/23/2020 15:40
	Project Number:	---	**Sampling Date:**	03/20/2020 09:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	2-26	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
2008795-08	**COC Number:**	---	**Receive Date:**	03/23/2020 15:40
	Project Number:	---	**Sampling Date:**	03/20/2020 09:10
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	2-36	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil
2008795-09	**COC Number:**	---	**Receive Date:**	03/23/2020 15:40
	Project Number:	---	**Sampling Date:**	03/20/2020 09:20
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	2-40	**Lab Matrix:**	Solids
	Sampled By:	---	**Sample Type:**	Soil

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Aldrin	ND	mg/kg	0.00050	0.000018	EPA-8081A	1.4		1
alpha-BHC	ND	mg/kg	0.00050	0.000038	EPA-8081A			1
beta-BHC	ND	mg/kg	0.00050	0.000048	EPA-8081A			1
delta-BHC	ND	mg/kg	0.00050	0.000037	EPA-8081A			1
gamma-BHC (Lindane)	ND	mg/kg	0.00050	0.000018	EPA-8081A	4.0		1
Chlordane (Technical)	ND	mg/kg	0.050	0.0010	EPA-8081A	2.5		1
4,4'-DDD	ND	mg/kg	0.00050	0.000064	EPA-8081A	1.0		1
4,4'-DDE	ND	mg/kg	0.00050	0.000095	EPA-8081A	1.0		1
4,4'-DDT	ND	mg/kg	0.00050	0.000040	EPA-8081A	1.0		1
Dieldrin	ND	mg/kg	0.00050	0.000036	EPA-8081A	8.0		1
Endosulfan I	ND	mg/kg	0.00050	0.000020	EPA-8081A			1
Endosulfan II	ND	mg/kg	0.00050	0.000034	EPA-8081A			1
Endosulfan sulfate	ND	mg/kg	0.00050	0.000026	EPA-8081A			1
Endrin	ND	mg/kg	0.00050	0.000065	EPA-8081A	0.2		1
Endrin aldehyde	ND	mg/kg	0.00050	0.000018	EPA-8081A			1
Heptachlor	ND	mg/kg	0.00050	0.000086	EPA-8081A	4.7		1
Heptachlor epoxide	ND	mg/kg	0.00050	0.000017	EPA-8081A			1
Methoxychlor	ND	mg/kg	0.00050	0.000094	EPA-8081A	100		1
Toxaphene	ND	mg/kg	0.050	0.0014	EPA-8081A	5		1
TCMX (Surrogate)	72.4	%	20 - 130 (LCL - UCL)		EPA-8081A			1
Decachlorobiphenyl (Surrogate)	66.5	%	40 - 130 (LCL - UCL)		EPA-8081A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8081A	03/26/20 14:30	03/27/20 20:54	HKS	GC-17	0.987	B074101	EPA 3550B

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Chlorinated Herbicides (EPA Method 8151A)

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
2,4-D	ND	mg/kg	0.020	0.0030	EPA-8151A	100		1
2,4-DB	ND	mg/kg	0.040	0.0067	EPA-8151A			1
Dalapon	ND	mg/kg	0.050	0.0068	EPA-8151A			1
Dicamba	ND	mg/kg	0.0020	0.00057	EPA-8151A			1
Dichloroprop	ND	mg/kg	0.020	0.0037	EPA-8151A			1
Dinoseb	ND	mg/kg	0.0070	0.0020	EPA-8151A			1
2,4,5-T	ND	mg/kg	0.0030	0.0011	EPA-8151A			1
2,4,5-TP (Silvex)	ND	mg/kg	0.0030	0.00073	EPA-8151A	10		1
2,4-Dichlorophenylacetic acid (Surrogate)	50.7	%	40 - 120 (LCL - UCL)		EPA-8151A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8151A	03/26/20 13:40	03/27/20 14:32	OLH	GC-8	0.984	B074098	EPA 3550B

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Bromobenzene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Bromochloromethane	ND	mg/kg	0.0050	0.0014	EPA-8260B			1
Bromodichloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Bromoform	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Bromomethane	ND	mg/kg	0.0050	0.0024	EPA-8260B		V01	1
n-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
sec-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
tert-Butylbenzene	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
Carbon tetrachloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Chloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chloroform	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Chloromethane	ND	mg/kg	0.0050	0.0017	EPA-8260B		V01	1
2-Chlorotoluene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
4-Chlorotoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Dibromochloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2-Dibromoethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Dibromomethane	ND	mg/kg	0.0050	0.0016	EPA-8260B			1
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Dichlorodifluoromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1

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Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Ethylbenzene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Hexachlorobutadiene	ND	mg/kg	0.0050	0.0031	EPA-8260B			1
Isopropylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
p-Isopropyltoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Methylene chloride	ND	mg/kg	0.010	0.0015	EPA-8260B			1
Methyl t-butyl ether	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Naphthalene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
n-Propylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Styrene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Tetrachloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Toluene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0026	EPA-8260B			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0027	EPA-8260B			1
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Trichloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B	2040		1
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Vinyl chloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Total Xylenes	ND	mg/kg	0.010	0.0034	EPA-8260B			1
p- & m-Xylenes	ND	mg/kg	0.0050	0.0038	EPA-8260B			1
o-Xylene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	109	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	99.4	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	90.4	%	74 - 121 (LCL - UCL)		EPA-8260B			1

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Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8260B	03/24/20 07:26	03/24/20 13:42	BYM	MS-V2	1	B073650	EPA 5030 Soil MS

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Acenaphthene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Acenaphthylene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Aldrin	ND	mg/kg	0.10	0.0067	EPA-8270C	1.4		1
Aniline	ND	mg/kg	0.20	0.011	EPA-8270C			1
Anthracene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzidine	ND	mg/kg	3.0	0.0093	EPA-8270C			1
Benzo[a]anthracene	ND	mg/kg	0.10	0.0077	EPA-8270C			1
Benzo[b]fluoranthene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzo[k]fluoranthene	ND	mg/kg	0.10	0.0082	EPA-8270C			1
Benzo[a]pyrene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzo[g,h,i]perylene	ND	mg/kg	0.10	0.013	EPA-8270C			1
Benzoic acid	ND	mg/kg	0.50	0.014	EPA-8270C			1
Benzyl alcohol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzyl butyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
alpha-BHC	ND	mg/kg	0.10	0.0067	EPA-8270C			1
beta-BHC	ND	mg/kg	0.10	0.0075	EPA-8270C			1
delta-BHC	ND	mg/kg	0.10	0.0067	EPA-8270C			1
gamma-BHC (Lindane)	ND	mg/kg	0.10	0.0067	EPA-8270C	4.0		1
bis(2-Chloroethoxy)methane	ND	mg/kg	0.10	0.0067	EPA-8270C			1
bis(2-Chloroethyl) ether	ND	mg/kg	0.10	0.0097	EPA-8270C			1
bis(2-Chloroisopropyl)ether	ND	mg/kg	0.10	0.0067	EPA-8270C			1
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.20	0.0067	EPA-8270C			1
4-Bromophenyl phenyl ether	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Chloroaniline	ND	mg/kg	0.10	0.015	EPA-8270C			1
2-Chloronaphthalene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Chlorophenyl phenyl ether	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Chrysene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4,4'-DDD	ND	mg/kg	0.10	0.0067	EPA-8270C	1.0		1
4,4'-DDE	ND	mg/kg	0.10	0.0068	EPA-8270C	1.0		1
4,4'-DDT	ND	mg/kg	0.10	0.0067	EPA-8270C	1.0		1
Dibenzo[a,h]anthracene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Dibenzofuran	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,2-Dichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
1,3-Dichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,4-Dichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
3,3-Dichlorobenzidine	ND	mg/kg	0.20	0.0067	EPA-8270C			1
Dieldrin	ND	mg/kg	0.10	0.0077	EPA-8270C	8.0		1
Diethyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Dimethyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Di-n-butyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4-Dinitrotoluene	ND	mg/kg	0.10	0.0085	EPA-8270C			1
2,6-Dinitrotoluene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Di-n-octyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,2-Diphenylhydrazine	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Endosulfan I	ND	mg/kg	0.20	0.0088	EPA-8270C			1
Endosulfan II	ND	mg/kg	0.20	0.0088	EPA-8270C			1
Endosulfan sulfate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Endrin	ND	mg/kg	0.20	0.0086	EPA-8270C	0.2		1
Endrin aldehyde	ND	mg/kg	0.50	0.0070	EPA-8270C			1
Fluoranthene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Fluorene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Heptachlor	ND	mg/kg	0.10	0.0067	EPA-8270C	4.7		1
Heptachlor epoxide	ND	mg/kg	0.10	0.013	EPA-8270C			1
Hexachlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Hexachlorobutadiene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Hexachlorocyclopentadiene	ND	mg/kg	0.10	0.015	EPA-8270C			1
Hexachloroethane	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Indeno[1,2,3-cd]pyrene	ND	mg/kg	0.10	0.0069	EPA-8270C			1
Isophorone	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2-Methylnaphthalene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Naphthalene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2-Naphthylamine	ND	mg/kg	3.0	0.036	EPA-8270C			1
2-Nitroaniline	ND	mg/kg	0.10	0.0067	EPA-8270C			1
3-Nitroaniline	ND	mg/kg	0.20	0.0067	EPA-8270C			1
4-Nitroaniline	ND	mg/kg	0.20	0.011	EPA-8270C			1
Nitrobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
N-Nitrosodimethylamine	ND	mg/kg	0.10	0.040	EPA-8270C			1
N-Nitrosodi-N-propylamine	ND	mg/kg	0.10	0.0067	EPA-8270C			1
N-Nitrosodiphenylamine	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Phenanthrene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Pyrene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Chloro-3-methylphenol	ND	mg/kg	0.20	0.0067	EPA-8270C			1
2-Chlorophenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4-Dichlorophenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4-Dimethylphenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.50	0.0067	EPA-8270C			1
2,4-Dinitrophenol	ND	mg/kg	0.50	0.0067	EPA-8270C			1
2-Methylphenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
3- & 4-Methylphenol	ND	mg/kg	0.20	0.014	EPA-8270C			1
2-Nitrophenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Nitrophenol	ND	mg/kg	0.20	0.018	EPA-8270C			1
Pentachlorophenol	ND	mg/kg	0.20	0.017	EPA-8270C	17		1
Phenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4,5-Trichlorophenol	ND	mg/kg	0.20	0.011	EPA-8270C			1
2,4,6-Trichlorophenol	ND	mg/kg	0.20	0.0067	EPA-8270C			1
2-Fluorophenol (Surrogate)	61.8	%	20 - 130 (LCL - UCL)		EPA-8270C			1
Phenol-d5 (Surrogate)	64.5	%	30 - 130 (LCL - UCL)		EPA-8270C			1
Nitrobenzene-d5 (Surrogate)	57.9	%	30 - 130 (LCL - UCL)		EPA-8270C			1
2-Fluorobiphenyl (Surrogate)	40.9	%	30 - 140 (LCL - UCL)		EPA-8270C			1
2,4,6-Tribromophenol (Surrogate)	60.4	%	20 - 150 (LCL - UCL)		EPA-8270C			1
p-Terphenyl-d14 (Surrogate)	42.0	%	30 - 150 (LCL - UCL)		EPA-8270C			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8270C	03/24/20 19:00	03/25/20 18:11	MK1	HPCHEM	0.950	B073980	EPA 3550B

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EPA Method 1664

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	**16**	**mg/kg**	**50**	**16**	**EPA-1664A HEM**	ND	**J**	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-1664A HEM	03/27/20 08:00	03/27/20 12:24	MAM	MAN-SV	1.008	B074123	EPA 1664/HEM

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Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Chemical Analysis

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Nitrogen	**200**	**mg/kg**	**60**	**20**	**Calc**	ND		1
Nitrate as N	**1.8**	**mg/kg**	**1.0**	**0.26**	**EPA-300.0**	ND		2
Total Kjeldahl Nitrogen	**200**	**mg/kg**	**40**	**13**	**EPA-351.2**	ND		3
Total Phosphorus	**230**	**mg/kg**	**50**	**16**	**EPA-365.4**	ND	**A07**	4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	Calc	03/24/20 12:01	04/07/20 12:01	AMM	Calc	1	B^C0235	Calc
2	EPA-300.0	04/01/20 14:00	04/02/20 18:41	MRC	IC5	1	B074450	Water Extract X10
3	EPA-351.2	03/24/20 17:00	03/25/20 14:03	JMH2	SC-2	1	B073888	EPA 351.2
4	EPA-365.4	03/24/20 17:00	03/25/20 10:50	JMH2	SC-1	5	B073889	EPA 365.4

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Total Concentrations (TTLC)

BCL Sample ID: 2008795-01 | **Client Sample Name:** 2-0.5, 3/20/2020 8:05:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Antimony	ND	mg/kg	0.50	0.080	EPA-6020	500		1
Arsenic	**0.59**	**mg/kg**	**0.50**	**0.17**	**EPA-6020**	500		2
Barium	**44**	**mg/kg**	**0.25**	**0.054**	**EPA-6020**	10000		3
Beryllium	**0.066**	**mg/kg**	**0.25**	**0.041**	**EPA-6020**	75	**J**	2
Cadmium	ND	mg/kg	0.25	0.048	EPA-6020	100		3
Chromium	**8.3**	**mg/kg**	**0.75**	**0.25**	**EPA-6020**	2500		2
Cobalt	**3.2**	**mg/kg**	**0.25**	**0.049**	**EPA-6020**	8000		2
Copper	**7.3**	**mg/kg**	**0.50**	**0.099**	**EPA-6020**	2500		2
Lead	**1.7**	**mg/kg**	**0.25**	**0.12**	**EPA-6020**	1000		2
Mercury	ND	mg/kg	0.16	0.016	EPA-7471A	20		4
Molybdenum	**0.13**	**mg/kg**	**0.25**	**0.045**	**EPA-6020**	3500	**J**	3
Nickel	**3.2**	**mg/kg**	**0.50**	**0.11**	**EPA-6020**	2000		2
Selenium	ND	mg/kg	0.50	0.11	EPA-6020	100		2
Silver	ND	mg/kg	0.25	0.051	EPA-6020	500		2
Thallium	**0.078**	**mg/kg**	**0.25**	**0.049**	**EPA-6020**	700	**J**	2
Vanadium	**29**	**mg/kg**	**0.75**	**0.27**	**EPA-6020**	2400		2
Zinc	**18**	**mg/kg**	**2.5**	**0.50**	**EPA-6020**	5000		3
Iron	**10000**	**mg/kg**	**25**	**8.5**	**EPA-6010B**		**A07**	5
Magnesium	**2000**	**mg/kg**	**2.5**	**1.3**	**EPA-6010B**			6

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-6020	03/24/20 12:05	03/26/20 10:14	ARD	PE-EL2	1	B073841	EPA 3050B
2	EPA-6020	03/24/20 12:05	03/24/20 16:38	ARD	PE-EL4	1	B073841	EPA 3050B
3	EPA-6020	03/24/20 12:05	03/25/20 12:36	ARD	PE-EL4	1	B073841	EPA 3050B
4	EPA-7471A	03/25/20 09:30	03/25/20 12:40	TMT	CETAC3	0.992	B073913	EPA 7471A
5	EPA-6010B	03/25/20 09:30	03/27/20 18:37	KDF	PE-OP4	5	B073934	EPA 3050B
6	EPA-6010B	03/25/20 09:30	03/25/20 19:55	KDF	PE-OP4	1	B073934	EPA 3050B

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Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Aldrin	ND	mg/kg	0.00050	0.000018	EPA-8081A	1.4		1
alpha-BHC	ND	mg/kg	0.00050	0.000038	EPA-8081A			1
beta-BHC	ND	mg/kg	0.00050	0.000048	EPA-8081A			1
delta-BHC	ND	mg/kg	0.00050	0.000037	EPA-8081A			1
gamma-BHC (Lindane)	ND	mg/kg	0.00050	0.000018	EPA-8081A	4.0		1
Chlordane (Technical)	ND	mg/kg	0.050	0.0010	EPA-8081A	2.5		1
4,4'-DDD	ND	mg/kg	0.00050	0.000064	EPA-8081A	1.0		1
4,4'-DDE	ND	mg/kg	0.00050	0.000095	EPA-8081A	1.0		1
4,4'-DDT	ND	mg/kg	0.00050	0.000040	EPA-8081A	1.0		1
Dieldrin	ND	mg/kg	0.00050	0.000036	EPA-8081A	8.0		1
Endosulfan I	ND	mg/kg	0.00050	0.000020	EPA-8081A			1
Endosulfan II	ND	mg/kg	0.00050	0.000034	EPA-8081A			1
Endosulfan sulfate	ND	mg/kg	0.00050	0.000026	EPA-8081A			1
Endrin	ND	mg/kg	0.00050	0.000065	EPA-8081A	0.2		1
Endrin aldehyde	ND	mg/kg	0.00050	0.000018	EPA-8081A			1
Heptachlor	ND	mg/kg	0.00050	0.000086	EPA-8081A	4.7		1
Heptachlor epoxide	ND	mg/kg	0.00050	0.000017	EPA-8081A			1
Methoxychlor	ND	mg/kg	0.00050	0.000094	EPA-8081A	100		1
Toxaphene	ND	mg/kg	0.050	0.0014	EPA-8081A	5		1
TCMX (Surrogate)	89.8	%	20 - 130 (LCL - UCL)		EPA-8081A			1
Decachlorobiphenyl (Surrogate)	85.8	%	40 - 130 (LCL - UCL)		EPA-8081A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8081A	03/26/20 14:30	03/27/20 21:44	HKS	GC-17	0.984	B074101	EPA 3550B

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Chlorinated Herbicides (EPA Method 8151A)

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
2,4-D	ND	mg/kg	0.020	0.0030	EPA-8151A	100		1
2,4-DB	ND	mg/kg	0.040	0.0067	EPA-8151A			1
Dalapon	ND	mg/kg	0.050	0.0068	EPA-8151A			1
Dicamba	ND	mg/kg	0.0020	0.00057	EPA-8151A			1
Dichloroprop	ND	mg/kg	0.020	0.0037	EPA-8151A			1
Dinoseb	ND	mg/kg	0.0070	0.0020	EPA-8151A			1
2,4,5-T	ND	mg/kg	0.0030	0.0011	EPA-8151A			1
2,4,5-TP (Silvex)	ND	mg/kg	0.0030	0.00073	EPA-8151A	10		1
2,4-Dichlorophenylacetic acid (Surrogate)	55.8	%	40 - 120 (LCL - UCL)		EPA-8151A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8151A	03/26/20 13:40	03/27/20 14:53	OLH	GC-8	1.017	B074098	EPA 3550B

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Bromobenzene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Bromochloromethane	ND	mg/kg	0.0050	0.0014	EPA-8260B			1
Bromodichloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Bromoform	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Bromomethane	ND	mg/kg	0.0050	0.0024	EPA-8260B		V01	1
n-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
sec-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
tert-Butylbenzene	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
Carbon tetrachloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Chloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chloroform	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Chloromethane	ND	mg/kg	0.0050	0.0017	EPA-8260B		V01	1
2-Chlorotoluene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
4-Chlorotoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Dibromochloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2-Dibromoethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Dibromomethane	ND	mg/kg	0.0050	0.0016	EPA-8260B			1
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Dichlorodifluoromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Ethylbenzene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Hexachlorobutadiene	ND	mg/kg	0.0050	0.0031	EPA-8260B			1
Isopropylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
p-Isopropyltoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Methylene chloride	ND	mg/kg	0.010	0.0015	EPA-8260B			1
Methyl t-butyl ether	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Naphthalene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
n-Propylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Styrene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Tetrachloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Toluene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0026	EPA-8260B			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0027	EPA-8260B			1
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Trichloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B	2040		1
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Vinyl chloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Total Xylenes	ND	mg/kg	0.010	0.0034	EPA-8260B			1
p- & m-Xylenes	ND	mg/kg	0.0050	0.0038	EPA-8260B			1
o-Xylene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	107	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	102	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	89.1	%	74 - 121 (LCL - UCL)		EPA-8260B			1

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8260B	03/24/20 07:26	03/24/20 14:08	BYM	MS-V2	1	B073650	EPA 5030 Soil MS

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Acenaphthene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Acenaphthylene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Aldrin	ND	mg/kg	0.10	0.0067	EPA-8270C	1.4		1
Aniline	ND	mg/kg	0.20	0.011	EPA-8270C			1
Anthracene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzidine	ND	mg/kg	3.0	0.0093	EPA-8270C			1
Benzo[a]anthracene	ND	mg/kg	0.10	0.0077	EPA-8270C			1
Benzo[b]fluoranthene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzo[k]fluoranthene	ND	mg/kg	0.10	0.0082	EPA-8270C			1
Benzo[a]pyrene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzo[g,h,i]perylene	ND	mg/kg	0.10	0.013	EPA-8270C			1
Benzoic acid	ND	mg/kg	0.50	0.014	EPA-8270C			1
Benzyl alcohol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzyl butyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
alpha-BHC	ND	mg/kg	0.10	0.0067	EPA-8270C			1
beta-BHC	ND	mg/kg	0.10	0.0075	EPA-8270C			1
delta-BHC	ND	mg/kg	0.10	0.0067	EPA-8270C			1
gamma-BHC (Lindane)	ND	mg/kg	0.10	0.0067	EPA-8270C	4.0		1
bis(2-Chloroethoxy)methane	ND	mg/kg	0.10	0.0067	EPA-8270C			1
bis(2-Chloroethyl) ether	ND	mg/kg	0.10	0.0097	EPA-8270C			1
bis(2-Chloroisopropyl)ether	ND	mg/kg	0.10	0.0067	EPA-8270C			1
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.20	0.0067	EPA-8270C			1
4-Bromophenyl phenyl ether	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Chloroaniline	ND	mg/kg	0.10	0.015	EPA-8270C			1
2-Chloronaphthalene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Chlorophenyl phenyl ether	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Chrysene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4,4'-DDD	ND	mg/kg	0.10	0.0067	EPA-8270C	1.0		1
4,4'-DDE	ND	mg/kg	0.10	0.0068	EPA-8270C	1.0		1
4,4'-DDT	ND	mg/kg	0.10	0.0067	EPA-8270C	1.0		1
Dibenzo[a,h]anthracene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Dibenzofuran	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,2-Dichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
1,3-Dichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,4-Dichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
3,3-Dichlorobenzidine	ND	mg/kg	0.20	0.0067	EPA-8270C			1
Dieldrin	ND	mg/kg	0.10	0.0077	EPA-8270C	8.0		1
Diethyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Dimethyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Di-n-butyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4-Dinitrotoluene	ND	mg/kg	0.10	0.0085	EPA-8270C			1
2,6-Dinitrotoluene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Di-n-octyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,2-Diphenylhydrazine	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Endosulfan I	ND	mg/kg	0.20	0.0088	EPA-8270C			1
Endosulfan II	ND	mg/kg	0.20	0.0088	EPA-8270C			1
Endosulfan sulfate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Endrin	ND	mg/kg	0.20	0.0086	EPA-8270C	0.2		1
Endrin aldehyde	ND	mg/kg	0.50	0.0070	EPA-8270C			1
Fluoranthene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Fluorene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Heptachlor	ND	mg/kg	0.10	0.0067	EPA-8270C	4.7		1
Heptachlor epoxide	ND	mg/kg	0.10	0.013	EPA-8270C			1
Hexachlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Hexachlorobutadiene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Hexachlorocyclopentadiene	ND	mg/kg	0.10	0.015	EPA-8270C			1
Hexachloroethane	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Indeno[1,2,3-cd]pyrene	ND	mg/kg	0.10	0.0069	EPA-8270C			1
Isophorone	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2-Methylnaphthalene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Naphthalene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2-Naphthylamine	ND	mg/kg	3.0	0.036	EPA-8270C			1
2-Nitroaniline	ND	mg/kg	0.10	0.0067	EPA-8270C			1
3-Nitroaniline	ND	mg/kg	0.20	0.0067	EPA-8270C			1
4-Nitroaniline	ND	mg/kg	0.20	0.011	EPA-8270C			1
Nitrobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
N-Nitrosodimethylamine	ND	mg/kg	0.10	0.040	EPA-8270C			1
N-Nitrosodi-N-propylamine	ND	mg/kg	0.10	0.0067	EPA-8270C			1
N-Nitrosodiphenylamine	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Phenanthrene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Pyrene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Chloro-3-methylphenol	ND	mg/kg	0.20	0.0067	EPA-8270C			1
2-Chlorophenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4-Dichlorophenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4-Dimethylphenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.50	0.0067	EPA-8270C			1
2,4-Dinitrophenol	ND	mg/kg	0.50	0.0067	EPA-8270C			1
2-Methylphenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
3- & 4-Methylphenol	ND	mg/kg	0.20	0.014	EPA-8270C			1
2-Nitrophenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Nitrophenol	ND	mg/kg	0.20	0.018	EPA-8270C			1
Pentachlorophenol	ND	mg/kg	0.20	0.017	EPA-8270C	17		1
Phenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4,5-Trichlorophenol	ND	mg/kg	0.20	0.011	EPA-8270C			1
2,4,6-Trichlorophenol	ND	mg/kg	0.20	0.0067	EPA-8270C			1
2-Fluorophenol (Surrogate)	68.1	%	20 - 130 (LCL - UCL)		EPA-8270C			1
Phenol-d5 (Surrogate)	70.4	%	30 - 130 (LCL - UCL)		EPA-8270C			1
Nitrobenzene-d5 (Surrogate)	67.5	%	30 - 130 (LCL - UCL)		EPA-8270C			1
2-Fluorobiphenyl (Surrogate)	71.4	%	30 - 140 (LCL - UCL)		EPA-8270C			1
2,4,6-Tribromophenol (Surrogate)	71.3	%	20 - 150 (LCL - UCL)		EPA-8270C			1
p-Terphenyl-d14 (Surrogate)	62.7	%	30 - 150 (LCL - UCL)		EPA-8270C			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8270C	03/24/20 19:00	03/25/20 18:39	MK1	HPCHEM	0.993	B073980	EPA 3550B

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EPA Method 1664

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	ND	mg/kg	50	16	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-1664A HEM	03/27/20 08:00	03/27/20 12:24	MAM	MAN-SV	1.008	B074123	EPA 1664/HEM

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Chemical Analysis

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Nitrogen	**190**	**mg/kg**	**60**	**20**	**Calc**	ND		1
Nitrate as N	**1.2**	**mg/kg**	**1.0**	**0.26**	**EPA-300.0**	ND		2
Total Kjeldahl Nitrogen	**190**	**mg/kg**	**40**	**13**	**EPA-351.2**	ND		3
Total Phosphorus	**370**	**mg/kg**	**10**	**3.2**	**EPA-365.4**	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	Calc	03/24/20 12:01	04/07/20 12:01	AMM	Calc	1	B^C0235	Calc
2	EPA-300.0	04/01/20 14:00	04/02/20 19:53	MRC	IC5	1	B074450	Water Extract X10
3	EPA-351.2	03/24/20 17:00	03/25/20 12:30	JMH2	SC-2	1	B073888	EPA 351.2
4	EPA-365.4	03/24/20 17:00	03/25/20 10:15	JMH2	SC-1	1	B073889	EPA 365.4

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Total Concentrations (TTLC)

BCL Sample ID: 2008795-02 | **Client Sample Name:** 2-1.5, 3/20/2020 8:10:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Antimony	ND	mg/kg	0.50	0.080	EPA-6020	500		1
Arsenic	**0.38**	**mg/kg**	**0.50**	**0.17**	**EPA-6020**	500	**J**	2
Barium	**30**	**mg/kg**	**0.25**	**0.054**	**EPA-6020**	10000		3
Beryllium	ND	mg/kg	0.25	0.041	EPA-6020	75		2
Cadmium	ND	mg/kg	0.25	0.048	EPA-6020	100		3
Chromium	**5.5**	**mg/kg**	**0.75**	**0.25**	**EPA-6020**	2500		2
Cobalt	**1.6**	**mg/kg**	**0.25**	**0.049**	**EPA-6020**	8000		2
Copper	**3.4**	**mg/kg**	**0.50**	**0.099**	**EPA-6020**	2500		2
Lead	**0.73**	**mg/kg**	**0.25**	**0.12**	**EPA-6020**	1000		2
Mercury	ND	mg/kg	0.16	0.016	EPA-7471A	20		4
Molybdenum	**0.096**	**mg/kg**	**0.25**	**0.045**	**EPA-6020**	3500	**J**	3
Nickel	**1.8**	**mg/kg**	**0.50**	**0.11**	**EPA-6020**	2000		2
Selenium	ND	mg/kg	0.50	0.11	EPA-6020	100		2
Silver	ND	mg/kg	0.25	0.051	EPA-6020	500		2
Thallium	ND	mg/kg	0.25	0.049	EPA-6020	700		2
Vanadium	**20**	**mg/kg**	**0.75**	**0.27**	**EPA-6020**	2400		2
Zinc	**9.1**	**mg/kg**	**2.5**	**0.50**	**EPA-6020**	5000		3
Iron	**9000**	**mg/kg**	**25**	**8.5**	**EPA-6010B**			5
Magnesium	**1100**	**mg/kg**	**2.5**	**1.3**	**EPA-6010B**			6

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-6020	03/24/20 12:05	03/26/20 10:29	ARD	PE-EL2	0.990	B073841	EPA 3050B
2	EPA-6020	03/24/20 12:05	03/24/20 16:54	ARD	PE-EL4	0.990	B073841	EPA 3050B
3	EPA-6020	03/24/20 12:05	03/25/20 12:58	ARD	PE-EL4	0.990	B073841	EPA 3050B
4	EPA-7471A	03/25/20 09:30	03/25/20 12:42	TMT	CETAC3	0.992	B073913	EPA 7471A
5	EPA-6010B	03/25/20 09:30	03/27/20 18:45	KDF	PE-OP4	4.854	B073934	EPA 3050B
6	EPA-6010B	03/25/20 09:30	03/25/20 20:02	KDF	PE-OP4	0.971	B073934	EPA 3050B

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Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides (EPA Method 8081A)

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Aldrin	ND	mg/kg	0.00050	0.000018	EPA-8081A	1.4		1
alpha-BHC	ND	mg/kg	0.00050	0.000038	EPA-8081A			1
beta-BHC	ND	mg/kg	0.00050	0.000048	EPA-8081A			1
delta-BHC	ND	mg/kg	0.00050	0.000037	EPA-8081A			1
gamma-BHC (Lindane)	ND	mg/kg	0.00050	0.000018	EPA-8081A	4.0		1
Chlordane (Technical)	ND	mg/kg	0.050	0.0010	EPA-8081A	2.5		1
4,4'-DDD	ND	mg/kg	0.00050	0.000064	EPA-8081A	1.0		1
4,4'-DDE	ND	mg/kg	0.00050	0.000095	EPA-8081A	1.0		1
4,4'-DDT	ND	mg/kg	0.00050	0.000040	EPA-8081A	1.0		1
Dieldrin	ND	mg/kg	0.00050	0.000036	EPA-8081A	8.0		1
Endosulfan I	ND	mg/kg	0.00050	0.000020	EPA-8081A			1
Endosulfan II	ND	mg/kg	0.00050	0.000034	EPA-8081A			1
Endosulfan sulfate	ND	mg/kg	0.00050	0.000026	EPA-8081A			1
Endrin	ND	mg/kg	0.00050	0.000065	EPA-8081A	0.2		1
Endrin aldehyde	ND	mg/kg	0.00050	0.000018	EPA-8081A			1
Heptachlor	ND	mg/kg	0.00050	0.000086	EPA-8081A	4.7		1
Heptachlor epoxide	ND	mg/kg	0.00050	0.000017	EPA-8081A			1
Methoxychlor	ND	mg/kg	0.00050	0.000094	EPA-8081A	100		1
Toxaphene	ND	mg/kg	0.050	0.0014	EPA-8081A	5		1
TCMX (Surrogate)	43.6	%	20 - 130 (LCL - UCL)		EPA-8081A			1
Decachlorobiphenyl (Surrogate)	31.3	%	40 - 130 (LCL - UCL)		EPA-8081A		A20	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8081A	03/26/20 14:30	03/27/20 22:00	HKS	GC-17	0.984	B074101	EPA 3550B

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Chlorinated Herbicides (EPA Method 8151A)

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
2,4-D	ND	mg/kg	0.020	0.0030	EPA-8151A	100		1
2,4-DB	ND	mg/kg	0.040	0.0067	EPA-8151A			1
Dalapon	ND	mg/kg	0.050	0.0068	EPA-8151A			1
Dicamba	ND	mg/kg	0.0020	0.00057	EPA-8151A			1
Dichloroprop	ND	mg/kg	0.020	0.0037	EPA-8151A			1
Dinoseb	ND	mg/kg	0.0070	0.0020	EPA-8151A			1
2,4,5-T	ND	mg/kg	0.0030	0.0011	EPA-8151A			1
2,4,5-TP (Silvex)	ND	mg/kg	0.0030	0.00073	EPA-8151A	10		1
2,4-Dichlorophenylacetic acid (Surrogate)	43.2	%	40 - 120 (LCL - UCL)		EPA-8151A			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8151A	03/26/20 13:40	03/27/20 15:14	OLH	GC-8	1.010	B074098	EPA 3550B

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Benzene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Bromobenzene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Bromochloromethane	ND	mg/kg	0.0050	0.0014	EPA-8260B			1
Bromodichloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Bromoform	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Bromomethane	ND	mg/kg	0.0050	0.0024	EPA-8260B		V01	1
n-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
sec-Butylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
tert-Butylbenzene	ND	mg/kg	0.0050	0.0024	EPA-8260B			1
Carbon tetrachloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
Chloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Chloroform	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Chloromethane	ND	mg/kg	0.0050	0.0017	EPA-8260B		V01	1
2-Chlorotoluene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
4-Chlorotoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Dibromochloromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2-Dibromo-3-chloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2-Dibromoethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Dibromomethane	ND	mg/kg	0.0050	0.0016	EPA-8260B			1
1,2-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,3-Dichlorobenzene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,4-Dichlorobenzene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
Dichlorodifluoromethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloroethane	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
1,1-Dichloroethene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
cis-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
trans-1,2-Dichloroethene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,2-Dichloropropane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
1,3-Dichloropropane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
2,2-Dichloropropane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1-Dichloropropene	ND	mg/kg	0.0050	0.0019	EPA-8260B			1

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
trans-1,3-Dichloropropene	ND	mg/kg	0.0050	0.0018	EPA-8260B			1
Ethylbenzene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Hexachlorobutadiene	ND	mg/kg	0.0050	0.0031	EPA-8260B			1
Isopropylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
p-Isopropyltoluene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Methylene chloride	ND	mg/kg	0.010	0.0015	EPA-8260B			1
Methyl t-butyl ether	ND	mg/kg	0.0050	0.0017	EPA-8260B			1
Naphthalene	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
n-Propylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Styrene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,1,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2,2-Tetrachloroethane	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Tetrachloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B			1
Toluene	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,3-Trichlorobenzene	ND	mg/kg	0.0050	0.0026	EPA-8260B			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.0050	0.0027	EPA-8260B			1
1,1,1-Trichloroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,1,2-Trichloroethane	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Trichloroethene	ND	mg/kg	0.0050	0.0022	EPA-8260B	2040		1
Trichlorofluoromethane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,2,3-Trichloropropane	ND	mg/kg	0.0050	0.0023	EPA-8260B			1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	mg/kg	0.0050	0.0020	EPA-8260B			1
1,2,4-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,3,5-Trimethylbenzene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
Vinyl chloride	ND	mg/kg	0.0050	0.0019	EPA-8260B			1
Total Xylenes	ND	mg/kg	0.010	0.0034	EPA-8260B			1
p- & m-Xylenes	ND	mg/kg	0.0050	0.0038	EPA-8260B			1
o-Xylene	ND	mg/kg	0.0050	0.0021	EPA-8260B			1
1,2-Dichloroethane-d4 (Surrogate)	102	%	70 - 121 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	99.4	%	81 - 117 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	85.7	%	74 - 121 (LCL - UCL)		EPA-8260B			1

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Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	
1	EPA-8260B	03/24/20 07:26	03/24/20 14:35	BYM	MS-V2	1	B073650	EPA 5030 Soil MS

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Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Acenaphthene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Acenaphthylene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Aldrin	ND	mg/kg	0.10	0.0067	EPA-8270C	1.4		1
Aniline	ND	mg/kg	0.20	0.011	EPA-8270C			1
Anthracene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzidine	ND	mg/kg	3.0	0.0093	EPA-8270C			1
Benzo[a]anthracene	ND	mg/kg	0.10	0.0077	EPA-8270C			1
Benzo[b]fluoranthene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzo[k]fluoranthene	ND	mg/kg	0.10	0.0082	EPA-8270C			1
Benzo[a]pyrene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzo[g,h,i]perylene	ND	mg/kg	0.10	0.013	EPA-8270C			1
Benzoic acid	ND	mg/kg	0.50	0.014	EPA-8270C			1
Benzyl alcohol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Benzyl butyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
alpha-BHC	ND	mg/kg	0.10	0.0067	EPA-8270C			1
beta-BHC	ND	mg/kg	0.10	0.0075	EPA-8270C			1
delta-BHC	ND	mg/kg	0.10	0.0067	EPA-8270C			1
gamma-BHC (Lindane)	ND	mg/kg	0.10	0.0067	EPA-8270C	4.0		1
bis(2-Chloroethoxy)methane	ND	mg/kg	0.10	0.0067	EPA-8270C			1
bis(2-Chloroethyl) ether	ND	mg/kg	0.10	0.0097	EPA-8270C			1
bis(2-Chloroisopropyl)ether	ND	mg/kg	0.10	0.0067	EPA-8270C			1
bis(2-Ethylhexyl)phthalate	ND	mg/kg	0.20	0.0067	EPA-8270C			1
4-Bromophenyl phenyl ether	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Chloroaniline	ND	mg/kg	0.10	0.015	EPA-8270C			1
2-Chloronaphthalene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Chlorophenyl phenyl ether	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Chrysene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4,4'-DDD	ND	mg/kg	0.10	0.0067	EPA-8270C	1.0		1
4,4'-DDE	ND	mg/kg	0.10	0.0068	EPA-8270C	1.0		1
4,4'-DDT	ND	mg/kg	0.10	0.0067	EPA-8270C	1.0		1
Dibenzo[a,h]anthracene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Dibenzofuran	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,2-Dichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
1,3-Dichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,4-Dichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
3,3-Dichlorobenzidine	ND	mg/kg	0.20	0.0067	EPA-8270C			1
Dieldrin	ND	mg/kg	0.10	0.0077	EPA-8270C	8.0		1
Diethyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Dimethyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Di-n-butyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4-Dinitrotoluene	ND	mg/kg	0.10	0.0085	EPA-8270C			1
2,6-Dinitrotoluene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Di-n-octyl phthalate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,2-Diphenylhydrazine	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Endosulfan I	ND	mg/kg	0.20	0.0088	EPA-8270C			1
Endosulfan II	ND	mg/kg	0.20	0.0088	EPA-8270C			1
Endosulfan sulfate	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Endrin	ND	mg/kg	0.20	0.0086	EPA-8270C	0.2		1
Endrin aldehyde	ND	mg/kg	0.50	0.0070	EPA-8270C			1
Fluoranthene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Fluorene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Heptachlor	ND	mg/kg	0.10	0.0067	EPA-8270C	4.7		1
Heptachlor epoxide	ND	mg/kg	0.10	0.013	EPA-8270C			1
Hexachlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Hexachlorobutadiene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Hexachlorocyclopentadiene	ND	mg/kg	0.10	0.015	EPA-8270C			1
Hexachloroethane	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Indeno[1,2,3-cd]pyrene	ND	mg/kg	0.10	0.0069	EPA-8270C			1
Isophorone	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2-Methylnaphthalene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Naphthalene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2-Naphthylamine	ND	mg/kg	3.0	0.036	EPA-8270C			1
2-Nitroaniline	ND	mg/kg	0.10	0.0067	EPA-8270C			1
3-Nitroaniline	ND	mg/kg	0.20	0.0067	EPA-8270C			1
4-Nitroaniline	ND	mg/kg	0.20	0.011	EPA-8270C			1
Nitrobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1

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San Diego, CA 92127

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Project Manager: Sarah Battelle

Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
N-Nitrosodimethylamine	ND	mg/kg	0.10	0.040	EPA-8270C			1
N-Nitrosodi-N-propylamine	ND	mg/kg	0.10	0.0067	EPA-8270C			1
N-Nitrosodiphenylamine	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Phenanthrene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
Pyrene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
1,2,4-Trichlorobenzene	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Chloro-3-methylphenol	ND	mg/kg	0.20	0.0067	EPA-8270C			1
2-Chlorophenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4-Dichlorophenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4-Dimethylphenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4,6-Dinitro-2-methylphenol	ND	mg/kg	0.50	0.0067	EPA-8270C			1
2,4-Dinitrophenol	ND	mg/kg	0.50	0.0067	EPA-8270C			1
2-Methylphenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
3- & 4-Methylphenol	ND	mg/kg	0.20	0.014	EPA-8270C			1
2-Nitrophenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
4-Nitrophenol	ND	mg/kg	0.20	0.018	EPA-8270C			1
Pentachlorophenol	ND	mg/kg	0.20	0.017	EPA-8270C	17		1
Phenol	ND	mg/kg	0.10	0.0067	EPA-8270C			1
2,4,5-Trichlorophenol	ND	mg/kg	0.20	0.011	EPA-8270C			1
2,4,6-Trichlorophenol	ND	mg/kg	0.20	0.0067	EPA-8270C			1
2-Fluorophenol (Surrogate)	69.0	%	20 - 130 (LCL - UCL)		EPA-8270C			1
Phenol-d5 (Surrogate)	71.7	%	30 - 130 (LCL - UCL)		EPA-8270C			1
Nitrobenzene-d5 (Surrogate)	62.1	%	30 - 130 (LCL - UCL)		EPA-8270C			1
2-Fluorobiphenyl (Surrogate)	49.5	%	30 - 140 (LCL - UCL)		EPA-8270C			1
2,4,6-Tribromophenol (Surrogate)	63.0	%	20 - 150 (LCL - UCL)		EPA-8270C			1
p-Terphenyl-d14 (Surrogate)	50.6	%	30 - 150 (LCL - UCL)		EPA-8270C			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-8270C	03/24/20 19:00	03/25/20 19:06	MK1	HPCHEM	0.997	B073980	EPA 3550B

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EPA Method 1664

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	ND	mg/kg	50	16	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-1664A HEM	03/27/20 08:00	03/27/20 12:24	MAM	MAN-SV	1.002	B074123	EPA 1664/HEM

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Chemical Analysis

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Nitrogen	**210**	**mg/kg**	**60**	**20**	**Calc**	ND		1
Nitrate as N	**2.9**	**mg/kg**	**1.0**	**0.26**	**EPA-300.0**	ND		2
Total Kjeldahl Nitrogen	**200**	**mg/kg**	**40**	**13**	**EPA-351.2**	ND		3
Total Phosphorus	**340**	**mg/kg**	**10**	**3.2**	**EPA-365.4**	ND		4

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	Calc	03/24/20 12:01	04/07/20 12:01	AMM	Calc	1	B^C0235	Calc
2	EPA-300.0	04/01/20 14:00	04/02/20 20:11	MRC	IC5	1	B074450	Water Extract X10
3	EPA-351.2	03/24/20 17:00	03/25/20 12:31	JMH2	SC-2	1	B073888	EPA 351.2
4	EPA-365.4	03/24/20 17:00	03/25/20 10:16	JMH2	SC-1	1	B073889	EPA 365.4

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Total Concentrations (TTLC)

BCL Sample ID: 2008795-03 | **Client Sample Name:** 2-6, 3/20/2020 8:20:00AM

Constituent	Result	Units	PQL	MDL	Method	TTLC Limits	Lab Quals	Run #
Antimony	ND	mg/kg	0.50	0.080	EPA-6020	500		1
Arsenic	**0.84**	**mg/kg**	**0.50**	**0.17**	**EPA-6020**	500		2
Barium	**63**	**mg/kg**	**0.25**	**0.054**	**EPA-6020**	10000		3
Beryllium	**0.094**	**mg/kg**	**0.25**	**0.041**	**EPA-6020**	75	**J**	2
Cadmium	ND	mg/kg	0.25	0.048	EPA-6020	100		3
Chromium	**9.6**	**mg/kg**	**0.75**	**0.25**	**EPA-6020**	2500		2
Cobalt	**3.7**	**mg/kg**	**0.25**	**0.049**	**EPA-6020**	8000		2
Copper	**8.0**	**mg/kg**	**0.50**	**0.099**	**EPA-6020**	2500		2
Lead	**1.3**	**mg/kg**	**0.25**	**0.12**	**EPA-6020**	1000		2
Mercury	ND	mg/kg	0.16	0.016	EPA-7471A	20		4
Molybdenum	**0.26**	**mg/kg**	**0.25**	**0.045**	**EPA-6020**	3500		3
Nickel	**4.1**	**mg/kg**	**0.50**	**0.11**	**EPA-6020**	2000		2
Selenium	ND	mg/kg	0.50	0.11	EPA-6020	100		2
Silver	ND	mg/kg	0.25	0.051	EPA-6020	500		2
Thallium	**0.11**	**mg/kg**	**0.25**	**0.049**	**EPA-6020**	700	**J**	2
Vanadium	**30**	**mg/kg**	**0.75**	**0.27**	**EPA-6020**	2400		2
Zinc	**21**	**mg/kg**	**2.5**	**0.50**	**EPA-6020**	5000		3
Iron	**12000**	**mg/kg**	**25**	**8.5**	**EPA-6010B**			5
Magnesium	**2100**	**mg/kg**	**2.5**	**1.3**	**EPA-6010B**			6

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-6020	03/24/20 12:05	03/26/20 10:31	ARD	PE-EL2	0.990	B073841	EPA 3050B
2	EPA-6020	03/24/20 12:05	03/24/20 16:57	ARD	PE-EL4	0.990	B073841	EPA 3050B
3	EPA-6020	03/24/20 12:05	03/25/20 13:00	ARD	PE-EL4	0.990	B073841	EPA 3050B
4	EPA-7471A	03/25/20 09:30	03/25/20 12:44	TMT	CETAC3	1.025	B073913	EPA 7471A
5	EPA-6010B	03/25/20 09:30	03/27/20 18:46	KDF	PE-OP4	5	B073934	EPA 3050B
6	EPA-6010B	03/25/20 09:30	03/25/20 20:03	KDF	PE-OP4	1	B073934	EPA 3050B

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Organochlorine Pesticides (EPA Method 8081A)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B074101						
Aldrin	B074101-BLK1	ND	mg/kg	0.00050	0.000018	
alpha-BHC	B074101-BLK1	ND	mg/kg	0.00050	0.000038	
beta-BHC	B074101-BLK1	ND	mg/kg	0.00050	0.000048	
delta-BHC	B074101-BLK1	ND	mg/kg	0.00050	0.000037	
gamma-BHC (Lindane)	B074101-BLK1	ND	mg/kg	0.00050	0.000018	
Chlordane (Technical)	B074101-BLK1	ND	mg/kg	0.050	0.0010	
4,4'-DDD	B074101-BLK1	ND	mg/kg	0.00050	0.000064	
4,4'-DDE	B074101-BLK1	ND	mg/kg	0.00050	0.000095	
4,4'-DDT	B074101-BLK1	ND	mg/kg	0.00050	0.000040	
Dieldrin	B074101-BLK1	ND	mg/kg	0.00050	0.000036	
Endosulfan I	B074101-BLK1	ND	mg/kg	0.00050	0.000020	
Endosulfan II	B074101-BLK1	ND	mg/kg	0.00050	0.000034	
Endosulfan sulfate	B074101-BLK1	ND	mg/kg	0.00050	0.000026	
Endrin	B074101-BLK1	ND	mg/kg	0.00050	0.000065	
Endrin aldehyde	B074101-BLK1	ND	mg/kg	0.00050	0.000018	
Heptachlor	B074101-BLK1	ND	mg/kg	0.00050	0.000086	
Heptachlor epoxide	B074101-BLK1	ND	mg/kg	0.00050	0.000017	
Methoxychlor	B074101-BLK1	ND	mg/kg	0.00050	0.000094	
Toxaphene	B074101-BLK1	ND	mg/kg	0.050	0.0014	
TCMX (Surrogate)	**B074101-BLK1**	**87.4**	%	**20 - 130 (LCL - UCL)**		
Decachlorobiphenyl (Surrogate)	**B074101-BLK1**	**93.7**	%	**40 - 130 (LCL - UCL)**		

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Organochlorine Pesticides (EPA Method 8081A)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B074101										
Aldrin	B074101-BS1	LCS	0.0046805	0.0049505	mg/kg	94.5		70 - 130		
gamma-BHC (Lindane)	B074101-BS1	LCS	0.0051512	0.0049505	mg/kg	104		60 - 140		
4,4'-DDT	B074101-BS1	LCS	0.0060578	0.0049505	mg/kg	122		60 - 140		
Dieldrin	B074101-BS1	LCS	0.0052875	0.0049505	mg/kg	107		70 - 130		
Endrin	B074101-BS1	LCS	0.0055957	0.0049505	mg/kg	113		60 - 140		
Heptachlor	B074101-BS1	LCS	0.0054244	0.0049505	mg/kg	110		60 - 140		
TCMX (Surrogate)	B074101-BS1	LCS	0.0087472	0.0099010	mg/kg	88.3		20 - 130		
Decachlorobiphenyl (Surrogate)	B074101-BS1	LCS	0.018757	0.019802	mg/kg	94.7		40 - 130		

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Organochlorine Pesticides (EPA Method 8081A)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B074101	Used client sample: Y - Description: 2-0.5, 03/20/2020 08:05										
Aldrin	MS	2008795-01	ND	0.0037080	0.0049834	mg/kg		74.4		50 - 140	
	MSD	2008795-01	ND	0.0038444	0.0050847	mg/kg	3.6	75.6	30	50 - 140	
gamma-BHC (Lindane)	MS	2008795-01	ND	0.0050588	0.0049834	mg/kg		102		50 - 140	
	MSD	2008795-01	ND	0.0052607	0.0050847	mg/kg	3.9	103	30	50 - 140	
4,4'-DDT	MS	2008795-01	ND	0.0055638	0.0049834	mg/kg		112		50 - 140	
	MSD	2008795-01	ND	0.0056932	0.0050847	mg/kg	2.3	112	30	50 - 140	
Dieldrin	MS	2008795-01	ND	0.0047807	0.0049834	mg/kg		95.9		40 - 140	
	MSD	2008795-01	ND	0.0049529	0.0050847	mg/kg	3.5	97.4	30	40 - 140	
Endrin	MS	2008795-01	ND	0.0053332	0.0049834	mg/kg		107		50 - 150	
	MSD	2008795-01	ND	0.0054844	0.0050847	mg/kg	2.8	108	30	50 - 150	
Heptachlor	MS	2008795-01	ND	0.0051296	0.0049834	mg/kg		103		60 - 140	
	MSD	2008795-01	ND	0.0053149	0.0050847	mg/kg	3.5	105	30	60 - 140	
TCMX (Surrogate)	MS	2008795-01	ND	0.0085445	0.0099668	mg/kg		85.7		20 - 130	
	MSD	2008795-01	ND	0.0095681	0.010169	mg/kg	11.3	94.1		20 - 130	
Decachlorobiphenyl (Surrogate)	MS	2008795-01	ND	0.017298	0.019934	mg/kg		86.8		40 - 130	
	MSD	2008795-01	ND	0.017298	0.020339	mg/kg	0.0	85.0		40 - 130	

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Chlorinated Herbicides (EPA Method 8151A)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B074098						
2,4-D	B074098-BLK1	ND	mg/kg	0.020	0.0030	
2,4-DB	B074098-BLK1	ND	mg/kg	0.040	0.0067	
Dalapon	B074098-BLK1	ND	mg/kg	0.050	0.0068	
Dicamba	B074098-BLK1	ND	mg/kg	0.0020	0.00057	
Dichloroprop	B074098-BLK1	ND	mg/kg	0.020	0.0037	
Dinoseb	B074098-BLK1	ND	mg/kg	0.0070	0.0020	
2,4,5-T	B074098-BLK1	ND	mg/kg	0.0030	0.0011	
2,4,5-TP (Silvex)	B074098-BLK1	ND	mg/kg	0.0030	0.00073	
2,4-Dichlorophenylacetic acid (Surrogate)	**B074098-BLK1**	**79.3**	%	**40 - 120 (LCL - UCL)**		

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Chlorinated Herbicides (EPA Method 8151A)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B074098										
2,4-D	B074098-BS1	LCS	0.061311	0.078689	mg/kg	77.9		50 - 120		
2,4-DB	B074098-BS1	LCS	0.11115	0.17705	mg/kg	62.8		50 - 120		
Dicamba	B074098-BS1	LCS	0.017049	0.019672	mg/kg	86.7		50 - 120		
Dichloroprop	B074098-BS1	LCS	0.054754	0.078689	mg/kg	69.6		50 - 120		
Dinoseb	B074098-BS1	LCS	0.024918	0.039344	mg/kg	63.3		50 - 120		
2,4,5-T	B074098-BS1	LCS	0.010164	0.019672	mg/kg	51.7		30 - 120		
2,4,5-TP (Silvex)	B074098-BS1	LCS	0.012787	0.019672	mg/kg	65.0		50 - 120		
2,4-Dichlorophenylacetic acid (Surrogate)	B074098-BS1	LCS	0.099344	0.13115	mg/kg	75.7		40 - 120		

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Chlorinated Herbicides (EPA Method 8151A)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B074098	Used client sample: Y - Description: 2-1.5, 03/20/2020 08:10										
2,4-D	MS	2008795-02	ND	0.061639	0.078689	mg/kg		78.3		40 - 120	
	MSD	2008795-02	ND	0.058667	0.080000	mg/kg	4.9	73.3	30	40 - 120	
2,4-DB	MS	2008795-02	ND	0.10984	0.17705	mg/kg		62.0		50 - 120	
	MSD	2008795-02	ND	0.10367	0.18000	mg/kg	5.8	57.6	30	50 - 120	
Dicamba	MS	2008795-02	ND	0.014426	0.019672	mg/kg		73.3		50 - 120	
	MSD	2008795-02	ND	0.014333	0.020000	mg/kg	0.6	71.7	30	50 - 120	
Dichloroprop	MS	2008795-02	ND	0.051148	0.078689	mg/kg		65.0		40 - 120	
	MSD	2008795-02	ND	0.046333	0.080000	mg/kg	9.9	57.9	30	40 - 120	
Dinoseb	MS	2008795-02	ND	0.020656	0.039344	mg/kg		52.5		40 - 130	
	MSD	2008795-02	ND	0.020667	0.040000	mg/kg	0.1	51.7	30	40 - 130	
2,4,5-T	MS	2008795-02	ND	0.0081967	0.019672	mg/kg		41.7		30 - 120	
	MSD	2008795-02	ND	0.0066667	0.020000	mg/kg	20.6	33.3	30	30 - 120	
2,4,5-TP (Silvex)	MS	2008795-02	ND	0.010820	0.019672	mg/kg		55.0		40 - 120	
	MSD	2008795-02	ND	0.010667	0.020000	mg/kg	1.4	53.3	30	40 - 120	
2,4-Dichlorophenylacetic acid (Surrogate	MS	2008795-02	ND	0.089508	0.13115	mg/kg		68.2		40 - 120	
	MSD	2008795-02	ND	0.088333	0.13333	mg/kg	1.3	66.3		40 - 120	

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073650						
Benzene	B073650-BLK1	ND	mg/kg	0.0050	0.0018	
Bromobenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
Bromochloromethane	B073650-BLK1	ND	mg/kg	0.0050	0.0014	
Bromodichloromethane	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
Bromoform	B073650-BLK1	ND	mg/kg	0.0050	0.0023	
Bromomethane	B073650-BLK1	ND	mg/kg	0.0050	0.0024	
n-Butylbenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
sec-Butylbenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
tert-Butylbenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0024	
Carbon tetrachloride	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
Chlorobenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
Chloroethane	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
Chloroform	B073650-BLK1	ND	mg/kg	0.0050	0.0017	
Chloromethane	B073650-BLK1	ND	mg/kg	0.0050	0.0017	
2-Chlorotoluene	B073650-BLK1	ND	mg/kg	0.0050	0.0018	
4-Chlorotoluene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
Dibromochloromethane	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
1,2-Dibromo-3-chloropropane	B073650-BLK1	ND	mg/kg	0.0050	0.0023	
1,2-Dibromoethane	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
Dibromomethane	B073650-BLK1	ND	mg/kg	0.0050	0.0016	
1,2-Dichlorobenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0023	
1,3-Dichlorobenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
1,4-Dichlorobenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0023	
Dichlorodifluoromethane	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
1,1-Dichloroethane	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
1,2-Dichloroethane	B073650-BLK1	ND	mg/kg	0.0050	0.0017	
1,1-Dichloroethene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
cis-1,2-Dichloroethene	B073650-BLK1	ND	mg/kg	0.0050	0.0018	
trans-1,2-Dichloroethene	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
1,2-Dichloropropane	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
1,3-Dichloropropane	B073650-BLK1	ND	mg/kg	0.0050	0.0022	
2,2-Dichloropropane	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
1,1-Dichloropropene	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
cis-1,3-Dichloropropene	B073650-BLK1	ND	mg/kg	0.0050	0.0017	

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073650						
trans-1,3-Dichloropropene	B073650-BLK1	ND	mg/kg	0.0050	0.0018	
Ethylbenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0022	
Hexachlorobutadiene	B073650-BLK1	ND	mg/kg	0.0050	0.0031	
Isopropylbenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
p-Isopropyltoluene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
Methylene chloride	B073650-BLK1	ND	mg/kg	0.010	0.0015	
Methyl t-butyl ether	B073650-BLK1	ND	mg/kg	0.0050	0.0017	
Naphthalene	B073650-BLK1	ND	mg/kg	0.0050	0.0023	
n-Propylbenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
Styrene	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
1,1,1,2-Tetrachloroethane	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
1,1,2,2-Tetrachloroethane	B073650-BLK1	ND	mg/kg	0.0050	0.0022	
Tetrachloroethene	B073650-BLK1	ND	mg/kg	0.0050	0.0022	
Toluene	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
1,2,3-Trichlorobenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0026	
1,2,4-Trichlorobenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0027	
1,1,1-Trichloroethane	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
1,1,2-Trichloroethane	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
Trichloroethene	B073650-BLK1	ND	mg/kg	0.0050	0.0022	
Trichlorofluoromethane	B073650-BLK1	ND	mg/kg	0.0050	0.0023	
1,2,3-Trichloropropane	B073650-BLK1	ND	mg/kg	0.0050	0.0023	
1,1,2-Trichloro-1,2,2-trifluoroethane	B073650-BLK1	ND	mg/kg	0.0050	0.0020	
1,2,4-Trimethylbenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
1,3,5-Trimethylbenzene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
Vinyl chloride	B073650-BLK1	ND	mg/kg	0.0050	0.0019	
Total Xylenes	B073650-BLK1	ND	mg/kg	0.010	0.0034	
p- & m-Xylenes	B073650-BLK1	ND	mg/kg	0.0050	0.0038	
o-Xylene	B073650-BLK1	ND	mg/kg	0.0050	0.0021	
1,2-Dichloroethane-d4 (Surrogate)	**B073650-BLK1**	**97.5**	%	**70 - 121 (LCL - UCL)**		
Toluene-d8 (Surrogate)	**B073650-BLK1**	**97.4**	%	**81 - 117 (LCL - UCL)**		
4-Bromofluorobenzene (Surrogate)	**B073650-BLK1**	**90.4**	%	**74 - 121 (LCL - UCL)**		

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Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B073650										
Benzene	B073650-BS1	LCS	0.12967	0.12500	mg/kg	104		70 - 130		
Bromodichloromethane	B073650-BS1	LCS	0.12230	0.12500	mg/kg	97.8		70 - 130		
Chlorobenzene	B073650-BS1	LCS	0.12342	0.12500	mg/kg	98.7		70 - 130		
Chloroethane	B073650-BS1	LCS	0.16128	0.12500	mg/kg	129		70 - 130		
1,4-Dichlorobenzene	B073650-BS1	LCS	0.12245	0.12500	mg/kg	98.0		70 - 130		
1,1-Dichloroethane	B073650-BS1	LCS	0.12178	0.12500	mg/kg	97.4		70 - 130		
1,1-Dichloroethene	B073650-BS1	LCS	0.11731	0.12500	mg/kg	93.8		70 - 130		
Toluene	B073650-BS1	LCS	0.12333	0.12500	mg/kg	98.7		70 - 130		
Trichloroethene	B073650-BS1	LCS	0.11867	0.12500	mg/kg	94.9		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	B073650-BS1	LCS	0.050990	0.050000	mg/kg	102		70 - 121		
Toluene-d8 (Surrogate)	B073650-BS1	LCS	0.049600	0.050000	mg/kg	99.2		81 - 117		
4-Bromofluorobenzene (Surrogate)	B073650-BS1	LCS	0.049460	0.050000	mg/kg	98.9		74 - 121		

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Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073650	Used client sample: N										
Benzene	MS	2005481-75	ND	0.14024	0.12500	mg/kg		112		70 - 130	
	MSD	2005481-75	ND	0.14128	0.12500	mg/kg	0.7	113	20	70 - 130	
Bromodichloromethane	MS	2005481-75	ND	0.13293	0.12500	mg/kg		106		70 - 130	
	MSD	2005481-75	ND	0.13894	0.12500	mg/kg	4.4	111	20	70 - 130	
Chlorobenzene	MS	2005481-75	ND	0.12958	0.12500	mg/kg		104		70 - 130	
	MSD	2005481-75	ND	0.13092	0.12500	mg/kg	1.0	105	20	70 - 130	
Chloroethane	MS	2005481-75	ND	0.14217	0.12500	mg/kg		114		70 - 130	
	MSD	2005481-75	ND	0.14551	0.12500	mg/kg	2.3	116	20	70 - 130	
1,4-Dichlorobenzene	MS	2005481-75	ND	0.12745	0.12500	mg/kg		102		70 - 130	
	MSD	2005481-75	ND	0.13281	0.12500	mg/kg	4.1	106	20	70 - 130	
1,1-Dichloroethane	MS	2005481-75	ND	0.13261	0.12500	mg/kg		106		70 - 130	
	MSD	2005481-75	ND	0.13390	0.12500	mg/kg	1.0	107	20	70 - 130	
1,1-Dichloroethene	MS	2005481-75	ND	0.12705	0.12500	mg/kg		102		70 - 130	
	MSD	2005481-75	ND	0.12662	0.12500	mg/kg	0.3	101	20	70 - 130	
Toluene	MS	2005481-75	ND	0.13133	0.12500	mg/kg		105		70 - 130	
	MSD	2005481-75	ND	0.13663	0.12500	mg/kg	4.0	109	20	70 - 130	
Trichloroethene	MS	2005481-75	ND	0.12834	0.12500	mg/kg		103		70 - 130	
	MSD	2005481-75	ND	0.13360	0.12500	mg/kg	4.0	107	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	2005481-75	ND	0.052410	0.050000	mg/kg		105		70 - 121	
	MSD	2005481-75	ND	0.053610	0.050000	mg/kg	2.3	107		70 - 121	
Toluene-d8 (Surrogate)	MS	2005481-75	ND	0.049870	0.050000	mg/kg		99.7		81 - 117	
	MSD	2005481-75	ND	0.050350	0.050000	mg/kg	1.0	101		81 - 117	
4-Bromofluorobenzene (Surrogate)	MS	2005481-75	ND	0.047590	0.050000	mg/kg		95.2		74 - 121	
	MSD	2005481-75	ND	0.048740	0.050000	mg/kg	2.4	97.5		74 - 121	

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073980						
Acenaphthene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Acenaphthylene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Aldrin	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Aniline	B073980-BLK1	ND	mg/kg	0.20	0.011	
Anthracene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Benzidine	B073980-BLK1	ND	mg/kg	3.0	0.0093	
Benzo[a]anthracene	B073980-BLK1	ND	mg/kg	0.10	0.0077	
Benzo[b]fluoranthene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Benzo[k]fluoranthene	B073980-BLK1	ND	mg/kg	0.10	0.0082	
Benzo[a]pyrene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Benzo[g,h,i]perylene	B073980-BLK1	ND	mg/kg	0.10	0.013	
Benzoic acid	B073980-BLK1	ND	mg/kg	0.50	0.014	
Benzyl alcohol	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Benzyl butyl phthalate	B073980-BLK1	ND	mg/kg	0.10	0.0067	
alpha-BHC	B073980-BLK1	ND	mg/kg	0.10	0.0067	
beta-BHC	B073980-BLK1	ND	mg/kg	0.10	0.0075	
delta-BHC	B073980-BLK1	ND	mg/kg	0.10	0.0067	
gamma-BHC (Lindane)	B073980-BLK1	ND	mg/kg	0.10	0.0067	
bis(2-Chloroethoxy)methane	B073980-BLK1	ND	mg/kg	0.10	0.0067	
bis(2-Chloroethyl) ether	B073980-BLK1	ND	mg/kg	0.10	0.0097	
bis(2-Chloroisopropyl)ether	B073980-BLK1	ND	mg/kg	0.10	0.0067	
bis(2-Ethylhexyl)phthalate	B073980-BLK1	ND	mg/kg	0.20	0.0067	
4-Bromophenyl phenyl ether	B073980-BLK1	ND	mg/kg	0.10	0.0067	
4-Chloroaniline	B073980-BLK1	ND	mg/kg	0.10	0.015	
2-Chloronaphthalene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
4-Chlorophenyl phenyl ether	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Chrysene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
4,4'-DDD	B073980-BLK1	ND	mg/kg	0.10	0.0067	
4,4'-DDE	B073980-BLK1	ND	mg/kg	0.10	0.0068	
4,4'-DDT	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Dibenzo[a,h]anthracene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Dibenzofuran	B073980-BLK1	ND	mg/kg	0.10	0.0067	
1,2-Dichlorobenzene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
1,3-Dichlorobenzene	B073980-BLK1	ND	mg/kg	0.10	0.0067	

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073980						
1,4-Dichlorobenzene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
3,3-Dichlorobenzidine	B073980-BLK1	ND	mg/kg	0.20	0.0067	
Dieldrin	B073980-BLK1	ND	mg/kg	0.10	0.0077	
Diethyl phthalate	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Dimethyl phthalate	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Di-n-butyl phthalate	B073980-BLK1	ND	mg/kg	0.10	0.0067	
2,4-Dinitrotoluene	B073980-BLK1	ND	mg/kg	0.10	0.0085	
2,6-Dinitrotoluene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Di-n-octyl phthalate	B073980-BLK1	ND	mg/kg	0.10	0.0067	
1,2-Diphenylhydrazine	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Endosulfan I	B073980-BLK1	ND	mg/kg	0.20	0.0088	
Endosulfan II	B073980-BLK1	ND	mg/kg	0.20	0.0088	
Endosulfan sulfate	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Endrin	B073980-BLK1	ND	mg/kg	0.20	0.0086	
Endrin aldehyde	B073980-BLK1	ND	mg/kg	0.50	0.0070	
Fluoranthene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Fluorene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Heptachlor	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Heptachlor epoxide	B073980-BLK1	ND	mg/kg	0.10	0.013	
Hexachlorobenzene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Hexachlorobutadiene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Hexachlorocyclopentadiene	B073980-BLK1	ND	mg/kg	0.10	0.015	
Hexachloroethane	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Indeno[1,2,3-cd]pyrene	B073980-BLK1	ND	mg/kg	0.10	0.0069	
Isophorone	B073980-BLK1	ND	mg/kg	0.10	0.0067	
2-Methylnaphthalene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Naphthalene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
2-Naphthylamine	B073980-BLK1	ND	mg/kg	3.0	0.036	
2-Nitroaniline	B073980-BLK1	ND	mg/kg	0.10	0.0067	
3-Nitroaniline	B073980-BLK1	ND	mg/kg	0.20	0.0067	
4-Nitroaniline	B073980-BLK1	ND	mg/kg	0.20	0.011	
Nitrobenzene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
N-Nitrosodimethylamine	B073980-BLK1	ND	mg/kg	0.10	0.040	
N-Nitrosodi-N-propylamine	B073980-BLK1	ND	mg/kg	0.10	0.0067	

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073980						
N-Nitrosodiphenylamine	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Phenanthrene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
Pyrene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
1,2,4-Trichlorobenzene	B073980-BLK1	ND	mg/kg	0.10	0.0067	
4-Chloro-3-methylphenol	B073980-BLK1	ND	mg/kg	0.20	0.0067	
2-Chlorophenol	B073980-BLK1	ND	mg/kg	0.10	0.0067	
2,4-Dichlorophenol	B073980-BLK1	ND	mg/kg	0.10	0.0067	
2,4-Dimethylphenol	B073980-BLK1	ND	mg/kg	0.10	0.0067	
4,6-Dinitro-2-methylphenol	B073980-BLK1	ND	mg/kg	0.50	0.0067	
2,4-Dinitrophenol	B073980-BLK1	ND	mg/kg	0.50	0.0067	
2-Methylphenol	B073980-BLK1	ND	mg/kg	0.10	0.0067	
3- & 4-Methylphenol	B073980-BLK1	ND	mg/kg	0.20	0.014	
2-Nitrophenol	B073980-BLK1	ND	mg/kg	0.10	0.0067	
4-Nitrophenol	B073980-BLK1	ND	mg/kg	0.20	0.018	
Pentachlorophenol	B073980-BLK1	ND	mg/kg	0.20	0.017	
Phenol	B073980-BLK1	ND	mg/kg	0.10	0.0067	
2,4,5-Trichlorophenol	B073980-BLK1	ND	mg/kg	0.20	0.011	
2,4,6-Trichlorophenol	B073980-BLK1	ND	mg/kg	0.20	0.0067	
2-Fluorophenol (Surrogate)	**B073980-BLK1**	**72.5**	%	**20 - 130 (LCL - UCL)**		
Phenol-d5 (Surrogate)	**B073980-BLK1**	**74.2**	%	**30 - 130 (LCL - UCL)**		
Nitrobenzene-d5 (Surrogate)	**B073980-BLK1**	**72.3**	%	**30 - 130 (LCL - UCL)**		
2-Fluorobiphenyl (Surrogate)	**B073980-BLK1**	**81.1**	%	**30 - 140 (LCL - UCL)**		
2,4,6-Tribromophenol (Surrogate)	**B073980-BLK1**	**80.6**	%	**20 - 150 (LCL - UCL)**		
p-Terphenyl-d14 (Surrogate)	**B073980-BLK1**	**73.4**	%	**30 - 150 (LCL - UCL)**		

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B073980										
Acenaphthene	B073980-BS1	LCS	1.3213	1.6892	mg/kg	78.2		50 - 130		
1,4-Dichlorobenzene	B073980-BS1	LCS	1.5332	1.6892	mg/kg	90.8		50 - 130		
2,4-Dinitrotoluene	B073980-BS1	LCS	1.8008	1.6892	mg/kg	107		50 - 130		
Hexachlorobenzene	B073980-BS1	LCS	1.7342	1.6892	mg/kg	103		40 - 130		
Hexachlorobutadiene	B073980-BS1	LCS	1.5816	1.6892	mg/kg	93.6		50 - 130		
Hexachloroethane	B073980-BS1	LCS	1.5743	1.6892	mg/kg	93.2		50 - 130		
Nitrobenzene	B073980-BS1	LCS	1.7180	1.6892	mg/kg	102		50 - 130		
N-Nitrosodi-N-propylamine	B073980-BS1	LCS	1.3866	1.6892	mg/kg	82.1		40 - 120		
Pyrene	B073980-BS1	LCS	1.4220	1.6892	mg/kg	84.2		40 - 150		
1,2,4-Trichlorobenzene	B073980-BS1	LCS	1.7322	1.6892	mg/kg	103		50 - 120		
4-Chloro-3-methylphenol	B073980-BS1	LCS	1.5852	1.6892	mg/kg	93.8		50 - 130		
2-Chlorophenol	B073980-BS1	LCS	1.2022	1.6892	mg/kg	71.2		50 - 130		
2-Methylphenol	B073980-BS1	LCS	1.3905	1.6892	mg/kg	82.3		50 - 130		
3- & 4-Methylphenol	B073980-BS1	LCS	2.8079	3.3784	mg/kg	83.1		50 - 130		
4-Nitrophenol	B073980-BS1	LCS	1.3452	1.6892	mg/kg	79.6		30 - 130		
Pentachlorophenol	B073980-BS1	LCS	0.96676	1.6892	mg/kg	57.2		20 - 130		
Phenol	B073980-BS1	LCS	1.2647	1.6892	mg/kg	74.9		40 - 120		
2,4,6-Trichlorophenol	B073980-BS1	LCS	1.4713	1.6892	mg/kg	87.1		50 - 130		
2-Fluorophenol (Surrogate)	B073980-BS1	LCS	1.0220	1.3514	mg/kg	75.6		20 - 130		
Phenol-d5 (Surrogate)	B073980-BS1	LCS	1.0982	1.3514	mg/kg	81.3		30 - 130		
Nitrobenzene-d5 (Surrogate)	B073980-BS1	LCS	1.0843	1.3514	mg/kg	80.2		30 - 130		
2-Fluorobiphenyl (Surrogate)	B073980-BS1	LCS	1.1969	1.3514	mg/kg	88.6		30 - 140		
2,4,6-Tribromophenol (Surrogate)	B073980-BS1	LCS	1.0916	1.3514	mg/kg	80.8		20 - 150		
p-Terphenyl-d14 (Surrogate)	B073980-BS1	LCS	0.52675	0.67568	mg/kg	78.0		30 - 150		

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073980	Used client sample: N										
Acenaphthene	MS	2008659-01	ND	0.80252	1.6611	mg/kg		48.3		30 - 140	J,A01
	MSD	2008659-01	ND	0.55667	1.6667	mg/kg	36.2	33.4	30	30 - 140	J,A01, Q02
1,4-Dichlorobenzene	MS	2008659-01	ND	0.74990	1.6611	mg/kg		45.1		50 - 130	J,A01, Q03
	MSD	2008659-01	ND	0.44333	1.6667	mg/kg	51.4	26.6	30	50 - 130	J,A01, Q02,Q 03
2,4-Dinitrotoluene	MS	2008659-01	ND	0.61505	1.6611	mg/kg		37.0		50 - 130	J,A01, Q03
	MSD	2008659-01	ND	0.42667	1.6667	mg/kg	36.2	25.6	30	50 - 130	J,A01, Q02,Q 03
Hexachlorobenzene	MS	2008659-01	ND	0.97027	1.6611	mg/kg		58.4		50 - 130	J,A01
	MSD	2008659-01	ND	0.82000	1.6667	mg/kg	16.8	49.2	30	50 - 130	J,A01, Q03
Hexachlorobutadiene	MS	2008659-01	ND	0.87159	1.6611	mg/kg		52.5		50 - 130	J,A01
	MSD	2008659-01	ND	0.68667	1.6667	mg/kg	23.7	41.2	30	50 - 130	J,A01, Q03
Hexachloroethane	MS	2008659-01	ND	0.66767	1.6611	mg/kg		40.2		50 - 130	J,A01, Q03
	MSD	2008659-01	ND	0.38000	1.6667	mg/kg	54.9	22.8	30	50 - 130	J,A01, Q02,Q 03
Nitrobenzene	MS	2008659-01	ND	0.89462	1.6611	mg/kg		53.9		30 - 120	J,A01
	MSD	2008659-01	ND	0.56000	1.6667	mg/kg	46.0	33.6	30	30 - 120	J,A01, Q02
N-Nitrosodi-N-propylamine	MS	2008659-01	ND	0.81239	1.6611	mg/kg		48.9		20 - 130	J,A01
	MSD	2008659-01	ND	0.46333	1.6667	mg/kg	54.7	27.8	30	20 - 130	J,A01, Q02
Pyrene	MS	2008659-01	ND	ND	1.6611	mg/kg		0		40 - 140	A01,Q 03
	MSD	2008659-01	ND	ND	1.6667	mg/kg		0	30	40 - 140	A01,Q 03
1,2,4-Trichlorobenzene	MS	2008659-01	ND	0.84199	1.6611	mg/kg		50.7		50 - 130	J,A01
	MSD	2008659-01	ND	0.52667	1.6667	mg/kg	46.1	31.6	30	50 - 130	J,A01, Q02,Q 03
4-Chloro-3-methylphenol	MS	2008659-01	ND	0.79595	1.6611	mg/kg		47.9		50 - 130	J,A01, Q03
	MSD	2008659-01	ND	0.52333	1.6667	mg/kg	41.3	31.4	30	50 - 130	J,A01, Q02,Q 03

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Base Neutral and Acid Extractables Organic Analysis (EPA Method 8270C)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073980	Used client sample: N										
2-Chlorophenol	MS	**2008659-01**	**ND**	**0.67425**	**1.6611**	**mg/kg**		**40.6**		**50 - 130**	**J,A01, Q03**
	MSD	**2008659-01**	**ND**	**0.45333**	**1.6667**	**mg/kg**	**39.2**	**27.2**	**30**	**50 - 130**	**J,A01, Q02,Q 03**
2-Methylphenol	MS	**2008659-01**	**ND**	**0.79266**	**1.6611**	**mg/kg**		**47.7**		**50 - 130**	**J,A01, Q03**
	MSD	**2008659-01**	**ND**	**0.58000**	**1.6667**	**mg/kg**	**31.0**	**34.8**	**30**	**50 - 130**	**J,A01, Q02,Q 03**
3- & 4-Methylphenol	MS	**2008659-01**	**ND**	**1.7202**	**3.3223**	**mg/kg**		**51.8**		**50 - 130**	**J,A01**
	MSD	**2008659-01**	**ND**	**1.2100**	**3.3333**	**mg/kg**	**34.8**	**36.3**	**30**	**50 - 130**	**J,A01, Q02,Q 03**
4-Nitrophenol	MS	2008659-01	ND	1.8320	1.6611	mg/kg		110		30 - 140	J,A01
	MSD	2008659-01	ND	1.7467	1.6667	mg/kg	4.8	105	30	30 - 140	J,A01
Pentachlorophenol	MS	2008659-01	ND	1.1577	1.6611	mg/kg		69.7		30 - 130	J,A01
	MSD	2008659-01	ND	1.0533	1.6667	mg/kg	9.4	63.2	30	30 - 130	J,A01
Phenol	MS	**2008659-01**	**ND**	**0.75977**	**1.6611**	**mg/kg**		**45.7**		**40 - 150**	**J,A01**
	MSD	**2008659-01**	**ND**	**0.55667**	**1.6667**	**mg/kg**	**30.9**	**33.4**	**30**	**40 - 150**	**J,A01, Q02,Q 03**
2,4,6-Trichlorophenol	MS	**2008659-01**	**ND**	**0.78608**	**1.6611**	**mg/kg**		**47.3**		**50 - 130**	**J,A01, Q03**
	MSD	**2008659-01**	**ND**	**0.50667**	**1.6667**	**mg/kg**	**43.2**	**30.4**	**30**	**50 - 130**	**J,A01, Q02,Q 03**
2-Fluorophenol (Surrogate)	MS	2008659-01	ND	0.56900	1.3289	mg/kg		42.8		20 - 130	A01
	MSD	2008659-01	ND	0.48333	1.3333	mg/kg	16.3	36.3		20 - 130	A01
Phenol-d5 (Surrogate)	MS	2008659-01	ND	0.56900	1.3289	mg/kg		42.8		30 - 130	A01
	MSD	2008659-01	ND	0.50000	1.3333	mg/kg	12.9	37.5		30 - 130	A01
Nitrobenzene-d5 (Surrogate)	MS	**2008659-01**	**ND**	**0.50980**	**1.3289**	**mg/kg**		**38.4**		**30 - 130**	**A01**
	MSD	**2008659-01**	**ND**	**0.37000**	**1.3333**	**mg/kg**	**31.8**	**27.8**		**30 - 130**	**A01,S 09**
2-Fluorobiphenyl (Surrogate)	MS	**2008659-01**	**ND**	**0**	**1.3289**	**mg/kg**		**0**		**30 - 140**	**A01,S 09**
	MSD	**2008659-01**	**ND**	**0**	**1.3333**	**mg/kg**		**0**		**30 - 140**	**A01,S 09**
2,4,6-Tribromophenol (Surrogate)	MS	2008659-01	ND	0.40126	1.3289	mg/kg		30.2		20 - 150	A01
	MSD	2008659-01	ND	0.30667	1.3333	mg/kg	26.7	23.0		20 - 150	A01
p-Terphenyl-d14 (Surrogate)	MS	2008659-01	ND	0.30259	0.66445	mg/kg		45.5		30 - 150	A01
	MSD	2008659-01	ND	0.31333	0.66667	mg/kg	3.5	47.0		30 - 150	A01

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EPA Method 1664

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B074123						
Oil and Grease	B074123-BLK1	ND	mg/kg	50	16	

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EPA Method 1664

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B074123										
Oil and Grease	B074123-BS1	LCS	760.56	788.73	mg/kg	96.4		70 - 130		

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EPA Method 1664

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B074123	Used client sample: N										
Oil and Grease	DUP	2009043-05	ND	ND		mg/kg			30		
	MS	2009043-05	ND	739.52	782.44	mg/kg		94.5		70 - 130	
	MSD	2009043-05	ND	793.59	785.57	mg/kg	7.1	101	30	70 - 130	

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Chemical Analysis

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B^C0235						
Total Nitrogen	B^C0235-BLK1	ND	mg/kg	60	20	
QC Batch ID: B073888						
Total Kjeldahl Nitrogen	B073888-BLK1	ND	mg/kg	40	13	
QC Batch ID: B073889						
Total Phosphorus	B073889-BLK1	ND	mg/kg	10	3.2	
QC Batch ID: B074450						
Nitrate as N	B074450-BLK1	ND	mg/kg	1.0	0.26	

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Chemical Analysis

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B073888										
Total Kjeldahl Nitrogen	B073888-BS1	LCS	408.46	400.00	mg/kg	102		90 - 110		
QC Batch ID: B073889										
Total Phosphorus	B073889-BS1	LCS	204.20	200.00	mg/kg	102		85 - 115		
QC Batch ID: B074450										
Nitrate as N	B074450-BS1	LCS	5.1350	5.0000	mg/kg	103		90 - 110		

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Chemical Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073888	Used client sample: Y - Description: 2-0.5, 03/20/2020 08:05										
Total Kjeldahl Nitrogen	DUP	**2008795-01**	**196.98**	**200.70**		**mg/kg**	**1.9**		**20**		
	MS	**2008795-01**	**196.98**	**648.14**	**400.00**	**mg/kg**		**113**		**90 - 110**	**Q03**
	MSD	**2008795-01**	**196.98**	**652.84**	**400.00**	**mg/kg**	**0.7**	**114**	**20**	**90 - 110**	**Q03**
QC Batch ID: B073889	Used client sample: Y - Description: 2-0.5, 03/20/2020 08:05										
Total Phosphorus	DUP	**2008795-01**	**230.50**	**229.00**		**mg/kg**	**0.7**		**20**		
	MS	**2008795-01**	**230.50**	**496.50**	**200.00**	**mg/kg**		**133**		**80 - 120**	**Q03**
	MSD	**2008795-01**	**230.50**	**488.30**	**200.00**	**mg/kg**	**1.7**	**129**	**20**	**80 - 120**	**Q03**
QC Batch ID: B074450	Used client sample: Y - Description: 2-0.5, 03/20/2020 08:05										
Nitrate as N	DUP	2008795-01	1.7600	1.7000		mg/kg	3.5		20		
	MS	2008795-01	1.7600	53.303	50.505	mg/kg		102		80 - 120	
	MSD	2008795-01	1.7600	53.263	50.505	mg/kg	0.1	102	20	80 - 120	

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Total Concentrations (TTLC)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B073841						
Antimony	B073841-BLK3	ND	mg/kg	0.50	0.080	
Arsenic	B073841-BLK1	ND	mg/kg	0.50	0.17	
Barium	B073841-BLK2	ND	mg/kg	0.25	0.054	
Beryllium	B073841-BLK1	ND	mg/kg	0.25	0.041	
Cadmium	B073841-BLK2	ND	mg/kg	0.25	0.048	
Chromium	B073841-BLK1	ND	mg/kg	0.75	0.25	
Cobalt	B073841-BLK1	ND	mg/kg	0.25	0.049	
Copper	B073841-BLK1	ND	mg/kg	0.50	0.099	
Lead	B073841-BLK1	ND	mg/kg	0.25	0.12	
Molybdenum	B073841-BLK2	ND	mg/kg	0.25	0.045	
Nickel	B073841-BLK1	ND	mg/kg	0.50	0.11	
Selenium	B073841-BLK1	ND	mg/kg	0.50	0.11	
Silver	B073841-BLK1	ND	mg/kg	0.25	0.051	
Thallium	B073841-BLK1	ND	mg/kg	0.25	0.049	
Vanadium	B073841-BLK1	ND	mg/kg	0.75	0.27	
Zinc	**B073841-BLK2**	**0.77800**	**mg/kg**	**2.5**	**0.50**	**J**
QC Batch ID: B073913						
Mercury	**B073913-BLK1**	**0.036800**	**mg/kg**	**0.16**	**0.016**	**J**
QC Batch ID: B073934						
Iron	**B073934-BLK2**	**1.8413**	**mg/kg**	**5.0**	**1.7**	**J**
Magnesium	B073934-BLK1	ND	mg/kg	2.5	1.3	

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Total Concentrations (TTLC)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B073841										
Antimony	B073841-BS3	LCS	10.577	10.000	mg/kg	106		75 - 125		
Arsenic	B073841-BS1	LCS	24.077	25.000	mg/kg	96.3		75 - 125		
Barium	B073841-BS2	LCS	11.200	10.000	mg/kg	112		75 - 125		
Beryllium	B073841-BS1	LCS	10.250	10.000	mg/kg	102		75 - 125		
Cadmium	B073841-BS2	LCS	11.442	10.000	mg/kg	114		75 - 125		
Chromium	B073841-BS1	LCS	10.004	10.000	mg/kg	100		75 - 125		
Cobalt	B073841-BS1	LCS	9.8525	10.000	mg/kg	98.5		75 - 125		
Copper	B073841-BS1	LCS	25.375	25.000	mg/kg	101		75 - 125		
Lead	B073841-BS1	LCS	26.415	25.000	mg/kg	106		75 - 125		
Molybdenum	B073841-BS2	LCS	10.532	10.000	mg/kg	105		75 - 125		
Nickel	B073841-BS1	LCS	24.821	25.000	mg/kg	99.3		75 - 125		
Selenium	B073841-BS1	LCS	25.011	25.000	mg/kg	100		75 - 125		
Silver	B073841-BS1	LCS	9.9592	10.000	mg/kg	99.6		75 - 125		
Thallium	B073841-BS1	LCS	10.391	10.000	mg/kg	104		75 - 125		
Vanadium	B073841-BS1	LCS	9.9022	10.000	mg/kg	99.0		75 - 125		
Zinc	B073841-BS2	LCS	30.289	25.000	mg/kg	121		75 - 125		
QC Batch ID: B073913										
Mercury	B073913-BS1	LCS	0.92320	0.80000	mg/kg	115		80 - 120		
QC Batch ID: B073934										
Iron	B073934-BS2	LCS	516.23	500.00	mg/kg	103		75 - 125		
Magnesium	B073934-BS1	LCS	593.23	500.00	mg/kg	119		75 - 125		

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Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073841	Used client sample: Y - Description: 2-0.5, 03/20/2020 08:05										
Antimony	DUP	2008795-01	ND	ND		mg/kg			20		
	MS	2008795-01	ND	2.3330	10.000	mg/kg		23.3		16 - 119	
	MSD	2008795-01	ND	2.4115	10.000	mg/kg	3.3	24.1	20	16 - 119	
Arsenic	DUP	2008795-01	0.59100	0.70400		mg/kg	17.5		20		
	MS	2008795-01	0.59100	24.426	25.000	mg/kg		95.3		75 - 125	
	MSD	2008795-01	0.59100	24.294	25.000	mg/kg	0.5	94.8	20	75 - 125	
Barium	DUP	**2008795-01**	**44.309**	**44.515**		**mg/kg**	**0.5**		**20**		
	MS	**2008795-01**	**44.309**	**60.419**	**10.000**	**mg/kg**		**161**		**75 - 125**	**A03**
	MSD	**2008795-01**	**44.309**	**59.471**	**10.000**	**mg/kg**	**1.6**	**152**	**20**	**75 - 125**	**A03**
Beryllium	DUP	2008795-01	0.065750	0.062250		mg/kg	5.5		20		J
	MS	2008795-01	0.065750	9.7158	10.000	mg/kg		96.5		75 - 125	
	MSD	2008795-01	0.065750	9.6055	10.000	mg/kg	1.1	95.4	20	75 - 125	
Cadmium	DUP	2008795-01	ND	ND		mg/kg			20		
	MS	2008795-01	ND	11.388	10.000	mg/kg		114		75 - 125	
	MSD	2008795-01	ND	11.936	10.000	mg/kg	4.7	119	20	75 - 125	
Chromium	DUP	2008795-01	8.2598	7.5692		mg/kg	8.7		20		
	MS	2008795-01	8.2598	17.439	10.000	mg/kg		91.8		75 - 125	
	MSD	2008795-01	8.2598	18.100	10.000	mg/kg	3.7	98.4	20	75 - 125	
Cobalt	DUP	2008795-01	3.2278	3.2250		mg/kg	0.1		20		
	MS	2008795-01	3.2278	12.140	10.000	mg/kg		89.1		75 - 125	
	MSD	2008795-01	3.2278	12.358	10.000	mg/kg	1.8	91.3	20	75 - 125	
Copper	DUP	2008795-01	7.3202	7.1210		mg/kg	2.8		20		
	MS	2008795-01	7.3202	31.115	25.000	mg/kg		95.2		75 - 125	
	MSD	2008795-01	7.3202	30.364	25.000	mg/kg	2.4	92.2	20	75 - 125	
Lead	DUP	2008795-01	1.7375	1.6540		mg/kg	4.9		20		
	MS	2008795-01	1.7375	25.774	25.000	mg/kg		96.1		75 - 125	
	MSD	2008795-01	1.7375	25.681	25.000	mg/kg	0.4	95.8	20	75 - 125	
Molybdenum	DUP	2008795-01	0.13175	0.13900		mg/kg	5.4		20		J
	MS	2008795-01	0.13175	10.192	10.000	mg/kg		101		75 - 125	
	MSD	2008795-01	0.13175	10.623	10.000	mg/kg	4.1	105	20	75 - 125	
Nickel	DUP	2008795-01	3.1950	3.0865		mg/kg	3.5		20		
	MS	2008795-01	3.1950	25.744	25.000	mg/kg		90.2		75 - 125	
	MSD	2008795-01	3.1950	26.028	25.000	mg/kg	1.1	91.3	20	75 - 125	
Selenium	DUP	2008795-01	ND	ND		mg/kg			20		
	MS	2008795-01	ND	24.964	25.000	mg/kg		99.9		75 - 125	
	MSD	2008795-01	ND	25.047	25.000	mg/kg	0.3	100	20	75 - 125	
Silver	DUP	2008795-01	ND	ND		mg/kg			20		
	MS	2008795-01	ND	9.5780	10.000	mg/kg		95.8		75 - 125	
	MSD	2008795-01	ND	9.6580	10.000	mg/kg	0.8	96.6	20	75 - 125	

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Total Concentrations (TTLC)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B073841	Used client sample: Y - Description: 2-0.5, 03/20/2020 08:05										
Thallium	DUP	2008795-01	0.077750	0.071000		mg/kg	9.1		20		J
	MS	2008795-01	0.077750	9.7742	10.000	mg/kg		97.0		75 - 125	
	MSD	2008795-01	0.077750	9.6398	10.000	mg/kg	1.4	95.6	20	75 - 125	
Vanadium	DUP	2008795-01	28.955	29.455		mg/kg	1.7		20		
	MS	2008795-01	28.955	39.797	10.000	mg/kg		108		75 - 125	
	MSD	2008795-01	28.955	39.756	10.000	mg/kg	0.1	108	20	75 - 125	
Zinc	DUP	2008795-01	18.231	18.728		mg/kg	2.7		20		
	MS	2008795-01	18.231	47.869	25.000	mg/kg		119		75 - 125	
	MSD	2008795-01	18.231	48.966	25.000	mg/kg	2.3	123	20	75 - 125	
QC Batch ID: B073913	Used client sample: N										
Mercury	DUP	**2008685-01**	**0.020000**	**0.028361**		**mg/kg**	**34.6**		**20**		**J,A02**
	MS	**2008685-01**	**0.020000**	**0.80000**	**0.81967**	**mg/kg**		**95.2**		**80 - 120**	
	MSD	**2008685-01**	**0.020000**	**0.85902**	**0.81967**	**mg/kg**	**7.1**	**102**	**20**	**80 - 120**	
QC Batch ID: B073934	Used client sample: Y - Description: 2-0.5, 03/20/2020 08:05										
Iron	DUP	**2008795-01**	**10432**	**11023**		**mg/kg**	**5.5**		**20**		
	MS	**2008795-01**	**10432**	**11697**	**500.00**	**mg/kg**		**253**		**75 - 125**	**A03**
	MSD	**2008795-01**	**10432**	**11445**	**500.00**	**mg/kg**	**2.2**	**202**	**20**	**75 - 125**	**A03**
Magnesium	DUP	**2008795-01**	**1997.0**	**1942.1**		**mg/kg**	**2.8**		**20**		
	MS	**2008795-01**	**1997.0**	**2700.1**	**500.00**	**mg/kg**		**141**		**75 - 125**	**Q03**
	MSD	**2008795-01**	**1997.0**	**2795.9**	**500.00**	**mg/kg**	**3.5**	**160**	**20**	**75 - 125**	**Q03**

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ANALYTICAL REPORT

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Tel: (714)895-5494

Laboratory Job ID: 570-24361-1
Client Project/Site: 2008795

For:
BC Laboratories
4100 Atlas Court
Bakersfield, California 93308

Attn: Natalie Serda

Authorized for release by:
4/17/2020 2:03:53 PM

Terri Chang, Project Manager I
(714)895-5494
terrichang@eurofinsus.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: BC Laboratories
Project/Site: 2008795

Laboratory Job ID: 570-24361-1

Table of Contents

Eurofins Calscience LLC
4/17/2020

Definitions/Glossary

Client: BC Laboratories
Project/Site: 2008795

Job ID: 570-24361-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Eurofins Calscience LLC

Detection Summary

Client: BC Laboratories
Project/Site: 2008795

Job ID: 570-24361-1

Client Sample ID: 2008795-01 — Lab Sample ID: 570-24361-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon, Total Organic	520		500	mg/Kg	1		9060A	Total/NA

Client Sample ID: 2008795-02 — Lab Sample ID: 570-24361-2

No Detections.

Client Sample ID: 2008795-03 — Lab Sample ID: 570-24361-3

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Carbon, Total Organic	770		500	mg/Kg	1		9060A	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Calscience LLC

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Client Sample Results

Client: BC Laboratories
Project/Site: 2008795

Job ID: 570-24361-1

General Chemistry

Client Sample ID: 2008795-01
Date Collected: 03/20/20 08:05
Date Received: 03/26/20 10:30

Lab Sample ID: 570-24361-1
Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	520		500	mg/Kg			04/14/20 09:49	1

Client Sample ID: 2008795-02
Date Collected: 03/20/20 08:10
Date Received: 03/26/20 10:30

Lab Sample ID: 570-24361-2
Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	ND		500	mg/Kg			04/14/20 09:49	1

Client Sample ID: 2008795-03
Date Collected: 03/20/20 08:20
Date Received: 03/26/20 10:30

Lab Sample ID: 570-24361-3
Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	770		500	mg/Kg			04/14/20 09:49	1

Eurofins Calscience LLC

QC Sample Results

Client: BC Laboratories
Project/Site: 2008795

Job ID: 570-24361-1

Method: 9060A - Organic Carbon, Total (TOC)

Lab Sample ID: MB 570-63307/4
Matrix: Solid
Analysis Batch: 63307

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Carbon, Total Organic	ND		500	mg/Kg			04/14/20 09:49	1

Lab Sample ID: LCS 570-63307/5
Matrix: Solid
Analysis Batch: 63307

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	29900	25650		mg/Kg		86	80 - 120

Lab Sample ID: LCSD 570-63307/6
Matrix: Solid
Analysis Batch: 63307

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	30000	28490		mg/Kg		95	80 - 120	10	20

Lab Sample ID: 570-24722-A-1-B MS
Matrix: Solid
Analysis Batch: 63307

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Carbon, Total Organic	5750		29700	33400		mg/Kg		93	75 - 125

Lab Sample ID: 570-24722-A-1-C MSD
Matrix: Solid
Analysis Batch: 63307

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Carbon, Total Organic	5750		29100	30420		mg/Kg		85	75 - 125	9	25

Method: Moisture - Percent Moisture

Lab Sample ID: 570-24316-A-1 DU
Matrix: Solid
Analysis Batch: 60128

Client Sample ID: Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Percent Moisture	46.6		46.2		%		0.8	10

Eurofins Calscience LLC

QC Association Summary

Client: BC Laboratories
Project/Site: 2008795

Job ID: 570-24361-1

General Chemistry

Analysis Batch: 60128

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-24316-A-1 DU	Duplicate	Total/NA	Solid	Moisture	

Cleanup Batch: 61011

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-24722-A-1-B MS	Matrix Spike	Total/NA	Solid	Homogenize Prep	
570-24722-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	Homogenize Prep	

Analysis Batch: 63307

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
570-24361-1	2008795-01	Total/NA	Solid	9060A	
570-24361-2	2008795-02	Total/NA	Solid	9060A	
570-24361-3	2008795-03	Total/NA	Solid	9060A	
MB 570-63307/4	Method Blank	Total/NA	Solid	9060A	
LCS 570-63307/5	Lab Control Sample	Total/NA	Solid	9060A	
LCSD 570-63307/6	Lab Control Sample Dup	Total/NA	Solid	9060A	
570-24722-A-1-B MS	Matrix Spike	Total/NA	Solid	9060A	61011
570-24722-A-1-C MSD	Matrix Spike Duplicate	Total/NA	Solid	9060A	61011

Eurofins Calscience LLC

Lab Chronicle

Client: BC Laboratories
Project/Site: 2008795

Job ID: 570-24361-1

Client Sample ID: 2008795-01

Lab Sample ID: 570-24361-1
Matrix: Solid
Date Collected: 03/20/20 08:05
Date Received: 03/26/20 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	206.0 mg	206.0 mg	63307	04/14/20 09:49	CY2M	ECL 1
	Instrument ID: TOC10									

Client Sample ID: 2008795-02

Lab Sample ID: 570-24361-2
Matrix: Solid
Date Collected: 03/20/20 08:10
Date Received: 03/26/20 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	206.3 mg	206.3 mg	63307	04/14/20 09:49	CY2M	ECL 1
	Instrument ID: TOC10									

Client Sample ID: 2008795-03

Lab Sample ID: 570-24361-3
Matrix: Solid
Date Collected: 03/20/20 08:20
Date Received: 03/26/20 10:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9060A		1	205.9 mg	205.9 mg	63307	04/14/20 09:49	CY2M	ECL 1
	Instrument ID: TOC10									

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Eurofins Calscience LLC

Accreditation/Certification Summary

Client: BC Laboratories
Project/Site: 2008795

Job ID: 570-24361-1

Laboratory: Eurofins Calscience LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	Los Angeles County Sanitation Districts	10109	09-29-20
California	SCAQMD LAP	17LA0919	11-30-20
California	State	2944	09-29-20
Guam	State	20-003R	10-31-20
Nevada	State	CA00111	07-31-20
Oregon	NELAP	CA300001	01-29-21
USDA	US Federal Programs	P330-20-00034	02-10-23
Washington	State	C916-18	10-11-20

Eurofins Calscience LLC

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Method Summary

Client: BC Laboratories
Project/Site: 2008795

Job ID: 570-24361-1

Method	Method Description	Protocol	Laboratory
9060A	Organic Carbon, Total (TOC)	SW846	ECL 1
Moisture	Percent Moisture	EPA	ECL 2

Protocol References:

EPA = US Environmental Protection Agency

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

Laboratory References:

ECL 1 = Eurofins Calscience LLC Lincoln, 7440 Lincoln Way, Garden Grove, CA 92841, TEL (714)895-5494

ECL 2 = Eurofins Calscience LLC Lampson, 7445 Lampson Ave, Garden Grove, CA 92841, TEL (714)895-5494

Eurofins Calscience LLC

Sample Summary

Client: BC Laboratories
Project/Site: 2008795

Job ID: 570-24361-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
570-24361-1	2008795-01	Solid	03/20/20 08:05	03/26/20 10:30	
570-24361-2	2008795-02	Solid	03/20/20 08:10	03/26/20 10:30	
570-24361-3	2008795-03	Solid	03/20/20 08:20	03/26/20 10:30	

Eurofins Calscience LLC

24361

SUBCONTRACT ORDER

BC Laboratories

2008795

SENDING LABORATORY:

BC Laboratories
4100 Atlas Ct
Bakersfield, CA 93308
Phone: 661-327-4911
Fax: 661-327-1918
Project Manager: Natalie Serda

RECEIVING LABORATORY:

Eurofins Calscience- Garden Grove $CLSCC-EINV
7440 Lincoln Way
Garden Grove, CA 92841-1427
Phone :(714) 895-5494
Fax: (714) 894-7501

570-24361 Chain of Custody

Natalie.Serda@bclabs.com

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: 2008795-01	**Solids**	**Sampled:03/20/20 08:05**	1	
oi9060s TOC CLSCC	04/06/20 17:00	04/17/20 08:05		
Containers Supplied:				
Ja ✓				
Sample ID: 2008795-02	**Solids**	**Sampled:03/20/20 08:10**	2	
oi9060s TOC CLSCC	04/06/20 17:00	04/17/20 08:10		
Containers Supplied:				
Sample ID: 2008795-03	**Solids**	**Sampled:03/20/20 08:20**	3	
oi9060s TOC CLSCC	04/06/20 17:00	04/17/20 08:20		
Containers Supplied:				

2nd 3/25/20		[illegible] EC 3/26/20 10:30	
Released By	Date	Received By	Date
Released By	Date	Received By	Date
		3-8/2-9 SG	

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Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

Chain of Custody Record

eurofins Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Chang, Terri	Carrier Tracking No(s):	COC No: 570-28384.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: terrichang@eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Env LLC		Accreditations Required (See note):		Job #: 570-24361-1
Address: 2425 New Holland Pike,	Due Date Requested: 4/15/2020			
City: Lancaster	TAT Requested (days):			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #: 570-24361			
Email:	WO #:			
Project Name: 2008795	Project #: 570-24361			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA
M - Hexane; N - None; O - AsNaO2; P - Na2O4S; Q - Na2SO3; R - Na2S2O3; S - H2SO4; T - TSP Dodecahydrate; U - Acetone; V - MCAA; W - pH 4-5; Z - other (specify)
Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Organic Carbon	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
2008795-01 (570-24361-1)	3/20/20	08:05 Pacific		Solid			X	1	Please watch Holding Time!
2008795-02 (570-24361-2)	3/20/20	08:10 Pacific		Solid			X	1	Please watch Holding Time!
2008795-03 (570-24361-3)	3/20/20	08:20 Pacific		Solid			X	1	Please watch Holding Time!

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For ______ Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2
Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	04/08/2020 1630	ECI			

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

1 2 3 4 5 6 7 8 9 10 11 12 13

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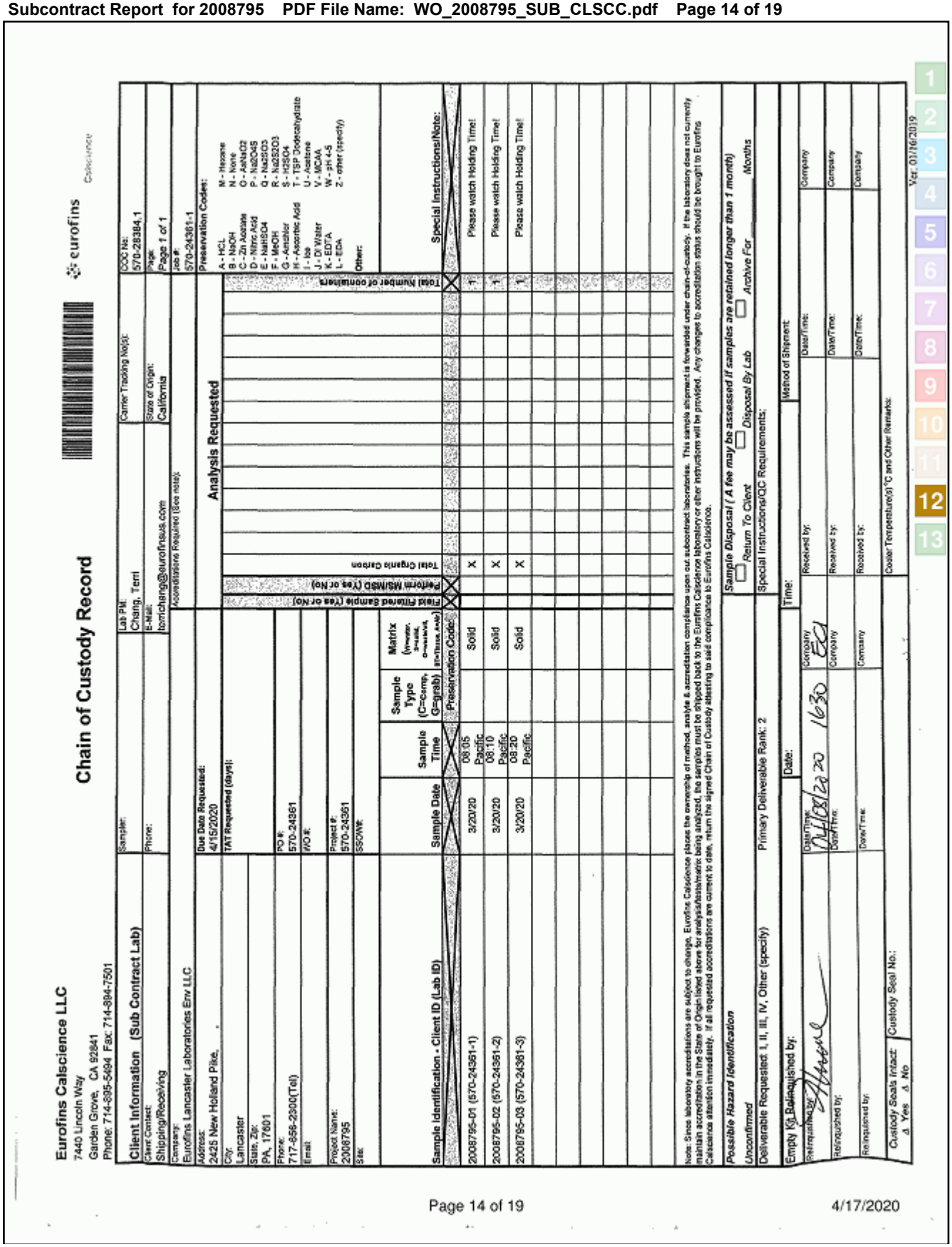

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

Chain of Custody Record

eurofins Calscience

Client Information (Sub Contract Lab)
Client Contact: Shipping/Receiving
Company: Eurofins Lancaster Laboratories Env LLC
Address: 2425 New Holland Pike,
City: Lancaster
State, Zip: PA, 17601
Phone: 717-656-2300(Tel)
Email:
Project Name: 2008795
Site:

Sampler:
Phone:
PO #: 570-24361
WO #:
Project #: 570-24361
SSOW#:

Lab PM: Chang, Terri
E-Mail: tomchang@eurofinsus.com
Due Date Requested: 4/15/2020
TAT Requested (days):
Accreditations Required (See note):

Carrier Tracking No(s):
State of Origin: California
COC No: 570-28384.1
Page: Page 1 of 1
Job #: 570-24361-1

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify), Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (w=water, s=solid, o=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Organic Carbon	Total Number of containers	Special Instructions/Note:
		Preservation Code:							
2008795-01 (570-24361-1)	3/20/20	08:05 Pacific	Solid			X		1	Please watch Holding Time!
2008795-02 (570-24361-2)	3/20/20	08:10 Pacific	Solid			X		1	Please watch Holding Time!
2008795-03 (570-24361-3)	3/20/20	08:20 Pacific	Solid			X		1	Please watch Holding Time!

Note: Since laboratory accreditations are subject to change, Eurofins Calscience places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Calscience laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Calscience attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Calscience.

Possible Hazard Identification
Unconfirmed
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For Months
Special Instructions/QC Requirements:

Empty Kit Relinquished by:
Date: Time: Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☐ Yes ☐ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 03/16/2019

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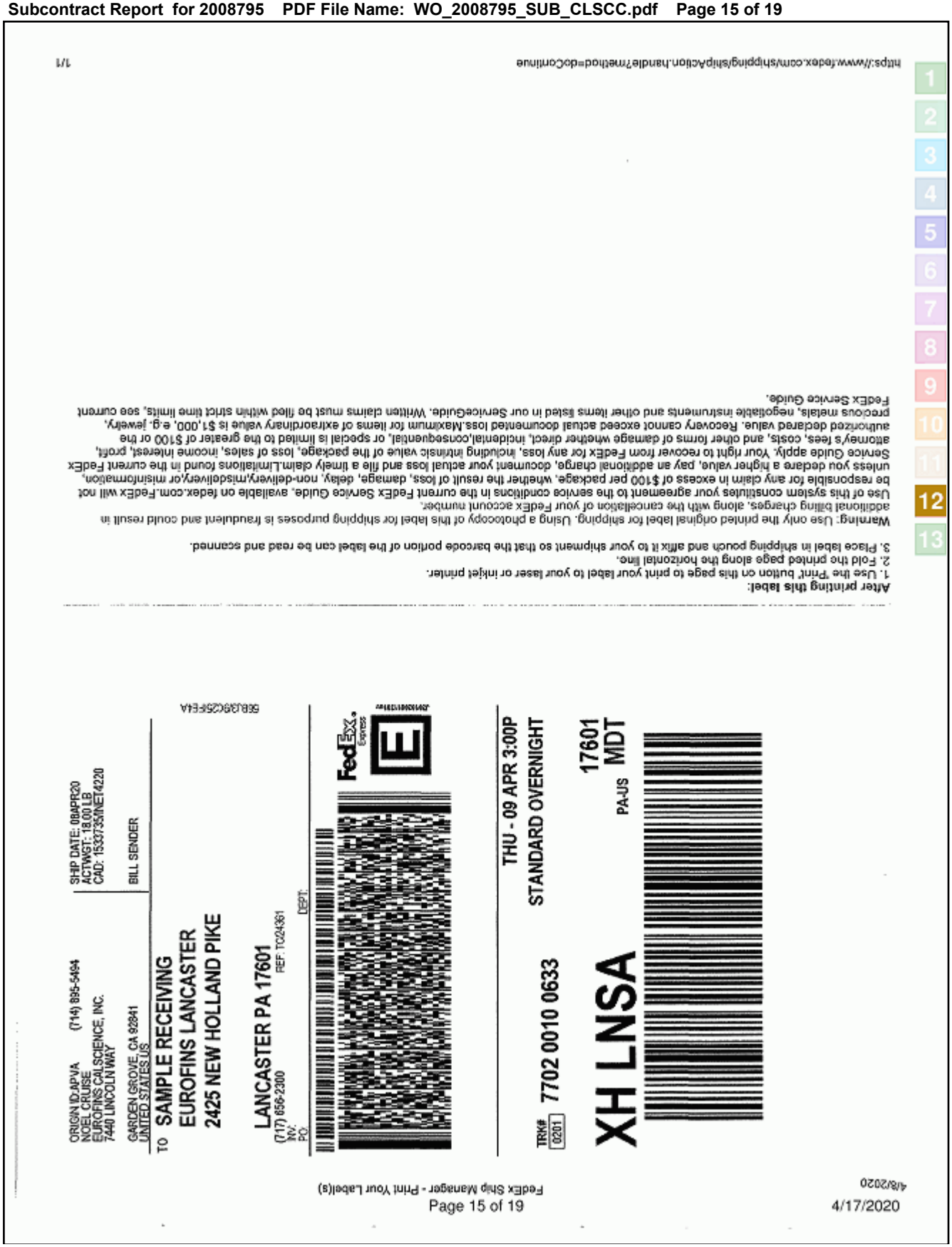

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3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

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ORIGIN ID:APVA (714) 895-5494
NOEL CRUISE
EUROFINS CALSCIENCE, INC.
7440 LINCOLN WAY
GARDEN GROVE, CA 92841
UNITED STATES US

SHIP DATE: 08APR20
ACTWGT: 18.00 LB
CAD: 15337335/INET4220

BILL SENDER

TO SAMPLE RECEIVING
EUROFINS LANCASTER
2425 NEW HOLLAND PIKE
LANCASTER PA 17601
(717) 656-2300
INV:
PO:
REF: TO24361
DEPT:

FedEx Express

THU - 09 APR 3:00P
STANDARD OVERNIGHT

TRK# 0201 7702 0010 0633

XH LNSA

17601
PA-US MDT

568J39C25FE4A

4/8/2020

FedEx Ship Manager - Print Your Label(s)

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24361

Eurofins Calscience LLC
7440 Lincoln Way
Garden Grove, CA 92841
Phone: 714-895-5494 Fax: 714-894-7501

Chain of Custody Record

eurofins Calscience

Client Information (Sub Contract Lab)	Sampler:	Lab PM: Chang, Terri	Carrier Tracking No(s):	COC No: 570-28384.1
Client Contact: Shipping/Receiving	Phone:	E-Mail: terrichang@eurofinsus.com	State of Origin: California	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Env LLC		Accreditations Required (See note):		Job #: 570-24361-1
Address: 2425 New Holland Pike,	Due Date Requested: 4/15/2020			
City: Lancaster	TAT Requested (days):			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #: 570-24361			
Email:	WO #:			
Project Name: 2008795	Project #: 570-24361			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL; B - NaOH; C - Zn Acetate; D - Nitric Acid; E - NaHSO4; F - MeOH; G - Amchlor; H - Ascorbic Acid; I - Ice; J - DI Water; K - EDTA; L - EDA
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2008795-03 (570-24361-3)	3/20/20	08:20 Pacific		Solid			X	1	Please watch Holding Time!

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Possible Hazard Identification: Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): Return To Client / Disposal By Lab / Archive For ___ Months

Deliverable Requested: I, II, III, IV, Other (specify) — Primary Deliverable Rank: 2

Special Instructions/QC Requirements:

Empty Kit Relinquished by: — Date: — Time: — Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	04/08/2020 1630	ECI			
			[signature]	4/9/2020 1023	ELLE

Custody Seals Intact: Δ Yes Δ No — Custody Seal No.: — Cooler Temperature(s) °C and Other Remarks: 0.8

Ver: 01/16/2019

ELLE 4-10-2020 @ 1555

Page 16 of 19 — 4/17/2020

24361

570-24361 Waybill

FROM
HOLLY MEYERS-BC LABORATORIES, INC
4100 ATLAS CT
BAKERSFIELD CA 93308

Package 1 of 1
47057

GLS
PDS
S92841A

SHIP TO
TERRI CHANG
EUROFINS - CALSCIENCE
7440 LINCOLN WAY
GARDEN GROVE CA 92841

17768308

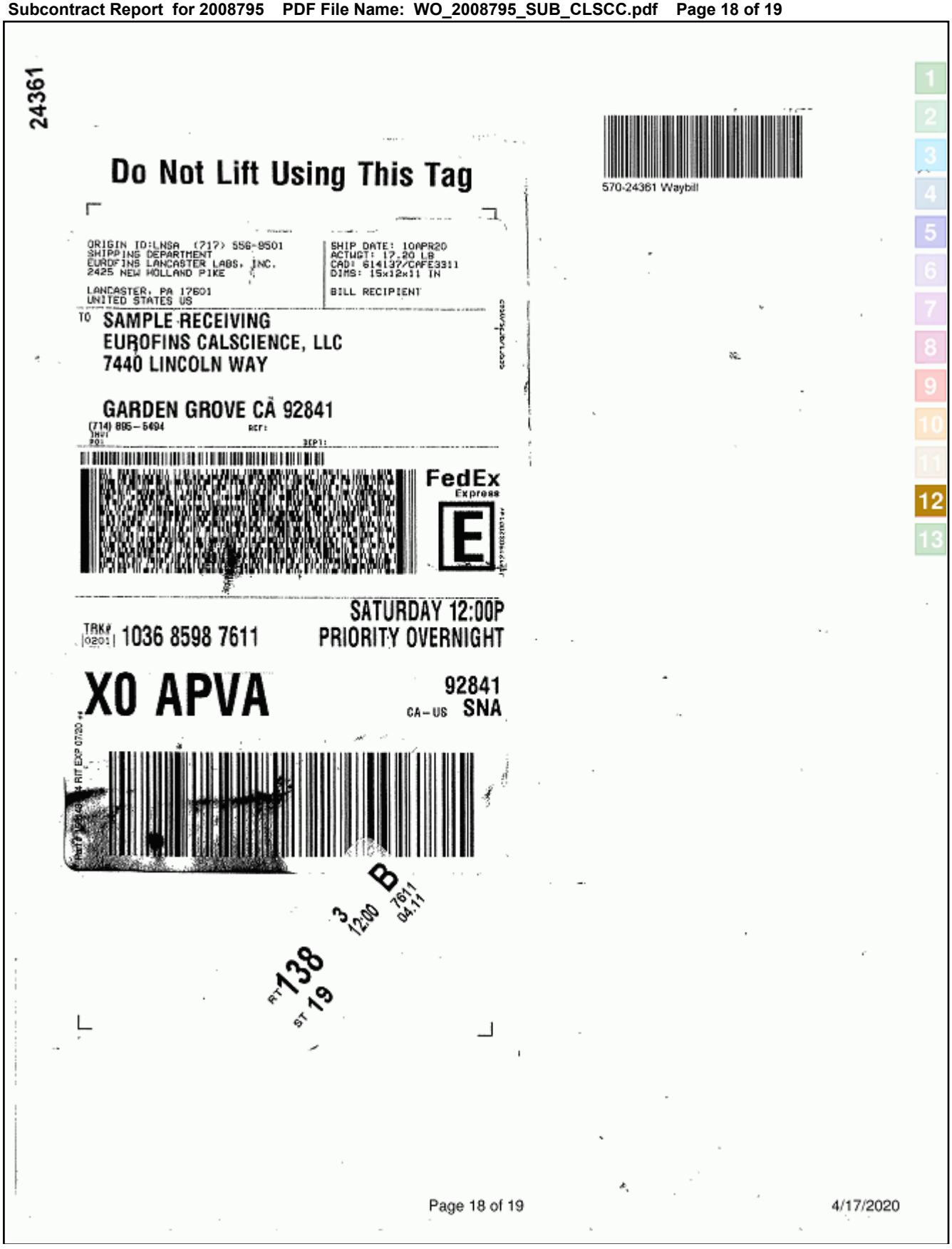
ORC CA927-CL0

C.O.D. : 0.00 Wgt: 8
Ref. # :

Sig. Type: STANDARD
GLS TRACKING NUMBER : 470570325203718258 20

03/25/20 10:36 AM C

Page 17 of 19 4/17/2020



24361

Do Not Lift Using This Tag

570-24361 Waybill

ORIGIN ID:LNSA (717) 556-9501
SHIPPING DEPARTMENT
EUROFINS LANCASTER LABS, INC.
2425 NEW HOLLAND PIKE

LANCASTER, PA 17601
UNITED STATES US

SHIP DATE: 10APR20
ACTWGT: 17.20 LB
CAD: 614137/CAFE3311
DIMS: 15x12x11 IN

BILL RECIPIENT

TO SAMPLE RECEIVING
EUROFINS CALSCIENCE, LLC
7440 LINCOLN WAY

GARDEN GROVE CA 92841
(714) 895-5494

FedEx Express

TRK# 1036 8598 7611

SATURDAY 12:00P
PRIORITY OVERNIGHT

XO APVA

92841
CA-US SNA

Page 18 of 19

4/17/2020

Login Sample Receipt Checklist

Client: BC Laboratories

Job Number: 570-24361-1

Login Number: 24361
List Number: 1
Creator: Soriano, Precy

List Source: Eurofins Calscience

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are 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.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Eurofins Calscience LLC

Page 19 of 19

4/17/2020

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/17/2020 14:40
Project: Cottonwood
Project Number: S020.1016
Project Manager: Sarah Battelle

Notes And Definitions

J	Estimated Value (CLP Flag)
MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A01	Detection and quantitation limits are raised due to sample dilution.
A02	The difference between duplicate readings is less than the quantitation limit.
A03	The sample concentration was more than 4 times the spike level.
A07	Detection and quantitation limits were raised due to sample dilution caused by high analyte concentration or matrix interference.
A20	Surrogate is low due to matrix interference. Interference verified through second extraction/analysis.
Q02	Matrix spike precision is not within the control limits.
Q03	Matrix spike recovery(s) was(were) not within the control limits.
S09	The surrogate recovery for this compound was not within the control limits.
V01	The Initial Calibration Verification (ICV) recovery is not within established control limits.

Geo-Logic ASSOCIATES
Geologists, Hydrogeologists, and Engineers

GROUNDWATER MONITORING PROGRAM
SURFACE WATER DATA SHEET

Site Name: Cottonwood Golf **Project No.:** SO20.1016

Station I.D.: Up **Sampling Date:** 4/10/20
Collected By: KW **Sampling Time:** 14:30
Horiba Model S/N: San Diego **Duplicate Sample:** YES NO ✓

COLOR	ODOR	pH	CONDUCTIVITY ms/cm	TURBIDITY NTU	D.O. mg/L	TEMPERATURE °C	O.R.P. mV
Clear	No	6.88	3.71	20	8.72	14.79	163

Surface water conditions (including stream flow rate, stream depth):

Up to about 1-2 feet deep. Mostly laminar flow. Stream less than 10 feet wide at sample location.

Additional Info/Comments:

Geo-Logic ASSOCIATES
Geologists, Hydrogeologists, and Engineers

GROUNDWATER MONITORING PROGRAM
SURFACE WATER DATA SHEET

Site Name: Cottonwood Golf **Project No.:** SO20.1016

Station I.D.: Mid **Sampling Date:** 4/10/20
Collected By: KW **Sampling Time:** 13:30
Horiba Model S/N: San Diego **Duplicate Sample:** YES NO ✓

COLOR	ODOR	pH	CONDUCTIVITY ms/cm	TURBIDITY NTU	D.O. mg/L	TEMPERATURE °C	O.R.P. mV
Brown	No	6.38	4.64	>800	10.00	14.75	191

Surface water conditions (including stream flow rate, stream depth):

Up to about 3-4 feet deep. Turbid flow. Stream about 40+ feet wide at sample location.

Additional Info/Comments:

Geo-Logic ASSOCIATES
Geologists, Hydrogeologists, and Engineers

GROUNDWATER MONITORING PROGRAM
SURFACE WATER DATA SHEET

Site Name: Cottonwood Golf **Project No.:** SO20.1016

Station I.D.: Down **Sampling Date:** 4/14/20
Collected By: KW **Sampling Time:** 10:45
Horiba Model S/N: San Diego **Duplicate Sample:** YES NO ✓

COLOR	ODOR	pH	CONDUCTIVITY ms/cm	TURBIDITY NTU	D.O. mg/L	TEMPERATURE °C	O.R.P. mV
Clear	No	6.70	1.10	6.0	7.56	19.07	165

Surface water conditions (including stream flow rate, stream depth):
Up to about 1 foot deep. Clear, mostly laminar flow. Stream pretty wide at sample location (about 80').

Additional Info/Comments:

Date of Report: 04/21/2020

Sarah Battelle

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Client Project:	Cottonwood Sand Mine Project
BCL Project:	Bacteriological
BCL Work Order:	2010717
Invoice ID:	B377714

Enclosed are the results of analyses for samples received by the laboratory on 4/13/2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Natalie Serda
Client Service Rep

Table of Contents

Bact: 20-10717

Geo-Logic ASSOCIATES

CHAIN OF CUSTODY

DATE: ______

PAGE ______ OF ______

PROJECT INFORMATION

PROJECT NAME: COTTONWOOD JOB# 5020.1016
BILLING NUMBER: 5020.1016
PROJECT MANAGER: SARAH BATTELLE
LABORATORY: BC
SHIPMENT METHOD: UPS
TURN AROUND TIME: 24 hr. 48 hr. (NORMAL)
DISPOSAL: Lab Disposal (A) Return ( ) Pick Up ( )
SAMPLER'S SIGNATURE: [signature]

ANALYSES

SAMPLE I.D.	LAB I.D.	DATE	TIME	MATRIX	~~Petroleum Hydrocarbons (418.1)~~	Volatile Organics (624/8260/524.2) 8260	~~Semi-Volatile Organics (625/8270)~~	~~Pesticides and PCB's (608/8080)~~	~~CCR Metals~~ OIL & GREASE	TOC	TOTAL PHOSPHOROUS AS P	TSS	TDS	NITRATE-N, NITRITE-N	TOTAL NITROGEN AS N	TOTAL COLIFORM & E.COLI	VOCS (524.2)	TITLE 22 METALS + FE & MN	CHLORIDE, SULFATE	ORGANOCHLORINE PESTICIDES (505)	CHLORINATED HERBICIDES 515.1	SVOCS (525.2M)	MBAS	NUMBER OF CONTAINERS
UP -1		4/10/20	1430	W					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MID -2		4/10/20	1330	W					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

1. RELINQUISHED BY:
SIGNATURE: [signature] DATE: 4/10/20
PRINTED NAME: KYLE SWEGERT (?) TIME: 1710
COMPANY: GLA

2. RELINQUISHED BY:
SIGNATURE: DATE:
PRINTED NAME: TIME:
COMPANY:

3. RELINQUISHED BY:
SIGNATURE: DATE:
PRINTED NAME: TIME:
COMPANY:

1. RECEIVED BY:
SIGNATURE: [signature] DATE: 4-13-20
PRINTED NAME: T Jackson TIME: 814
COMPANY: BCL

2. RECEIVED BY:
SIGNATURE: DATE:
PRINTED NAME: TIME:
COMPANY:

3. RECEIVED BY:
SIGNATURE: DATE:
PRINTED NAME: TIME:
COMPANY:

COMMENTS
Okay to analyze past HT per Kyle
TG 4-13

White - Original to accompany lab report
Yellow - Lab Copy
Pink - Originator

250 W. 1st Street, Suite 228, Claremont, CA 91711 Phone: (909) 626-2282 Fax: (909) 626-1233

(MISC:CHAIN:6-1-92)

Chain of Custody and Cooler Receipt Form for 2010717 Page 2 of 2

Bact 20-10717

Geologic
San Diego
Kyle Welchans

COTTONWOOD SAND MINE PROJECT
Sample Container Order
Apr-20

Sample Description	Matrix	TOC	Total Phosphorus as P	Oil & Grease	MBAS	TSS	TDS	Nitrate-N, Nitrite-N, Total Nitrogen as N	Total Coliform and E. Coli (SM9223B)	VOCs (EPA 524.2)	Title 22 Metals (including iron and manganese)	Chloride, Sulfate	Organochlorine Pesticides (508)	Chlorinated Herbicides (515.1)	SVOCs (525.2M)	Notes
Ivanhoe #11	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
Lake #11	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
SW Up	SW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
SW Mid	SW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
SW Down	SW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
East Boring*	soil	X											X	X	X	
Mid Boring*	Soil	X											X	X	X	
West Boring*	Soil	X											X	X	X	
Trip Blanks*	W														X	
EXTRA	GW	X				X	X	X	X	X	X	X	X	X	X	
EXTRA	Soil	X											X	X	X	

Notes:
JN: SO20.1016

(1) Measure pH, DO, Electrical Conductivity, Temperature and Turbidity in field
EXTRA sample containers are for backup only and do not represent a sample point.
*Soil samples to be collected in stainless steel sample tubes. Provide 12 jars for any grab samples we may collect.

SAMPLE CONTAINER ORDER CHECKLIST
(C:\BottleOrder w added analytes.xlsx)4/13/2020

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/21/2020 9:08
Project: Bacteriological
Project Number: Cottonwood Sand Mine Project
Project Manager: Sarah Battelle

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
2010717-01	**COC Number:**	---	**Receive Date:**	04/13/2020 08:14
	Project Number:	---	**Sampling Date:**	04/10/2020 14:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	UP	**Lab Matrix:**	Water
	Sampled By:	---	**Sample Type:**	Water
2010717-02	**COC Number:**	---	**Receive Date:**	04/13/2020 08:14
	Project Number:	---	**Sampling Date:**	04/10/2020 13:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MID	**Lab Matrix:**	Water
	Sampled By:	---	**Sample Type:**	Water

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/21/2020 9:08
Project: Bacteriological
Project Number: Cottonwood Sand Mine Project
Project Manager: Sarah Battelle

2010717-01

Water Analysis (Bacteriological)

COC Number:	---	**District ID:**	
Project Number:	---	**System Number:**	
Sampling Location:	---	**Station Number:**	
Sampling Point:	UP	**Sample Site:**	
Sampled By:	---	**Residual Chlorine, ppm:**	
Receive Date:	04/13/2020 08:14	**Temperature, C:**	
Sampling Date:	04/10/2020 14:30		
Sample Depth:	---		
Sample Matrix:	Water		

Colilert (Quantitray)

Constituent	Result	Units	Method	Analyst	Initial Dilution	Date Started	Date Completed	Lab Quals
Total Coliform, Confirmed Test	97	Positive Wells	SM-9223B	FBV	1	04/13/2020 12:30	04/14/2020	
Total Coliform, Density	>2400	MPN/100ml	SM-9223B	FBV	1	04/13/2020 12:30	04/14/2020	A26,S05
E. Coli, Confirmed Test	95	Positive Wells	SM-9223B	FBV	1	04/13/2020 12:30	04/14/2020	
E. Coli, Density	2000	MPN/100ml	SM-9223B	FBV	1	04/13/2020 12:30	04/14/2020	A26,S05

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/21/2020 9:08
Project: Bacteriological
Project Number: Cottonwood Sand Mine Project
Project Manager: Sarah Battelle

2010717-02

Water Analysis (Bacteriological)

COC Number:	---	**District ID:**	
Project Number:	---	**System Number:**	
Sampling Location:	---	**Station Number:**	
Sampling Point:	MID	**Sample Site:**	
Sampled By:	---	**Residual Chlorine, ppm:**	
Receive Date:	04/13/2020 08:14	**Temperature, C:**	
Sampling Date:	04/10/2020 13:30		
Sample Depth:	---		
Sample Matrix:	Water		

Colilert (Quantitray)

Constituent	Result	Units	Method	Analyst	Initial Dilution	Date Started	Date Completed	Lab Quals
Total Coliform, Confirmed Test	97	Positive Wells	SM-9223B	FBV	1	04/13/2020 12:30	04/14/2020	
Total Coliform, Density	>2400	MPN/100ml	SM-9223B	FBV	1	04/13/2020 12:30	04/14/2020	A26,S05
E. Coli, Confirmed Test	89	Positive Wells	SM-9223B	FBV	1	04/13/2020 12:30	04/14/2020	
E. Coli, Density	1100	MPN/100ml	SM-9223B	FBV	1	04/13/2020 12:30	04/14/2020	A26,S05

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/21/2020 9:08
Project: Bacteriological
Project Number: Cottonwood Sand Mine Project
Project Manager: Sarah Battelle

Notes And Definitions

MPN	Most Probable Number
A26	Sample received past holding time.
S05	The sample holding time was exceeded.

EnviroMatrix **Analytical, Inc.**

10 June 2020

Geo-Logic Associates
Attn: Sarah Battelle
16885 W. Bernardo Drive, Suite 305
San Diego, CA 92127

EMA Log #: 20D0429

Project: COTTONWOOD/S020.1016

Enclosed are the results of analyses for samples received by the laboratory on 04/14/20 12:45. Samples were analyzed pursuant to client request utilizing EPA or other ELAP approved methodologies. I certify that this data is in compliance both technically and for completeness.

Leland S. Pitt
Laboratory Director

CA ELAP Certification #: 2564

4340 Viewridge Avenue, Suite A - San Diego, California 92123 - (858) 560-7717 - Fax (858) 560-7763
Analytical Chemistry Laboratory

Client Name: Geo-Logic Associates
Project Name: COTTONWOOD/S020.1016

EMA Log #: 20D0429

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
UP	20D0429-01	Water	04/14/20 11:30	04/14/20 12:45
MID	20D0429-02	Water	04/14/20 11:15	04/14/20 12:45
DOWN	20D0429-03	Water	04/14/20 10:45	04/14/20 12:45

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Geo-Logic Associates
Project Name: COTTONWOOD/S020.1016

EMA Log #: 20D0429

Conventional Chemistry Parameters by Standard/EPA Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Analyst	Batch	Sample Prepared / Sample Analyzed	Method	Notes
UP (20D0429-01) Water Sampled: 04/14/20 11:30 Received: 04/14/20 12:45										
Nitrate as N	**0.30**	0.02	0.10	mg/l	2	UM	0041651	04/17/20 12:54 04/17/20 14:26	EPA 353.2	W-02
Nitrite as N	**0.009**	0.007	0.05	"	1	UM	0042059	04/15/20 18:00 04/15/20 18:00	SM4500 NO2 B	J
MID (20D0429-02) Water Sampled: 04/14/20 11:15 Received: 04/14/20 12:45										
Nitrate as N	**0.40**	0.02	0.10	mg/l	2	UM	0041651	04/17/20 12:54 04/17/20 14:26	EPA 353.2	W-02
Nitrite as N	**0.01**	0.007	0.05	"	1	UM	0042059	04/15/20 18:00 04/15/20 18:00	SM4500 NO2 B	J
DOWN (20D0429-03) Water Sampled: 04/14/20 10:45 Received: 04/14/20 12:45										
Nitrate as N	**0.38**	0.02	0.10	mg/l	2	UM	0041651	04/17/20 12:54 04/17/20 14:26	EPA 353.2	W-02
Nitrite as N	**0.008**	0.007	0.05	"	1	UM	0042059	04/15/20 18:00 04/15/20 18:00	SM4500 NO2 B	J

Client Name: Geo-Logic Associates
Project Name: COTTONWOOD/S020.1016

EMA Log #: 20D0429

Microbiological Parameters by Standard Methods

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Analyst	Batch	Sample Prepared Sample Analyzed	Method	Notes
UP (20D0429-01) Water Sampled: 04/14/20 11:30 Received: 04/14/20 12:45										
Total Coliforms	>24200	1	1	MPN/10 0 ml	1	AER	0041453	04/14/20 16:00 04/15/20 16:00	SM9223	
Total Coliforms	**>24200**	1	1	MPN/10 0 ml	1	AER	0041453	04/14/20 16:00 04/15/20 16:00	SM9223	
E. Coli	**548**	1	1	"	"	AER	"	04/14/20 16:00 04/15/20 16:00	"	
MID (20D0429-02) Water Sampled: 04/14/20 11:15 Received: 04/14/20 12:45										
Total Coliforms	>24200	1	1	MPN/10 0 ml	1	AER	0041453	04/14/20 16:00 04/15/20 16:00	SM9223	
Total Coliforms	**>24200**	1	1	MPN/10 0 ml	1	AER	0041453	04/14/20 16:00 04/15/20 16:00	SM9223	
E. Coli	**194**	1	1	"	"	AER	"	04/14/20 16:00 04/15/20 16:00	"	
DOWN (20D0429-03) Water Sampled: 04/14/20 10:45 Received: 04/14/20 12:45										
Total Coliforms	>24200	1	1	MPN/10 0 ml	1	AER	0041453	04/14/20 16:00 04/15/20 16:00	SM9223	
Total Coliforms	**>24200**	1	1	MPN/10 0 ml	1	AER	0041453	04/14/20 16:00 04/15/20 16:00	SM9223	
E. Coli	**201**	1	1	"	"	AER	"	04/14/20 16:00 04/15/20 16:00	"	

Client Name: Geo-Logic Associates
Project Name: COTTONWOOD/S020.1016

EMA Log #: 20D0429

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Analyst	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0041651												
Blank (0041651-BLK1)					Prepared & Analyzed: 04/17/20							
Nitrate as N	0.01	0.009	0.05	mg/l	UM							J
LCS (0041651-BS1)					Prepared & Analyzed: 04/17/20							
Nitrate as N	0.49	0.009	0.05	mg/l	UM	0.500		98	90-110			
LCS Dup (0041651-BSD1)					Prepared & Analyzed: 04/17/20							
Nitrate as N	0.49	0.009	0.05	mg/l	UM	0.500		98	90-110	0.2	20	
Duplicate (0041651-DUP1)		**Source: 20D0177-04**			Prepared & Analyzed: 04/17/20							
Nitrate as N	ND	0.009	0.05	mg/l	UM		ND				20	
Matrix Spike (0041651-MS1)		**Source: 20D0177-04**			Prepared & Analyzed: 04/17/20							
Nitrate as N	0.98	0.02	0.10	mg/l	UM	1.00	ND	98	90-110			
Matrix Spike Dup (0041651-MSD1)		**Source: 20D0177-04**			Prepared & Analyzed: 04/17/20							
Nitrate as N	0.99	0.02	0.10	mg/l	UM	1.00	ND	99	90-110	0.4	20	
Batch 0042059												
Blank (0042059-BLK1)					Prepared & Analyzed: 04/15/20							
Nitrite as N	ND	0.007	0.05	mg/l	UM							
LCS (0042059-BS1)					Prepared & Analyzed: 04/15/20							
Nitrite as N	0.10	0.007	0.05	mg/l	UM	0.100		102	80-120			
LCS Dup (0042059-BSD1)					Prepared & Analyzed: 04/15/20							
Nitrite as N	0.10	0.007	0.05	mg/l	UM	0.100		102	80-120	0	20	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Client Name: Geo-Logic Associates
Project Name: COTTONWOOD/S020.1016

EMA Log #: 20D0429

Conventional Chemistry Parameters by Standard/EPA Methods - Quality Control

Analyte	Result	MDL	Reporting Limit	Units	Analyst	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 0042059												
Duplicate (0042059-DUP1)		**Source: 20D0420-02**			Prepared & Analyzed: 04/15/20							
Nitrite as N	ND	0.007	0.05	mg/l	UM		ND				20	
Matrix Spike (0042059-MS1)		**Source: 20D0420-02**			Prepared & Analyzed: 04/15/20							
Nitrite as N	0.10	0.007	0.05	mg/l	UM	0.100	ND	97	80-120			
Matrix Spike Dup (0042059-MSD1)		**Source: 20D0420-02**			Prepared & Analyzed: 04/15/20							
Nitrite as N	0.10	0.007	0.05	mg/l	UM	0.100	ND	97	80-120	0	20	

Client Name: Geo-Logic Associates **EMA Log #: 20D0429**
Project Name: COTTONWOOD/S020.1016

Notes and Definitions

W-02	The sample for nitrate analysis was preserved with H2SO4 after the nitrite portion of the analysis was completed to extend the holding time for the sample. Nitrate results are corrected for the nitrite contribution per the method.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
A-05a	>24200
ND	Analyte NOT DETECTED at or above the reporting limit (or method detection limit when specified)
NR	Not Reported
dry	Sample results reported on a dry weight basis (if indicated in units column)
RPD	Relative Percent Difference
MDL	Method detection limit (indicated per client's request)

20D0429

CHAIN-OF-CUSTODY RECORD

EnviroMatrix Analytical, Inc.

4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #:
Client: GEO-LOGIC ASSOCIATES
Attn: SARAH BATTELLE
Samplers(s): K. WELCHANS
Address: 1415 WEST BERNARDO COURT #200
Phone: 858-451-1136 Fax:
Email: SBATTELLE@GEO-LOGIC.COM
Billing Address:
Project ID: COTTONWOOD
Project #: 3020.1016 PO #:

Requested Analysis: Oil & Grease □ 413.1 □ 413.2 □ 1664; 8015 (TPH) □ Gas □ Diesel □ Ext; 624/8260 (VOC) Full BTXE MTBE Oxy Nap; 625 / 8270 (SVOC) □ PAH only; 608 / 8081 (Organochlorine Pesticides); 608 / 8082 (Polychlorinated Biphenyls); 8141 (Organophosphorus Pesticides); TBT (Organotin Compounds); □ pH □ EC □ TSS □ TDS; Nitrate □ Nitrite □ N-N □ TKN □ NH3; CAC Title 22/CAM17 Metals □ TTLC □ STLC; TCLP (RCRA) □ Metals □ Organics; Cd Cr Cu Pb Ni Ag Zn □ Dissolved; Coliform Total (MTF) □ Fecal (MTF); Colilert, T+E.Coli □ P/A Enumeration; Enterococcus, □ MTF □ Enterolert; Heterotrophic Plate Count (HPC); □ BOD □ COD □ Cyanide; MBAS

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type	Nitrate	Coliform Total (MTF)	Colilert T+E.Coli Enumeration	MBAS
1	UP	4-14-20	1130	W	3	X	X	X	X
2	MID	↓	1115	↓	↓	X	X	X	X
3	DOWN	↓	1045	↓	↓	X	X	X	X
4									
5									
6									
7									
8									
9									
10									

Matrix Codes A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid
Shipped By: □ Courier □ UPS □ FedEx □ USPS ☒ Client Drop Off □ Other
[1]Turn-Around-Time: □ Same Day □ 1 day □ 2 day □ 3 day □ 4 day □ 5 day ☒ STD (7-business days)
[1]Reporting Requirements: □ Fax ☒ PDF □ Excel □ Geotracker/EDF □ Hard Copy □ EDT □ CEDEN □ SDWIS
[1]Sample Disposal: ☒ By Laboratory □ [2]Return to Client: P/U or Delivery □ Archive

Sample Integrity

Correct Containers: (Yes) No N/A	Containers Properly Preseved: (Yes) No N/A
Custody Seals Intact: Yes No (N/A)	Temp @ Receipt: ICE
COC/Labels Agree: (Yes) No N/A	Sampled By: (Client) EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: [signature] / Print: KYLE WELCHANS / Company: GEO-LOGIC ASSOCIATES	4/14/20 1245	Signature: [signature] / Print: Amanda Walsw / Company: EMA
Signature: / Print: / Company:		Signature: / Print: / Company:
Signature: / Print: / Company:		Signature: / Print: / Company:

Project/Sample Location/Address:

Project/Sample Comments: Client is aware not all MBAS can be run, start with DOWN Sample #3. -AW 4/14/20

[1]Additional costs may apply. Please note there is a $35 minimum charge for all clients.
[2]EMA reserves the right to return any samples that do not match our waste profile.
NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

Date of Report: 04/30/2020

Sarah Battelle

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Client Project:	S020.1016
BCL Project:	Cottonwood Sand Mine Project
BCL Work Order:	2010716
Invoice ID:	B378800

Enclosed are the results of analyses for samples received by the laboratory on 4/13/2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Natalie Serda
Client Service Rep

Stuart Buttram
Technical Director

Table of Contents

Geo-Logic ASSOCIATES

CHAIN OF CUSTODY

Bact: 20-10717

20-10716

DATE: ______
PAGE ______ OF ______

PROJECT INFORMATION

PROJECT NAME: COTTONWOOD JOB# 5020.1016
BILLING NUMBER: 5020.1016
PROJECT MANAGER: SARAH BATELLE
LABORATORY: BC
SHIPMENT METHOD: UPS
TURN AROUND TIME: 24 hr. 48 hr. (NORMAL)
DISPOSAL: Lab Disposal (A) Return ( ) Pick Up ( )
SAMPLER'S SIGNATURE: [signature]

ANALYSES

SAMPLE I.D.	LAB I.D.	DATE	TIME	MATRIX	~~Petroleum Hydrocarbons (418.1)~~	Volatile Organics (624/8260/624) 8240	~~Semi-Volatile Organics (625/8270)~~	~~Pesticides and PCB's (608/8080)~~	~~CCR Metals~~ Oil & Grease	TOC	Total Phosphorous as P	TSS	TDS	Nitrate-N, Nitrite-N	Total Nitrogen as N	Total Coliform & E. Coli	VOCs (524.2)	Title 22 Metals + Fe & Mn	Chloride, Sulfate	Organochlorine Pesticides (508)	Chlorinated Herbicides 515.1	SVOCs (525.2M)	MBAS	NUMBER OF CONTAINERS
UP -1		4/10/20	1430	W					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MID -2		4/10/20	1330	W					X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

CHK BY [initials] DISTRIBUTION SUB OUT ☐

SHORT HOLDING TIME: Cr⁺⁶ (NO2) (NO3) CF SS DO Cl2 BOD (MBAS) COT

1. RELINQUISHED BY:		2. RELINQUISHED BY:		3. RELINQUISHED BY:		COMMENTS
SIGNATURE: [signature]	DATE: 4/10/20	SIGNATURE:	DATE:	SIGNATURE:	DATE:	Okay to analyze past HT per Kyle TL 4-13
PRINTED NAME: Kyle Weyland	TIME: 1710	PRINTED NAME:	TIME:	PRINTED NAME:	TIME:	
COMPANY: GLA		COMPANY:		COMPANY:		
1. RECEIVED BY:		**2. RECEIVED BY:**		**3. RECEIVED BY:**		
SIGNATURE: [signature]	DATE: 4-13-20	SIGNATURE:	DATE:	SIGNATURE:	DATE:	
PRINTED NAME: T Jackson	TIME: 814	PRINTED NAME:	TIME:	PRINTED NAME:	TIME:	White - Original to accompany lab report Yellow - Lab Copy Pink - Originator
COMPANY: BCL		COMPANY:		COMPANY:		

250 W. 1st Street, Suite 228, Claremont, CA 91711 Phone: (909) 626-2282 Fax: (909) 626-1233

(MISC:CHAIN:6-1-92)

Chain of Custody and Cooler Receipt Form for 2010716 Page 2 of 4

Bact 20-10717

Geologic
San Diego
Kyle Welchans
20-10710

COTTONWOOD SAND MINE PROJECT
Sample Container Order
Apr-20

Sample Description	Matrix	TOC	Total Phosphorus as P	Oil & Grease	MBAS	TSS	TDS	Nitrate-N, Nitrite-N, Total Nitrogen as N	Total Coliform and E. Coli (SM9223B)	VOCs (EPA 524.2)	Title 22 Metals (including iron and manganese)	Chloride, Sulfate	Organochlorine Pesticides (508)	Chlorinated Herbicides (515.1)	SVOCs (525.2M)	Notes
Ivanhoe #11	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
Lake #11	GW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
SW Up	SW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
SW Mid	SW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
SW Down	SW		X	X	X	X	X	X	X	X	X	X	X	X	X	1
East Boring*	soil	X											X	X	X	
Mid Boring*	Soil	X											X	X	X	
West Boring*	Soil	X											X	X	X	
Trip Blanks*	W														X	
EXTRA	GW	X				X	X	X	X	X	X	X	X	X	X	
EXTRA	Soil	X											X	X	X	

Notes:
JN: SO20.1016

(1) Measure pH, DO, Electrical Conductivity, Temperature and Turbidity in field
EXTRA sample containers are for backup only and do not represent a sample point.
*Soil samples to be collected in stainless steel sample tubes. Provide 12 jars for any grab samples we may collect.

SAMPLE CONTAINER ORDER CHECKLIST
(C:\BottleOrder w added analytes.xlsx)4/13/2020

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 2

Submission #: 20-10716

SHIPPING INFORMATION
Fed Ex ☐ UPS ☑ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☐ Other ☐ (Specify)________

SHIPPING CONTAINER
Ice Chest ☒ None ☐ Box ☐
Other ☐ (Specify)________

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments: Ice melted

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ | Containers ☐ Intact? Yes ☐ No ☐ | None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: .97 Container: PE Thermometer ID: 274 Date/Time 4.13.20 814

Temperature: (A) 10.2 °C / (C) 10.1 °C Analyst Init TKJ

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES	P-3									
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz	T,U									
PT CYANIDE										
PT NITROGEN FORMS	V									
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
~~PIA PHENOLICS~~ 144	W									
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL	A-D									
QT EPA 1664	X									
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525	Y									
QT EPA 525 ~~TRAVEL BLANK~~ 0606	Z(AA)									
~~40ml EPA 547~~ Dr 076	AB(AC)									
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:
Sample Numbering Completed By: JM Date/Time: 4.13.20 9:50
A = Actual / C = Corrected

Rev 21 05/23/2016
[S:\WPDoc\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20]

Chain of Custody and Cooler Receipt Form for 2010716 Page 4 of 4

BC LABORATORIES INC. COOLER RECEIPT FORM Page 2 Of 2

Submission #: 20-10716

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☒ Ontrac ☐ Hand Delivery ☐	Ice Chest ☒ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☐ Other ☐ (Specify)_____	Other ☐ (Specify)_____	W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments: ice Melted

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 97 Container: PE Thermometer ID: 274 9/13/20 TG

Temperature: (A) 11.5 °C / (C) 11.4 °C

Date/Time 4-13-20 814

Analyst Init TK

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES	N - Q									
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz	R S									
PT CYANIDE										
PT NITROGEN FORMS	T									
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON	U									
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL	A-M ✓									
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525	W									
QT EPA ~~525 TRAVEL BLANK~~ 0606	X W X (2HB)									
~~40ml EPA 547~~										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:_____

Sample Numbering Completed By: JTC Date/Time: 4-13-20 9:50

A = Actual / C = Corrected

Rev 21 05/23/2016

(S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMPREC rev 20)

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
2010716-01	**COC Number:**	---	**Receive Date:**	04/13/2020 08:14
	Project Number:	---	**Sampling Date:**	04/10/2020 14:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	UP	**Lab Matrix:**	Water
	Sampled By:	---	**Sample Type:**	Water
2010716-02	**COC Number:**	---	**Receive Date:**	04/13/2020 08:14
	Project Number:	---	**Sampling Date:**	04/10/2020 13:30
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MID	**Lab Matrix:**	Water
	Sampled By:	---	**Sample Type:**	Water

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides and PCB's (EPA Method 508)

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Aldrin	ND	ug/L	0.0050	0.0026	EPA-508	ND		1
alpha-BHC	ND	ug/L	0.0050	0.0032	EPA-508	ND		1
beta-BHC	ND	ug/L	0.0050	0.0020	EPA-508	ND		1
delta-BHC	ND	ug/L	0.0050	0.0021	EPA-508	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.0050	0.0020	EPA-508	ND		1
Chlordane (Technical)	ND	ug/L	0.10	0.036	EPA-508	ND		1
4,4'-DDD	ND	ug/L	0.0050	0.0023	EPA-508	ND		1
4,4'-DDE	ND	ug/L	0.0050	0.0022	EPA-508	ND		1
4,4'-DDT	ND	ug/L	0.0050	0.0038	EPA-508	ND		1
Dieldrin	ND	ug/L	0.0050	0.0013	EPA-508	ND		1
Endosulfan I	ND	ug/L	0.0050	0.0016	EPA-508	ND		1
Endosulfan II	ND	ug/L	0.0050	0.0027	EPA-508	ND		1
Endosulfan sulfate	ND	ug/L	0.0050	0.0040	EPA-508	ND		1
Endrin	ND	ug/L	0.0050	0.0020	EPA-508	ND		1
Endrin aldehyde	ND	ug/L	0.010	0.0021	EPA-508	ND		1
Heptachlor	ND	ug/L	0.0050	0.0019	EPA-508	ND		1
Heptachlor epoxide	ND	ug/L	0.0050	0.0014	EPA-508	ND		1
Methoxychlor	ND	ug/L	0.0050	0.0030	EPA-508	ND		1
Toxaphene	ND	ug/L	1.0	0.050	EPA-508	ND		1
PCB-1016	ND	ug/L	0.20	0.066	EPA-508	ND		1
PCB-1221	ND	ug/L	0.20	0.063	EPA-508	ND		1
PCB-1232	ND	ug/L	0.20	0.059	EPA-508	ND		1
PCB-1242	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1248	ND	ug/L	0.20	0.044	EPA-508	ND		1
PCB-1254	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1260	ND	ug/L	0.20	0.089	EPA-508	ND		1
Total PCB's (Summation)	ND	ug/L	0.20	0.10	EPA-508	ND		1
TCMX (Surrogate)	59.8	%	60 - 130 (LCL - UCL)		EPA-508		A20	1
Decachlorobiphenyl (Surrogate)	38.8	%	60 - 130 (LCL - UCL)		EPA-508		A20	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-508	04/16/20 14:15	04/17/20 15:10	HKS	GC-17	1	B075742	EPA 508

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis (EPA Method 515.1)

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Bentazon	ND	ug/L	0.80	0.22	EPA-515.1	ND		1
2,4-D	ND	ug/L	0.40	0.18	EPA-515.1	ND		1
2,4-DB	ND	ug/L	3.0	0.37	EPA-515.1	ND		1
Dalapon	ND	ug/L	5.0	0.31	EPA-515.1	ND		1
Dicamba	ND	ug/L	0.080	0.040	EPA-515.1	ND		1
Dichloroprop	ND	ug/L	0.50	0.11	EPA-515.1	ND		1
Dinoseb	ND	ug/L	0.20	0.057	EPA-515.1	ND		1
MCPA	ND	ug/L	10	6.0	EPA-515.1	ND		1
MCPP	ND	ug/L	10	6.0	EPA-515.1	ND		1
2,4,5-T	ND	ug/L	0.090	0.012	EPA-515.1	ND		1
2,4,5-TP (Silvex)	ND	ug/L	0.070	0.032	EPA-515.1	ND		1
2,4-Dichlorophenylacetic acid (Surrogate)	88.0	%	40 - 120 (LCL - UCL)		EPA-515.1			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-515.1	04/15/20 10:00	04/18/20 04:51	OLH	GC-8	1	B075911	EPA 515.1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
Bromobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Bromochloromethane	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Bromoform	ND	ug/L	0.50	0.46	EPA-524.2	ND		1
Bromomethane	ND	ug/L	0.50	0.20	EPA-524.2	ND	V11	1
n-Butylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chlorobenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chloroform	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloromethane	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
2-Chlorotoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.093	EPA-524.2	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.89	EPA-524.2	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
Dibromomethane	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1-Dichloroethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
1,1-Dichloropropene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
Total 1,3-Dichloropropene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Ethylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Methylene chloride	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Naphthalene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
Styrene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
Toluene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Trichloroethene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.78	EPA-524.2	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Vinyl chloride	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Total Xylenes	ND	ug/L	0.50	0.47	EPA-524.2	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.97	EPA-524.2	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
t-Butyl alcohol	ND	ug/L	10	9.4	EPA-524.2	ND		1
Diisopropyl ether	ND	ug/L	0.50	0.36	EPA-524.2	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50	0.32	EPA-524.2	ND		1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
p- & m-Xylenes	ND	ug/L	0.50	0.34	EPA-524.2	ND		1
o-Xylene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
1,2-Dichloroethane-d4 (Surrogate)	103	%	75 - 125 (LCL - UCL)		EPA-524.2			1
Toluene-d8 (Surrogate)	98.4	%	80 - 120 (LCL - UCL)		EPA-524.2			1
4-Bromofluorobenzene (Surrogate)	101	%	80 - 120 (LCL - UCL)		EPA-524.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-524.2	04/14/20 06:10	04/14/20 13:27	MGC	MS-V5	1	B075334	EPA 524.2

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthylene	ND	ug/L	0.10	0.031	EPA-525.2	ND		1
Alachlor	ND	ug/L	0.20	0.090	EPA-525.2	ND		1
Anthracene	ND	ug/L	0.10	0.034	EPA-525.2	ND		1
Atraton	ND	ug/L	0.50	0.057	EPA-525.2	ND		1
Atrazine	ND	ug/L	0.30	0.14	EPA-525.2	ND		1
Benzo[a]anthracene	ND	ug/L	0.20	0.044	EPA-525.2	ND		1
Benzo[b]fluoranthene	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Benzo[k]fluoranthene	ND	ug/L	0.30	0.072	EPA-525.2	ND		1
Benzo[a]pyrene	ND	ug/L	0.10	0.050	EPA-525.2	ND		1
Benzo[g,h,i]perylene	ND	ug/L	0.30	0.065	EPA-525.2	ND		1
Benzyl butyl phthalate	ND	ug/L	4.0	0.047	EPA-525.2	ND		1
delta-BHC	ND	ug/L	0.20	0.048	EPA-525.2	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.20	0.063	EPA-525.2	ND		1
bis(2-Ethylhexyl)phthalate	ND	ug/L	3.0	0.030	EPA-525.2	ND		1
Bromacil	ND	ug/L	0.50	0.043	EPA-525.2	ND		1
Chrysene	ND	ug/L	0.30	0.060	EPA-525.2	ND		1
Diazinon	ND	ug/L	0.20	0.080	EPA-525.2	ND		1
Dibenzo[a,h]anthracene	ND	ug/L	0.30	0.051	EPA-525.2	ND		1
Di(2-ethylhexyl)adipate	ND	ug/L	1.0	0.025	EPA-525.2	ND		1
Dimethoate	ND	ug/L	2.0	0.050	EPA-525.2	ND		1
Dimethyl phthalate	ND	ug/L	1.0	0.034	EPA-525.2	ND		1
Di-n-butyl phthalate	ND	ug/L	1.0	0.063	EPA-525.2	ND		1
Fluorene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorobenzene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorocyclopentadiene	ND	ug/L	1.0	0.12	EPA-525.2	ND		1
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.30	0.032	EPA-525.2	ND		1
Methoxychlor	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Metolachlor	ND	ug/L	0.50	0.056	EPA-525.2	ND		1
Metribuzin	ND	ug/L	0.50	0.048	EPA-525.2	ND		1
Molinate	ND	ug/L	0.50	0.036	EPA-525.2	ND		1
Phenanthrene	ND	ug/L	0.10	0.020	EPA-525.2	ND		1
Prometon	ND	ug/L	0.50	0.11	EPA-525.2	ND		1
Prometryn	ND	ug/L	0.50	0.045	EPA-525.2	ND		1

Geologic Associates (Main)
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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Pyrene	ND	ug/L	0.10	0.040	EPA-525.2	ND		1
Secbumeton	ND	ug/L	0.50	0.079	EPA-525.2	ND		1
Simazine	ND	ug/L	0.30	0.066	EPA-525.2	ND		1
Terbutryn	ND	ug/L	0.50	0.050	EPA-525.2	ND		1
Thiobencarb	ND	ug/L	0.50	0.044	EPA-525.2	ND		1
Perylene-d12 (Surrogate)	59.0	%	60 - 140 (LCL - UCL)		EPA-525.2		S09	1
1,3-Dimethyl-2-nitrobenzene (Surrogate)	47.4	%	70 - 130 (LCL - UCL)		EPA-525.2		S09	1
Triphenylphosphate (Surrogate)	128	%	70 - 130 (LCL - UCL)		EPA-525.2			1
Pyrene-d10 (Surrogate)	97.2	%	70 - 130 (LCL - UCL)		EPA-525.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-525.2	04/20/20 07:30	04/23/20 09:04	MK	MS-B6	1	B076114	EPA 525.2

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

EPA Method 1664

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	ND	mg/L	5.0	0.66	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-1664A HEM	04/17/20 12:00	04/20/20 15:16	MAM	MAN-SV	1	B075919	EPA 1664/HEM

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Water Analysis (General Chemistry)

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Chloride	**50**	**mg/L**	**0.50**	**0.13**	**EPA-300.0**	ND		1
Nitrate as N	**0.25**	**mg/L**	**0.10**	**0.024**	**EPA-300.0**	ND	**A26,S05**	1
Sulfate	**47**	**mg/L**	**1.0**	**0.14**	**EPA-300.0**	ND		1
Total Dissolved Solids @ 180 C	**350**	**mg/L**	**20**	**10**	**EPA-160.1**	ND	**A07**	2
Total Suspended Solids (Glass Fiber)	**14**	**mg/L**	**0.56**	**0.56**	**EPA-160.2**	ND	**A07**	3
MBAS	ND	mg/L	0.10	0.025	EPA-425.1	ND	A26,S05	4
Total Nitrogen	**0.97**	**mg/L**	**0.30**	**0.10**	**Calc**	ND		5
Total Kjeldahl Nitrogen	**0.73**	**mg/L**	**0.20**	**0.067**	**EPA-351.2**	ND		6
Nitrite as N	ND	ug/L	50	10	EPA-353.2	ND	A26,S05	7
Total Phosphorus	**0.12**	**mg/L**	**0.050**	**0.017**	**EPA-365.4**	ND		8
Non-Volatile Organic Carbon	**8.2**	**mg/L**	**1.0**	**0.30**	**EPA-415.1**	ND		9

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-300.0	04/13/20 16:00	04/13/20 17:48	CMM	IC7	1	B075354	No Prep
2	EPA-160.1	04/16/20 16:00	04/16/20 16:00	CAD	MANUAL	2	B075627	No Prep
3	EPA-160.2	04/14/20 09:00	04/14/20 09:00	OJP	MANUAL	1.111	B075436	No Prep
4	EPA-425.1	04/15/20 07:30	04/15/20 07:30	JMN	SPEC06	1	B075548	No Prep
5	Calc	04/13/20 15:01	04/29/20 17:01	AMM	Calc	1	B^D0141	Calc
6	EPA-351.2	04/27/20 08:45	04/28/20 14:45	JMH2	SC-2	1	B076461	EPA 351.2
7	EPA-353.2	04/14/20 08:49	04/14/20 08:49	MC1	KONE-1	1	B075605	No Prep
8	EPA-365.4	04/27/20 08:45	04/29/20 10:13	JMH2	SC-2	1	B076462	EPA 365.4
9	EPA-415.1	04/15/20 07:00	04/16/20 08:11	ALW	TOC2	1	B075339	No Prep

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Metals Analysis

BCL Sample ID: 2010716-01 | **Client Sample Name:** UP, 4/10/2020 2:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Antimony	**0.36**	**ug/L**	**2.0**	**0.11**	**EPA-200.8**	ND	**J**	1
Total Recoverable Arsenic	ND	ug/L	2.0	0.70	EPA-200.8	ND		1
Total Recoverable Barium	**32**	**ug/L**	**1.0**	**0.21**	**EPA-200.8**	0.22		1
Total Recoverable Beryllium	ND	ug/L	1.0	0.14	EPA-200.8	ND		1
Total Recoverable Cadmium	ND	ug/L	1.0	0.11	EPA-200.8	ND		1
Total Recoverable Chromium	**0.92**	**ug/L**	**3.0**	**0.50**	**EPA-200.8**	ND	**J**	1
Total Recoverable Cobalt	**0.71**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND	**J**	1
Total Recoverable Copper	**5.7**	**ug/L**	**2.0**	**0.22**	**EPA-200.8**	0.39		1
Total Recoverable Iron	**800**	**ug/L**	**50**	**30**	**EPA-200.7**	ND		2
Total Recoverable Lead	**0.66**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND	**J**	1
Total Recoverable Manganese	**140**	**ug/L**	**10**	**4.0**	**EPA-200.7**	ND		2
Total Recoverable Mercury	**0.035**	**ug/L**	**0.20**	**0.022**	**EPA-245.1**	ND	**J**	3
Total Recoverable Molybdenum	**2.3**	**ug/L**	**1.0**	**0.11**	**EPA-200.8**	ND		1
Total Recoverable Nickel	**1.8**	**ug/L**	**2.0**	**0.19**	**EPA-200.8**	0.45	**J**	1
Total Recoverable Selenium	ND	ug/L	2.0	0.19	EPA-200.8	ND		1
Total Recoverable Silver	ND	ug/L	1.0	0.10	EPA-200.8	ND		4
Total Recoverable Thallium	ND	ug/L	1.0	0.10	EPA-200.8	ND		1
Total Recoverable Vanadium	**9.6**	**ug/L**	**3.0**	**0.78**	**EPA-200.8**	ND		1
Total Recoverable Zinc	**16**	**ug/L**	**10**	**1.7**	**EPA-200.8**	2.5		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-200.8	04/15/20 12:15	04/15/20 18:32	AS1	PE-EL4	1	B075555	EPA 200.2
2	EPA-200.7	04/13/20 16:40	04/14/20 18:08	JRG	PE-OP4	1	B075327	EPA 200.2
3	EPA-245.1	04/16/20 09:00	04/16/20 12:38	TMT	CETAC3	1	B075618	EPA 245.1
4	EPA-200.8	04/16/20 09:30	04/16/20 14:37	AS1	PE-EL2	1	B075654	EPA 200.2

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides and PCB's (EPA Method 508)

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Aldrin	ND	ug/L	0.0050	0.0026	EPA-508	ND		1
alpha-BHC	ND	ug/L	0.0050	0.0032	EPA-508	ND		1
beta-BHC	ND	ug/L	0.0050	0.0020	EPA-508	ND		1
delta-BHC	ND	ug/L	0.0050	0.0021	EPA-508	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.0050	0.0020	EPA-508	ND		1
Chlordane (Technical)	ND	ug/L	0.10	0.036	EPA-508	ND		1
4,4'-DDD	ND	ug/L	0.0050	0.0023	EPA-508	ND		1
4,4'-DDE	ND	ug/L	0.0050	0.0022	EPA-508	ND		1
4,4'-DDT	ND	ug/L	0.0050	0.0038	EPA-508	ND		1
Dieldrin	ND	ug/L	0.0050	0.0013	EPA-508	ND		1
Endosulfan I	ND	ug/L	0.0050	0.0016	EPA-508	ND		1
Endosulfan II	ND	ug/L	0.0050	0.0027	EPA-508	ND		1
Endosulfan sulfate	ND	ug/L	0.0050	0.0040	EPA-508	ND		1
Endrin	ND	ug/L	0.0050	0.0020	EPA-508	ND		1
Endrin aldehyde	ND	ug/L	0.010	0.0021	EPA-508	ND		1
Heptachlor	ND	ug/L	0.0050	0.0019	EPA-508	ND		1
Heptachlor epoxide	ND	ug/L	0.0050	0.0014	EPA-508	ND		1
Methoxychlor	ND	ug/L	0.0050	0.0030	EPA-508	ND		1
Toxaphene	ND	ug/L	1.0	0.050	EPA-508	ND		1
PCB-1016	ND	ug/L	0.20	0.066	EPA-508	ND		1
PCB-1221	ND	ug/L	0.20	0.063	EPA-508	ND		1
PCB-1232	ND	ug/L	0.20	0.059	EPA-508	ND		1
PCB-1242	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1248	ND	ug/L	0.20	0.044	EPA-508	ND		1
PCB-1254	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1260	ND	ug/L	0.20	0.089	EPA-508	ND		1
Total PCB's (Summation)	ND	ug/L	0.20	0.10	EPA-508	ND		1
TCMX (Surrogate)	27.9	%	60 - 130 (LCL - UCL)		EPA-508		A20	1
Decachlorobiphenyl (Surrogate)	27.2	%	60 - 130 (LCL - UCL)		EPA-508		A20	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-508	04/16/20 14:15	04/17/20 15:26	HKS	GC-17	1	B075742	EPA 508

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis (EPA Method 515.1)

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Bentazon	ND	ug/L	0.80	0.22	EPA-515.1	ND		1
2,4-D	ND	ug/L	0.40	0.18	EPA-515.1	ND		1
2,4-DB	ND	ug/L	3.0	0.37	EPA-515.1	ND		1
Dalapon	ND	ug/L	5.0	0.31	EPA-515.1	ND		1
Dicamba	ND	ug/L	0.080	0.040	EPA-515.1	ND		1
Dichloroprop	ND	ug/L	0.50	0.11	EPA-515.1	ND		1
Dinoseb	ND	ug/L	0.20	0.057	EPA-515.1	ND		1
MCPA	ND	ug/L	10	6.0	EPA-515.1	ND		1
MCPP	ND	ug/L	10	6.0	EPA-515.1	ND		1
2,4,5-T	ND	ug/L	0.090	0.012	EPA-515.1	ND		1
2,4,5-TP (Silvex)	ND	ug/L	0.070	0.032	EPA-515.1	ND		1
2,4-Dichlorophenylacetic acid (Surrogate)	42.8	%	40 - 120 (LCL - UCL)		EPA-515.1			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-515.1	04/15/20 10:00	04/18/20 05:14	OLH	GC-8	1	B075911	EPA 515.1

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San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
Bromobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Bromochloromethane	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Bromoform	ND	ug/L	0.50	0.46	EPA-524.2	ND		1
Bromomethane	ND	ug/L	0.50	0.20	EPA-524.2	ND	V11	1
n-Butylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chlorobenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chloroform	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloromethane	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
2-Chlorotoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.093	EPA-524.2	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.89	EPA-524.2	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
Dibromomethane	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1-Dichloroethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
1,1-Dichloropropene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1

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San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
Total 1,3-Dichloropropene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Ethylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Methylene chloride	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Naphthalene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
Styrene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
Toluene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Trichloroethene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.78	EPA-524.2	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Vinyl chloride	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Total Xylenes	ND	ug/L	0.50	0.47	EPA-524.2	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.97	EPA-524.2	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
t-Butyl alcohol	ND	ug/L	10	9.4	EPA-524.2	ND		1
Diisopropyl ether	ND	ug/L	0.50	0.36	EPA-524.2	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50	0.32	EPA-524.2	ND		1

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San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
p- & m-Xylenes	ND	ug/L	0.50	0.34	EPA-524.2	ND		1
o-Xylene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
1,2-Dichloroethane-d4 (Surrogate)	104	%	75 - 125 (LCL - UCL)		EPA-524.2			1
Toluene-d8 (Surrogate)	98.6	%	80 - 120 (LCL - UCL)		EPA-524.2			1
4-Bromofluorobenzene (Surrogate)	101	%	80 - 120 (LCL - UCL)		EPA-524.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-524.2	04/14/20 06:10	04/14/20 13:51	MGC	MS-V5	1	B075334	EPA 524.2

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthylene	ND	ug/L	0.10	0.031	EPA-525.2	ND		1
Alachlor	ND	ug/L	0.20	0.090	EPA-525.2	ND		1
Anthracene	ND	ug/L	0.10	0.034	EPA-525.2	ND		1
Atraton	ND	ug/L	0.50	0.057	EPA-525.2	ND		1
Atrazine	ND	ug/L	0.30	0.14	EPA-525.2	ND		1
Benzo[a]anthracene	ND	ug/L	0.20	0.044	EPA-525.2	ND		1
Benzo[b]fluoranthene	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Benzo[k]fluoranthene	ND	ug/L	0.30	0.072	EPA-525.2	ND		1
Benzo[a]pyrene	ND	ug/L	0.10	0.050	EPA-525.2	ND		1
Benzo[g,h,i]perylene	ND	ug/L	0.30	0.065	EPA-525.2	ND		1
Benzyl butyl phthalate	ND	ug/L	4.0	0.047	EPA-525.2	ND		1
delta-BHC	ND	ug/L	0.20	0.048	EPA-525.2	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.20	0.063	EPA-525.2	ND		1
bis(2-Ethylhexyl)phthalate	ND	ug/L	3.0	0.030	EPA-525.2	ND		1
Bromacil	ND	ug/L	0.50	0.043	EPA-525.2	ND		1
Chrysene	ND	ug/L	0.30	0.060	EPA-525.2	ND		1
Diazinon	ND	ug/L	0.20	0.080	EPA-525.2	ND		1
Dibenzo[a,h]anthracene	ND	ug/L	0.30	0.051	EPA-525.2	ND		1
Di(2-ethylhexyl)adipate	ND	ug/L	1.0	0.025	EPA-525.2	ND		1
Dimethoate	ND	ug/L	2.0	0.050	EPA-525.2	ND		1
Dimethyl phthalate	ND	ug/L	1.0	0.034	EPA-525.2	ND		1
Di-n-butyl phthalate	ND	ug/L	1.0	0.063	EPA-525.2	ND		1
Fluorene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorobenzene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorocyclopentadiene	ND	ug/L	1.0	0.12	EPA-525.2	ND		1
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.30	0.032	EPA-525.2	ND		1
Methoxychlor	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Metolachlor	ND	ug/L	0.50	0.056	EPA-525.2	ND		1
Metribuzin	ND	ug/L	0.50	0.048	EPA-525.2	ND		1
Molinate	ND	ug/L	0.50	0.036	EPA-525.2	ND		1
Phenanthrene	ND	ug/L	0.10	0.020	EPA-525.2	ND		1
Prometon	ND	ug/L	0.50	0.11	EPA-525.2	ND		1
Prometryn	ND	ug/L	0.50	0.045	EPA-525.2	ND		1

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Pyrene	ND	ug/L	0.10	0.040	EPA-525.2	ND		1
Secbumeton	ND	ug/L	0.50	0.079	EPA-525.2	ND		1
Simazine	ND	ug/L	0.30	0.066	EPA-525.2	ND		1
Terbutryn	ND	ug/L	0.50	0.050	EPA-525.2	ND		1
Thiobencarb	ND	ug/L	0.50	0.044	EPA-525.2	ND		1
Perylene-d12 (Surrogate)	62.6	%	60 - 140 (LCL - UCL)		EPA-525.2			1
1,3-Dimethyl-2-nitrobenzene (Surrogate)	49.4	%	70 - 130 (LCL - UCL)		EPA-525.2		S09	1
Triphenylphosphate (Surrogate)	141	%	70 - 130 (LCL - UCL)		EPA-525.2		S09	1
Pyrene-d10 (Surrogate)	88.2	%	70 - 130 (LCL - UCL)		EPA-525.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-525.2	04/20/20 07:30	04/23/20 09:31	MK	MS-B6	1	B076114	EPA 525.2

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

EPA Method 1664

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	ND	mg/L	5.0	0.66	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-1664A HEM	04/17/20 12:00	04/20/20 15:16	MAM	MAN-SV	1	B075919	EPA 1664/HEM

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Water Analysis (General Chemistry)

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Chloride	**28**	**mg/L**	**0.50**	**0.13**	**EPA-300.0**	ND		1
Nitrate as N	**0.99**	**mg/L**	**0.10**	**0.024**	**EPA-300.0**	ND	**A26,S05**	1
Sulfate	**21**	**mg/L**	**1.0**	**0.14**	**EPA-300.0**	ND		1
Total Dissolved Solids @ 180 C	**280**	**mg/L**	**20**	**10**	**EPA-160.1**	ND	**A07**	2
Total Suspended Solids (Glass Fiber)	**2400**	**mg/L**	**23**	**23**	**EPA-160.2**	ND	**A07**	3
MBAS	ND	mg/L	0.10	0.025	EPA-425.1	ND	A26,S05	4
Total Nitrogen	**5.1**	**mg/L**	**0.30**	**0.10**	**Calc**	ND		5
Total Kjeldahl Nitrogen	**4.1**	**mg/L**	**0.20**	**0.067**	**EPA-351.2**	ND		6
Nitrite as N	ND	ug/L	50	10	EPA-353.2	ND	A26,S05	7
Total Phosphorus	**1.0**	**mg/L**	**0.050**	**0.017**	**EPA-365.4**	ND		8
Non-Volatile Organic Carbon	**33**	**mg/L**	**5.0**	**1.5**	**EPA-415.1**	ND	**A07**	9

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-300.0	04/13/20 16:00	04/13/20 19:00	CMM	IC7	1	B075354	No Prep
2	EPA-160.1	04/16/20 16:00	04/16/20 16:00	CAD	MANUAL	2	B075627	No Prep
3	EPA-160.2	04/14/20 09:00	04/14/20 09:00	OJP	MANUAL	45.455	B075436	No Prep
4	EPA-425.1	04/15/20 07:30	04/15/20 07:30	JMN	SPEC06	1	B075548	No Prep
5	Calc	04/13/20 15:01	04/29/20 17:01	AMM	Calc	1	B^D0141	Calc
6	EPA-351.2	04/27/20 08:45	04/28/20 14:46	JMH2	SC-2	1	B076461	EPA 351.2
7	EPA-353.2	04/14/20 08:49	04/14/20 08:49	MC1	KONE-1	1	B075605	No Prep
8	EPA-365.4	04/27/20 08:45	04/29/20 10:13	JMH2	SC-2	1	B076462	EPA 365.4
9	EPA-415.1	04/15/20 07:00	04/16/20 08:26	ALW	TOC2	5	B075339	No Prep

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Metals Analysis

BCL Sample ID: 2010716-02 | **Client Sample Name:** MID, 4/10/2020 1:30:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Antimony	**0.24**	**ug/L**	**4.0**	**0.22**	**EPA-200.8**	ND	**J,A07**	1
Total Recoverable Arsenic	**3.3**	**ug/L**	**4.0**	**1.4**	**EPA-200.8**	ND	**J,A07**	1
Total Recoverable Barium	**270**	**ug/L**	**2.0**	**0.42**	**EPA-200.8**	0.43	**A07**	1
Total Recoverable Beryllium	**0.65**	**ug/L**	**2.0**	**0.28**	**EPA-200.8**	ND	**J,A07**	1
Total Recoverable Cadmium	**0.44**	**ug/L**	**2.0**	**0.22**	**EPA-200.8**	ND	**J,A07**	1
Total Recoverable Chromium	**32**	**ug/L**	**6.0**	**1.0**	**EPA-200.8**	ND	**A07**	1
Total Recoverable Cobalt	**26**	**ug/L**	**2.0**	**0.20**	**EPA-200.8**	ND	**A07**	1
Total Recoverable Copper	**85**	**ug/L**	**4.0**	**0.44**	**EPA-200.8**	0.78	**A07**	1
Total Recoverable Iron	**21000**	**ug/L**	**50**	**30**	**EPA-200.7**	ND		2
Total Recoverable Lead	**23**	**ug/L**	**2.0**	**0.20**	**EPA-200.8**	ND	**A07**	1
Total Recoverable Manganese	**910**	**ug/L**	**10**	**4.0**	**EPA-200.7**	ND		2
Total Recoverable Mercury	ND	ug/L	0.20	0.022	EPA-245.1	ND		3
Total Recoverable Molybdenum	**0.77**	**ug/L**	**2.0**	**0.22**	**EPA-200.8**	ND	**J,A07**	1
Total Recoverable Nickel	**24**	**ug/L**	**4.0**	**0.38**	**EPA-200.8**	0.90	**A07**	1
Total Recoverable Selenium	ND	ug/L	4.0	0.38	EPA-200.8	ND	A07	1
Total Recoverable Silver	ND	ug/L	2.0	0.20	EPA-200.8	ND	A07	4
Total Recoverable Thallium	**0.50**	**ug/L**	**2.0**	**0.20**	**EPA-200.8**	ND	**J,A07**	1
Total Recoverable Vanadium	**120**	**ug/L**	**6.0**	**1.6**	**EPA-200.8**	ND	**A07**	1
Total Recoverable Zinc	**170**	**ug/L**	**20**	**3.4**	**EPA-200.8**	5.1	**A07**	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-200.8	04/15/20 12:15	04/15/20 18:34	AS1	PE-EL4	2	B075555	EPA 200.2
2	EPA-200.7	04/13/20 16:40	04/14/20 18:11	JRG	PE-OP4	1	B075327	EPA 200.2
3	EPA-245.1	04/16/20 09:00	04/16/20 12:40	TMT	CETAC3	1	B075618	EPA 245.1
4	EPA-200.8	04/16/20 09:30	04/16/20 14:39	AS1	PE-EL2	2	B075654	EPA 200.2

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11415 West Bernardo Court, Suite 200
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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides and PCB's (EPA Method 508)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075742						
Aldrin	B075742-BLK1	ND	ug/L	0.0050	0.0026	
alpha-BHC	B075742-BLK1	ND	ug/L	0.0050	0.0032	
beta-BHC	B075742-BLK1	ND	ug/L	0.0050	0.0020	
delta-BHC	B075742-BLK1	ND	ug/L	0.0050	0.0021	
gamma-BHC (Lindane)	B075742-BLK1	ND	ug/L	0.0050	0.0020	
Chlordane (Technical)	B075742-BLK1	ND	ug/L	0.10	0.036	
4,4'-DDD	B075742-BLK1	ND	ug/L	0.0050	0.0023	
4,4'-DDE	B075742-BLK1	ND	ug/L	0.0050	0.0022	
4,4'-DDT	B075742-BLK1	ND	ug/L	0.0050	0.0038	
Dieldrin	B075742-BLK1	ND	ug/L	0.0050	0.0013	
Endosulfan I	B075742-BLK1	ND	ug/L	0.0050	0.0016	
Endosulfan II	B075742-BLK1	ND	ug/L	0.0050	0.0027	
Endosulfan sulfate	B075742-BLK1	ND	ug/L	0.0050	0.0040	
Endrin	B075742-BLK1	ND	ug/L	0.0050	0.0020	
Endrin aldehyde	B075742-BLK1	ND	ug/L	0.010	0.0021	
Heptachlor	B075742-BLK1	ND	ug/L	0.0050	0.0019	
Heptachlor epoxide	B075742-BLK1	ND	ug/L	0.0050	0.0014	
Methoxychlor	B075742-BLK1	ND	ug/L	0.0050	0.0030	
Toxaphene	B075742-BLK1	ND	ug/L	1.0	0.050	
PCB-1016	B075742-BLK1	ND	ug/L	0.20	0.066	
PCB-1221	B075742-BLK1	ND	ug/L	0.20	0.063	
PCB-1232	B075742-BLK1	ND	ug/L	0.20	0.059	
PCB-1242	B075742-BLK1	ND	ug/L	0.20	0.037	
PCB-1248	B075742-BLK1	ND	ug/L	0.20	0.044	
PCB-1254	B075742-BLK1	ND	ug/L	0.20	0.037	
PCB-1260	B075742-BLK1	ND	ug/L	0.20	0.089	
Total PCB's (Summation)	B075742-BLK1	ND	ug/L	0.20	0.10	
TCMX (Surrogate)	**B075742-BLK1**	**90.5**	%	**60 - 130 (LCL - UCL)**		
Decachlorobiphenyl (Surrogate)	**B075742-BLK1**	**78.2**	%	**60 - 130 (LCL - UCL)**		

Geologic Associates (Main)
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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides and PCB's (EPA Method 508)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075742										
Aldrin	B075742-BS1	LCS	0.14967	0.15000	ug/L	99.8		60 - 130		
gamma-BHC (Lindane)	B075742-BS1	LCS	0.19290	0.15000	ug/L	129		60 - 130		
4,4'-DDT	B075742-BS1	LCS	0.15165	0.15000	ug/L	101		60 - 130		
Dieldrin	B075742-BS1	LCS	0.15733	0.15000	ug/L	105		60 - 130		
Endrin	B075742-BS1	LCS	0.18935	0.15000	ug/L	126		60 - 130		
Heptachlor	B075742-BS1	LCS	0.16195	0.15000	ug/L	108		60 - 130		
TCMX (Surrogate)	B075742-BS1	LCS	0.29059	0.30000	ug/L	96.9		60 - 130		
Decachlorobiphenyl (Surrogate)	B075742-BS1	LCS	0.40066	0.60000	ug/L	66.8		60 - 130		

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San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides and PCB's (EPA Method 508)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075742	Used client sample: N										
Aldrin	MS	2009671-12	ND	0.15032	0.15000	ug/L		100		60 - 130	
	MSD	2009671-12	ND	0.15091	0.15000	ug/L	0.4	101	30	60 - 130	
gamma-BHC (Lindane)	MS	2009671-12	ND	0.19447	0.15000	ug/L		130		60 - 130	
	MSD	2009671-12	ND	0.19402	0.15000	ug/L	0.2	129	30	60 - 130	
4,4'-DDT	MS	2009671-12	ND	0.15097	0.15000	ug/L		101		60 - 130	
	MSD	2009671-12	ND	0.15167	0.15000	ug/L	0.5	101	30	60 - 130	
Dieldrin	MS	2009671-12	ND	0.15498	0.15000	ug/L		103		60 - 130	
	MSD	2009671-12	ND	0.15382	0.15000	ug/L	0.8	103	30	60 - 130	
Endrin	MS	2009671-12	ND	0.18795	0.15000	ug/L		125		60 - 130	
	MSD	2009671-12	ND	0.18988	0.15000	ug/L	1.0	127	30	60 - 130	
Heptachlor	MS	2009671-12	ND	0.16080	0.15000	ug/L		107		60 - 130	
	MSD	2009671-12	ND	0.16132	0.15000	ug/L	0.3	108	30	60 - 130	
TCMX (Surrogate)	MS	2009671-12	ND	0.29451	0.30000	ug/L		98.2		60 - 130	
	MSD	2009671-12	ND	0.30105	0.30000	ug/L	2.2	100		60 - 130	
Decachlorobiphenyl (Surrogate)	MS	2009671-12	ND	0.39531	0.60000	ug/L		65.9		60 - 130	
	MSD	2009671-12	ND	0.39924	0.60000	ug/L	1.0	66.5		60 - 130	

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Organic Analysis (EPA Method 515.1)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075911						
Bentazon	B075911-BLK1	ND	ug/L	0.80	0.22	
2,4-D	B075911-BLK1	ND	ug/L	0.40	0.18	
2,4-DB	B075911-BLK1	ND	ug/L	3.0	0.37	
Dalapon	B075911-BLK1	ND	ug/L	5.0	0.31	
Dicamba	B075911-BLK1	ND	ug/L	0.080	0.040	
Dichloroprop	B075911-BLK1	ND	ug/L	0.50	0.11	
Dinoseb	B075911-BLK1	ND	ug/L	0.20	0.057	
MCPA	B075911-BLK1	ND	ug/L	10	6.0	
MCPP	B075911-BLK1	ND	ug/L	10	6.0	
2,4,5-T	B075911-BLK1	ND	ug/L	0.090	0.012	
2,4,5-TP (Silvex)	B075911-BLK1	ND	ug/L	0.070	0.032	
2,4-Dichlorophenylacetic acid (Surrogate)	**B075911-BLK1**	**91.8**	%	**40 - 120 (LCL - UCL)**		

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Organic Analysis (EPA Method 515.1)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075911										
2,4-D	B075911-BS1	LCS	1.7400	2.4000	ug/L	72.5		50 - 120		
2,4-DB	B075911-BS1	LCS	3.9300	5.4000	ug/L	72.8		50 - 120		
Dicamba	B075911-BS1	LCS	0.40000	0.60000	ug/L	66.7		50 - 120		
Dichloroprop	B075911-BS1	LCS	1.6900	2.4000	ug/L	70.4		50 - 120		
Dinoseb	B075911-BS1	LCS	0.64000	1.2000	ug/L	53.3		50 - 120		
2,4,5-T	B075911-BS1	LCS	0.25000	0.60000	ug/L	41.7		40 - 120		
2,4,5-TP (Silvex)	B075911-BS1	LCS	0.36000	0.60000	ug/L	60.0		50 - 120		
2,4-Dichlorophenylacetic acid (Surrogate)	B075911-BS1	LCS	3.1200	4.0000	ug/L	78.0		40 - 120		

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Organic Analysis (EPA Method 515.1)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075911	Used client sample: N										
2,4-D	MS	2009671-14	ND	1.8800	2.4000	ug/L		78.3		40 - 120	
	MSD	2009671-14	ND	1.7900	2.4000	ug/L	4.9	74.6	30	40 - 120	
2,4-DB	MS	2009671-14	ND	4.3400	5.4000	ug/L		80.4		50 - 120	
	MSD	2009671-14	ND	4.0600	5.4000	ug/L	6.7	75.2	30	50 - 120	
Dicamba	MS	2009671-14	ND	0.44000	0.60000	ug/L		73.3		50 - 120	
	MSD	2009671-14	ND	0.40000	0.60000	ug/L	9.5	66.7	30	50 - 120	
Dichloroprop	MS	2009671-14	ND	1.9400	2.4000	ug/L		80.8		40 - 120	
	MSD	2009671-14	ND	1.7600	2.4000	ug/L	9.7	73.3	30	40 - 120	
Dinoseb	MS	2009671-14	ND	0.76000	1.2000	ug/L		63.3		40 - 130	
	MSD	2009671-14	ND	0.69000	1.2000	ug/L	9.7	57.5	30	40 - 130	
2,4,5-T	MS	2009671-14	ND	0.29000	0.60000	ug/L		48.3		40 - 120	
	MSD	2009671-14	ND	0.28000	0.60000	ug/L	3.5	46.7	30	40 - 120	
2,4,5-TP (Silvex)	MS	2009671-14	ND	0.40000	0.60000	ug/L		66.7		40 - 120	
	MSD	2009671-14	ND	0.37000	0.60000	ug/L	7.8	61.7	30	40 - 120	
2,4-Dichlorophenylacetic acid (Surrogate	MS	2009671-14	ND	3.3700	4.0000	ug/L		84.2		40 - 120	
	MSD	2009671-14	ND	3.1400	4.0000	ug/L	7.1	78.5		40 - 120	

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075334						
Benzene	B075334-BLK1	ND	ug/L	0.50	0.11	
Bromobenzene	B075334-BLK1	ND	ug/L	0.50	0.15	
Bromochloromethane	B075334-BLK1	ND	ug/L	0.50	0.27	
Bromodichloromethane	B075334-BLK1	ND	ug/L	0.50	0.20	
Bromoform	B075334-BLK1	ND	ug/L	0.50	0.46	
Bromomethane	B075334-BLK1	ND	ug/L	0.50	0.20	
n-Butylbenzene	B075334-BLK1	ND	ug/L	0.50	0.15	
sec-Butylbenzene	B075334-BLK1	ND	ug/L	0.50	0.13	
tert-Butylbenzene	B075334-BLK1	ND	ug/L	0.50	0.18	
Carbon tetrachloride	B075334-BLK1	ND	ug/L	0.50	0.17	
Chlorobenzene	B075334-BLK1	ND	ug/L	0.50	0.14	
Chloroethane	B075334-BLK1	ND	ug/L	0.50	0.17	
Chloroform	B075334-BLK1	ND	ug/L	0.50	0.14	
Chloromethane	B075334-BLK1	ND	ug/L	0.50	0.11	
2-Chlorotoluene	B075334-BLK1	ND	ug/L	0.50	0.14	
4-Chlorotoluene	B075334-BLK1	ND	ug/L	0.50	0.093	
Dibromochloromethane	B075334-BLK1	ND	ug/L	0.50	0.22	
1,2-Dibromo-3-chloropropane	B075334-BLK1	ND	ug/L	1.0	0.89	
1,2-Dibromoethane	B075334-BLK1	ND	ug/L	0.50	0.22	
Dibromomethane	B075334-BLK1	ND	ug/L	0.50	0.23	
1,2-Dichlorobenzene	B075334-BLK1	ND	ug/L	0.50	0.21	
1,3-Dichlorobenzene	B075334-BLK1	ND	ug/L	0.50	0.16	
1,4-Dichlorobenzene	B075334-BLK1	ND	ug/L	0.50	0.15	
Dichlorodifluoromethane	B075334-BLK1	ND	ug/L	0.50	0.15	
1,1-Dichloroethane	B075334-BLK1	ND	ug/L	0.50	0.15	
1,2-Dichloroethane	B075334-BLK1	ND	ug/L	0.50	0.17	
1,1-Dichloroethene	B075334-BLK1	ND	ug/L	0.50	0.27	
cis-1,2-Dichloroethene	B075334-BLK1	ND	ug/L	0.50	0.27	
trans-1,2-Dichloroethene	B075334-BLK1	ND	ug/L	0.50	0.17	
1,2-Dichloropropane	B075334-BLK1	ND	ug/L	0.50	0.15	
1,3-Dichloropropane	B075334-BLK1	ND	ug/L	0.50	0.13	
2,2-Dichloropropane	B075334-BLK1	ND	ug/L	0.50	0.18	
1,1-Dichloropropene	B075334-BLK1	ND	ug/L	0.50	0.19	
cis-1,3-Dichloropropene	B075334-BLK1	ND	ug/L	0.50	0.14	

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075334						
trans-1,3-Dichloropropene	B075334-BLK1	ND	ug/L	0.50	0.13	
Total 1,3-Dichloropropene	B075334-BLK1	ND	ug/L	0.50	0.27	
Ethylbenzene	B075334-BLK1	ND	ug/L	0.50	0.15	
Hexachlorobutadiene	B075334-BLK1	ND	ug/L	0.50	0.20	
Isopropylbenzene	B075334-BLK1	ND	ug/L	0.50	0.14	
p-Isopropyltoluene	B075334-BLK1	ND	ug/L	0.50	0.14	
Methylene chloride	B075334-BLK1	ND	ug/L	0.50	0.21	
Methyl t-butyl ether	B075334-BLK1	ND	ug/L	0.50	0.14	
Naphthalene	B075334-BLK1	ND	ug/L	0.50	0.16	
n-Propylbenzene	B075334-BLK1	ND	ug/L	0.50	0.12	
Styrene	B075334-BLK1	ND	ug/L	0.50	0.12	
1,1,1,2-Tetrachloroethane	B075334-BLK1	ND	ug/L	0.50	0.21	
1,1,2,2-Tetrachloroethane	B075334-BLK1	ND	ug/L	0.50	0.17	
Tetrachloroethene	B075334-BLK1	ND	ug/L	0.50	0.23	
Toluene	B075334-BLK1	ND	ug/L	0.50	0.17	
1,2,3-Trichlorobenzene	B075334-BLK1	ND	ug/L	0.50	0.19	
1,2,4-Trichlorobenzene	B075334-BLK1	ND	ug/L	0.50	0.15	
1,1,1-Trichloroethane	B075334-BLK1	ND	ug/L	0.50	0.21	
1,1,2-Trichloroethane	B075334-BLK1	ND	ug/L	0.50	0.21	
Trichloroethene	B075334-BLK1	ND	ug/L	0.50	0.19	
Trichlorofluoromethane	B075334-BLK1	ND	ug/L	0.50	0.14	
1,2,3-Trichloropropane	B075334-BLK1	ND	ug/L	1.0	0.78	
1,1,2-Trichloro-1,2,2-trifluoroethane	B075334-BLK1	ND	ug/L	0.50	0.19	
1,2,4-Trimethylbenzene	B075334-BLK1	ND	ug/L	0.50	0.17	
1,3,5-Trimethylbenzene	B075334-BLK1	ND	ug/L	0.50	0.14	
Vinyl chloride	B075334-BLK1	ND	ug/L	0.50	0.18	
Total Xylenes	B075334-BLK1	ND	ug/L	0.50	0.47	
Total Trihalomethanes	B075334-BLK1	ND	ug/L	2.0	0.97	
t-Amyl Methyl ether	B075334-BLK1	ND	ug/L	0.50	0.19	
t-Butyl alcohol	B075334-BLK1	ND	ug/L	10	9.4	
Diisopropyl ether	B075334-BLK1	ND	ug/L	0.50	0.36	
Ethyl t-butyl ether	B075334-BLK1	ND	ug/L	0.50	0.32	
p- & m-Xylenes	B075334-BLK1	ND	ug/L	0.50	0.34	
o-Xylene	B075334-BLK1	ND	ug/L	0.50	0.13	

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075334						
1,2-Dichloroethane-d4 (Surrogate)	B075334-BLK1	100	%	75 - 125 (LCL - UCL)		
Toluene-d8 (Surrogate)	B075334-BLK1	98.9	%	80 - 120 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	B075334-BLK1	102	%	80 - 120 (LCL - UCL)		

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075334										
Benzene	B075334-BS1	LCS	24.780	25.000	ug/L	99.1		70 - 130		
Bromodichloromethane	B075334-BS1	LCS	26.050	25.000	ug/L	104		70 - 130		
Chlorobenzene	B075334-BS1	LCS	24.370	25.000	ug/L	97.5		70 - 130		
Chloroethane	B075334-BS1	LCS	25.240	25.000	ug/L	101		70 - 130		
1,4-Dichlorobenzene	B075334-BS1	LCS	24.830	25.000	ug/L	99.3		70 - 130		
1,1-Dichloroethane	B075334-BS1	LCS	25.980	25.000	ug/L	104		70 - 130		
1,1-Dichloroethene	B075334-BS1	LCS	26.260	25.000	ug/L	105		70 - 130		
Toluene	B075334-BS1	LCS	24.780	25.000	ug/L	99.1		70 - 130		
Trichloroethene	B075334-BS1	LCS	25.370	25.000	ug/L	101		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	B075334-BS1	LCS	10.620	10.000	ug/L	106		75 - 125		
Toluene-d8 (Surrogate)	B075334-BS1	LCS	9.9300	10.000	ug/L	99.3		80 - 120		
4-Bromofluorobenzene (Surrogate)	B075334-BS1	LCS	9.9100	10.000	ug/L	99.1		80 - 120		

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075334	Used client sample: N										
Benzene	MS	2010487-07	ND	25.270	25.000	ug/L		101		70 - 130	
	MSD	2010487-07	ND	25.900	25.000	ug/L	2.5	104	20	70 - 130	
Bromodichloromethane	MS	2010487-07	ND	27.510	25.000	ug/L		110		70 - 130	
	MSD	2010487-07	ND	27.900	25.000	ug/L	1.4	112	20	70 - 130	
Chlorobenzene	MS	2010487-07	ND	23.800	25.000	ug/L		95.2		70 - 130	
	MSD	2010487-07	ND	25.180	25.000	ug/L	5.6	101	20	70 - 130	
Chloroethane	MS	2010487-07	ND	25.540	25.000	ug/L		102		70 - 130	
	MSD	2010487-07	ND	26.600	25.000	ug/L	4.1	106	20	70 - 130	
1,4-Dichlorobenzene	MS	2010487-07	ND	24.370	25.000	ug/L		97.5		70 - 130	
	MSD	2010487-07	ND	26.230	25.000	ug/L	7.4	105	20	70 - 130	
1,1-Dichloroethane	MS	2010487-07	ND	26.920	25.000	ug/L		108		70 - 130	
	MSD	2010487-07	ND	27.510	25.000	ug/L	2.2	110	20	70 - 130	
1,1-Dichloroethene	MS	2010487-07	ND	26.310	25.000	ug/L		105		70 - 130	
	MSD	2010487-07	ND	26.770	25.000	ug/L	1.7	107	20	70 - 130	
Toluene	MS	2010487-07	ND	24.380	25.000	ug/L		97.5		70 - 130	
	MSD	2010487-07	ND	25.330	25.000	ug/L	3.8	101	20	70 - 130	
Trichloroethene	MS	2010487-07	ND	24.520	25.000	ug/L		98.1		70 - 130	
	MSD	2010487-07	ND	25.080	25.000	ug/L	2.3	100	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	2010487-07	ND	11.620	10.000	ug/L		116		75 - 125	
	MSD	2010487-07	ND	11.370	10.000	ug/L	2.2	114		75 - 125	
Toluene-d8 (Surrogate)	MS	2010487-07	ND	9.9200	10.000	ug/L		99.2		80 - 120	
	MSD	2010487-07	ND	10.060	10.000	ug/L	1.4	101		80 - 120	
4-Bromofluorobenzene (Surrogate)	MS	2010487-07	ND	10.030	10.000	ug/L		100		80 - 120	
	MSD	2010487-07	ND	10.260	10.000	ug/L	2.3	103		80 - 120	

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B076114						
Acenaphthylene	B076114-BLK1	ND	ug/L	0.10	0.031	
Alachlor	B076114-BLK1	ND	ug/L	0.20	0.090	
Anthracene	B076114-BLK1	ND	ug/L	0.10	0.034	
Atraton	B076114-BLK1	ND	ug/L	0.50	0.057	
Atrazine	B076114-BLK1	ND	ug/L	0.30	0.14	
Benzo[a]anthracene	B076114-BLK1	ND	ug/L	0.20	0.044	
Benzo[b]fluoranthene	B076114-BLK1	ND	ug/L	0.30	0.034	
Benzo[k]fluoranthene	B076114-BLK1	ND	ug/L	0.30	0.072	
Benzo[a]pyrene	B076114-BLK1	ND	ug/L	0.10	0.050	
Benzo[g,h,i]perylene	B076114-BLK1	ND	ug/L	0.30	0.065	
Benzyl butyl phthalate	B076114-BLK1	ND	ug/L	4.0	0.047	
delta-BHC	B076114-BLK1	ND	ug/L	0.20	0.048	
gamma-BHC (Lindane)	B076114-BLK1	ND	ug/L	0.20	0.063	
bis(2-Ethylhexyl)phthalate	B076114-BLK1	ND	ug/L	3.0	0.030	
Bromacil	B076114-BLK1	ND	ug/L	0.50	0.043	
Chrysene	B076114-BLK1	ND	ug/L	0.30	0.060	
Diazinon	B076114-BLK1	ND	ug/L	0.20	0.080	
Dibenzo[a,h]anthracene	B076114-BLK1	ND	ug/L	0.30	0.051	
Di(2-ethylhexyl)adipate	B076114-BLK1	ND	ug/L	1.0	0.025	
Dimethoate	B076114-BLK1	ND	ug/L	2.0	0.050	
Dimethyl phthalate	B076114-BLK1	ND	ug/L	1.0	0.034	
Di-n-butyl phthalate	B076114-BLK1	ND	ug/L	1.0	0.063	
Fluorene	B076114-BLK1	ND	ug/L	0.20	0.029	
Hexachlorobenzene	B076114-BLK1	ND	ug/L	0.20	0.029	
Hexachlorocyclopentadiene	B076114-BLK1	ND	ug/L	1.0	0.12	
Indeno[1,2,3-cd]pyrene	B076114-BLK1	ND	ug/L	0.30	0.032	
Methoxychlor	B076114-BLK1	ND	ug/L	0.30	0.034	
Metolachlor	B076114-BLK1	ND	ug/L	0.50	0.056	
Metribuzin	B076114-BLK1	ND	ug/L	0.50	0.048	
Molinate	B076114-BLK1	ND	ug/L	0.50	0.036	
Phenanthrene	B076114-BLK1	ND	ug/L	0.10	0.020	
Prometon	B076114-BLK1	ND	ug/L	0.50	0.11	
Prometryn	B076114-BLK1	ND	ug/L	0.50	0.045	
Pyrene	B076114-BLK1	ND	ug/L	0.10	0.040	

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Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B076114						
Secbumeton	B076114-BLK1	ND	ug/L	0.50	0.079	
Simazine	B076114-BLK1	ND	ug/L	0.30	0.066	
Terbutryn	B076114-BLK1	ND	ug/L	0.50	0.050	
Thiobencarb	B076114-BLK1	ND	ug/L	0.50	0.044	
Perylene-d12 (Surrogate)	**B076114-BLK1**	**32.0**	%	**60 - 140 (LCL - UCL)**		**S09**
1,3-Dimethyl-2-nitrobenzene (Surrogate)	**B076114-BLK1**	**50.4**	%	**70 - 130 (LCL - UCL)**		**S09**
Triphenylphosphate (Surrogate)	**B076114-BLK1**	**130**	%	**70 - 130 (LCL - UCL)**		
Pyrene-d10 (Surrogate)	**B076114-BLK1**	**93.4**	%	**70 - 130 (LCL - UCL)**		

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B076114										
Acenaphthylene	B076114-BS1	LCS	0.90000	2.0000	ug/L	45.0		60 - 120		L01
Alachlor	B076114-BS1	LCS	2.3600	2.0000	ug/L	118		60 - 120		
Atrazine	B076114-BS1	LCS	1.3100	2.0000	ug/L	65.5		60 - 120		
Benzo[a]pyrene	B076114-BS1	LCS	1.7000	2.0000	ug/L	85.0		60 - 120		
Chrysene	B076114-BS1	LCS	1.4600	2.0000	ug/L	73.0		60 - 120		
Pyrene	B076114-BS1	LCS	1.9800	2.0000	ug/L	99.0		60 - 120		
Simazine	B076114-BS1	LCS	1.7000	2.0000	ug/L	85.0		60 - 120		
Perylene-d12 (Surrogate)	B076114-BS1	LCS	1.8200	5.0000	ug/L	36.4		60 - 140		S09
1,3-Dimethyl-2-nitrobenzene (Surrogate)	B076114-BS1	LCS	2.5000	5.0000	ug/L	50.0		70 - 130		S09
Triphenylphosphate (Surrogate)	B076114-BS1	LCS	6.3500	5.0000	ug/L	127		70 - 130		
Pyrene-d10 (Surrogate)	B076114-BS1	LCS	4.9500	5.0000	ug/L	99.0		70 - 130		

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B076114	Used client sample: N										
Acenaphthylene	MS	**2009671-35**	**ND**	**0.87000**	**2.0000**	**ug/L**		**43.5**		**50 - 120**	**Q03**
	MSD	**2009671-35**	**ND**	**0.88000**	**2.0000**	**ug/L**	**1.1**	**44.0**	**30**	**50 - 120**	**Q03**
Alachlor	MS	**2009671-35**	**ND**	**2.6300**	**2.0000**	**ug/L**		**132**		**50 - 120**	**Q03**
	MSD	**2009671-35**	**ND**	**2.3000**	**2.0000**	**ug/L**	**13.4**	**115**	**30**	**50 - 120**	
Atrazine	MS	2009671-35	ND	1.2800	2.0000	ug/L		64.0		50 - 120	
	MSD	2009671-35	ND	1.1500	2.0000	ug/L	10.7	57.5	30	50 - 120	
Benzo[a]pyrene	MS	2009671-35	ND	1.5600	2.0000	ug/L		78.0		50 - 120	
	MSD	2009671-35	ND	1.5500	2.0000	ug/L	0.6	77.5	30	50 - 120	
Chrysene	MS	2009671-35	ND	1.5200	2.0000	ug/L		76.0		50 - 120	
	MSD	2009671-35	ND	1.9200	2.0000	ug/L	23.3	96.0	30	50 - 120	
Pyrene	MS	2009671-35	ND	1.9700	2.0000	ug/L		98.5		50 - 120	
	MSD	2009671-35	ND	1.9100	2.0000	ug/L	3.1	95.5	30	50 - 120	
Simazine	MS	2009671-35	ND	1.7500	2.0000	ug/L		87.5		50 - 120	
	MSD	2009671-35	ND	1.5700	2.0000	ug/L	10.8	78.5	30	50 - 120	
Perylene-d12 (Surrogate)	MS	**2009671-35**	**ND**	**1.5900**	**5.0000**	**ug/L**		**31.8**		**60 - 140**	**S09**
	MSD	**2009671-35**	**ND**	**1.6300**	**5.0000**	**ug/L**	**2.5**	**32.6**		**60 - 140**	**S09**
1,3-Dimethyl-2-nitrobenzene (Surrogate	MS	**2009671-35**	**ND**	**2.5100**	**5.0000**	**ug/L**		**50.2**		**70 - 130**	**S09**
	MSD	**2009671-35**	**ND**	**2.4500**	**5.0000**	**ug/L**	**2.4**	**49.0**		**70 - 130**	**S09**
Triphenylphosphate (Surrogate)	MS	**2009671-35**	**ND**	**6.6600**	**5.0000**	**ug/L**		**133**		**70 - 130**	**S09**
	MSD	**2009671-35**	**ND**	**4.9300**	**5.0000**	**ug/L**	**29.9**	**98.6**		**70 - 130**	
Pyrene-d10 (Surrogate)	MS	2009671-35	ND	4.9400	5.0000	ug/L		98.8		70 - 130	
	MSD	2009671-35	ND	4.9200	5.0000	ug/L	0.4	98.4		70 - 130	

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EPA Method 1664

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075919						
Oil and Grease	B075919-BLK1	ND	mg/L	5.0	0.66	

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EPA Method 1664

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075919										
Oil and Grease	B075919-BS1	LCS	40.900	40.300	mg/L	101		78 - 114		

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EPA Method 1664

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075919	Used client sample: N										
Oil and Grease	DUP	2009671-08	ND	ND		mg/L			18		
	MS	2009671-08	ND	41.600	40.300	mg/L		103		78 - 114	
	MSD	2009671-08	ND	41.700	40.300	mg/L	0.2	103	18	78 - 114	

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Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B^D0141						
Total Nitrogen	B^D0141-BLK1	ND	mg/L	0.30	0.10	
QC Batch ID: B075339						
Non-Volatile Organic Carbon	B075339-BLK1	ND	mg/L	1.0	0.30	
QC Batch ID: B075354						
Chloride	B075354-BLK1	ND	mg/L	0.50	0.13	
Nitrate as N	B075354-BLK1	ND	mg/L	0.10	0.024	
Sulfate	B075354-BLK1	ND	mg/L	1.0	0.14	
QC Batch ID: B075436						
Total Suspended Solids (Glass Fiber)	B075436-BLK1	ND	mg/L	0.50	0.50	
QC Batch ID: B075548						
MBAS	B075548-BLK1	ND	mg/L	0.10	0.025	
QC Batch ID: B075605						
Nitrite as N	B075605-BLK1	ND	ug/L	50	10	
QC Batch ID: B075627						
Total Dissolved Solids @ 180 C	B075627-BLK1	ND	mg/L	6.7	3.3	
QC Batch ID: B076461						
Total Kjeldahl Nitrogen	B076461-BLK1	ND	mg/L	0.20	0.067	
QC Batch ID: B076462						
Total Phosphorus	B076462-BLK1	ND	mg/L	0.050	0.017	

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Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075339										
Non-Volatile Organic Carbon	B075339-BS1	LCS	5.2450	5.0000	mg/L	105		85 - 115		
QC Batch ID: B075354										
Chloride	B075354-BS1	LCS	51.313	50.000	mg/L	103		90 - 110		
Nitrate as N	B075354-BS1	LCS	5.0580	5.0000	mg/L	101		90 - 110		
Sulfate	B075354-BS1	LCS	102.79	100.00	mg/L	103		90 - 110		
QC Batch ID: B075548										
MBAS	B075548-BS1	LCS	0.19370	0.20000	mg/L	96.8		85 - 115		
QC Batch ID: B075605										
Nitrite as N	B075605-BS1	LCS	514.82	500.00	ug/L	103		90 - 110		
QC Batch ID: B075627										
Total Dissolved Solids @ 180 C	B075627-BS1	LCS	620.00	586.00	mg/L	106		90 - 110		
QC Batch ID: B076461										
Total Kjeldahl Nitrogen	B076461-BS1	LCS	2.1415	2.0000	mg/L	107		90 - 110		
QC Batch ID: B076462										
Total Phosphorus	B076462-BS1	LCS	0.99110	1.0000	mg/L	99.1		85 - 115		

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Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075339	Used client sample: N										
Non-Volatile Organic Carbon	DUP	2010713-01	0.36900	0.33900		mg/L	8.5		10		J
	MS	2010713-01	0.36900	5.4693	5.0251	mg/L		101		80 - 120	
	MSD	2010713-01	0.36900	5.4121	5.0251	mg/L	1.1	100	10	80 - 120	
QC Batch ID: B075354	Used client sample: Y - Description: UP, 04/10/2020 14:30										
Chloride	DUP	2010716-01	50.448	50.258		mg/L	0.4		10		
	MS	2010716-01	50.448	103.42	50.505	mg/L		105		80 - 120	
	MSD	2010716-01	50.448	103.58	50.505	mg/L	0.1	105	10	80 - 120	
Nitrate as N	DUP	2010716-01	0.24700	0.22600		mg/L	8.9		10		
	MS	2010716-01	0.24700	5.2343	5.0505	mg/L		98.7		80 - 120	
	MSD	2010716-01	0.24700	5.2545	5.0505	mg/L	0.4	99.1	10	80 - 120	
Sulfate	DUP	2010716-01	46.946	46.718		mg/L	0.5		10		
	MS	2010716-01	46.946	155.51	101.01	mg/L		107		80 - 120	
	MSD	2010716-01	46.946	155.57	101.01	mg/L	0.0	108	10	80 - 120	
QC Batch ID: B075436	Used client sample: Y - Description: MID, 04/10/2020 13:30										
Total Suspended Solids (Glass Fiber)	DUP	2010716-02	2400.0	2404.5		mg/L	0.2		10		
QC Batch ID: B075548	Used client sample: N										
MBAS	DUP	2010742-01	ND	ND		mg/L			20		
	MS	2010742-01	ND	0.40480	0.40000	mg/L		101		80 - 120	
	MSD	2010742-01	ND	0.39320	0.40000	mg/L	2.9	98.3	20	80 - 120	
QC Batch ID: B075605	Used client sample: Y - Description: UP, 04/10/2020 14:30										
Nitrite as N	DUP	2010716-01	ND	ND		ug/L			10		
	MS	2010716-01	ND	530.00	526.32	ug/L		101		90 - 110	
	MSD	2010716-01	ND	545.11	526.32	ug/L	2.8	104	10	90 - 110	
QC Batch ID: B075627	Used client sample: N										
Total Dissolved Solids @ 180 C	DUP	2011006-01	15500	15400		mg/L	0.6		10		
QC Batch ID: B076461	Used client sample: N										
Total Kjeldahl Nitrogen	DUP	2010701-10	0.27170	0.22290		mg/L	19.7		20		
	MS	2010701-10	0.27170	2.2322	2.0000	mg/L		98.0		90 - 110	
	MSD	2010701-10	0.27170	2.1980	2.0000	mg/L	1.5	96.3	20	90 - 110	
QC Batch ID: B076462	Used client sample: N										
Total Phosphorus	DUP	2010701-10	0.18190	0.19700		mg/L	8.0		20		
	MS	2010701-10	0.18190	1.2260	1.0000	mg/L		104		80 - 120	
	MSD	2010701-10	0.18190	1.1927	1.0000	mg/L	2.8	101	20	80 - 120	

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Metals Analysis

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075327						
Total Recoverable Iron	B075327-BLK1	ND	ug/L	50	30	
Total Recoverable Manganese	B075327-BLK1	ND	ug/L	10	4.0	
QC Batch ID: B075555						
Total Recoverable Antimony	B075555-BLK1	ND	ug/L	2.0	0.11	
Total Recoverable Arsenic	B075555-BLK1	ND	ug/L	2.0	0.70	
Total Recoverable Barium	**B075555-BLK1**	**0.21500**	**ug/L**	**1.0**	**0.21**	**J**
Total Recoverable Beryllium	B075555-BLK1	ND	ug/L	1.0	0.14	
Total Recoverable Cadmium	B075555-BLK1	ND	ug/L	1.0	0.11	
Total Recoverable Chromium	B075555-BLK1	ND	ug/L	3.0	0.50	
Total Recoverable Cobalt	B075555-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Copper	**B075555-BLK1**	**0.39200**	**ug/L**	**2.0**	**0.22**	**J**
Total Recoverable Lead	B075555-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Molybdenum	B075555-BLK1	ND	ug/L	1.0	0.11	
Total Recoverable Nickel	**B075555-BLK1**	**0.44800**	**ug/L**	**2.0**	**0.19**	**J**
Total Recoverable Selenium	B075555-BLK1	ND	ug/L	2.0	0.19	
Total Recoverable Thallium	B075555-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Vanadium	B075555-BLK1	ND	ug/L	3.0	0.78	
Total Recoverable Zinc	**B075555-BLK1**	**2.5360**	**ug/L**	**10**	**1.7**	**J**
QC Batch ID: B075618						
Total Recoverable Mercury	B075618-BLK1	ND	ug/L	0.20	0.022	
QC Batch ID: B075654						
Total Recoverable Silver	B075654-BLK1	ND	ug/L	1.0	0.10	

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Metals Analysis

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075327										
Total Recoverable Iron	B075327-BS1	LCS	1023.2	1000.0	ug/L	102		85 - 115		
Total Recoverable Manganese	B075327-BS1	LCS	499.89	500.00	ug/L	100		85 - 115		
QC Batch ID: B075555										
Total Recoverable Antimony	B075555-BS1	LCS	42.616	40.000	ug/L	107		85 - 115		
Total Recoverable Arsenic	B075555-BS1	LCS	104.20	100.00	ug/L	104		85 - 115		
Total Recoverable Barium	B075555-BS1	LCS	42.860	40.000	ug/L	107		85 - 115		
Total Recoverable Beryllium	B075555-BS1	LCS	45.562	40.000	ug/L	114		85 - 115		
Total Recoverable Cadmium	B075555-BS1	LCS	43.246	40.000	ug/L	108		85 - 115		
Total Recoverable Chromium	B075555-BS1	LCS	42.294	40.000	ug/L	106		85 - 115		
Total Recoverable Cobalt	B075555-BS1	LCS	43.402	40.000	ug/L	109		85 - 115		
Total Recoverable Copper	B075555-BS1	LCS	107.07	100.00	ug/L	107		85 - 115		
Total Recoverable Lead	B075555-BS1	LCS	111.05	100.00	ug/L	111		85 - 115		
Total Recoverable Molybdenum	B075555-BS1	LCS	39.085	40.000	ug/L	97.7		85 - 115		
Total Recoverable Nickel	B075555-BS1	LCS	111.41	100.00	ug/L	111		85 - 115		
Total Recoverable Selenium	B075555-BS1	LCS	105.00	100.00	ug/L	105		85 - 115		
Total Recoverable Thallium	B075555-BS1	LCS	43.127	40.000	ug/L	108		85 - 115		
Total Recoverable Vanadium	B075555-BS1	LCS	40.412	40.000	ug/L	101		85 - 115		
Total Recoverable Zinc	B075555-BS1	LCS	109.71	100.00	ug/L	110		85 - 115		
QC Batch ID: B075618										
Total Recoverable Mercury	B075618-BS1	LCS	0.96000	1.0000	ug/L	96.0		85 - 115		
QC Batch ID: B075654										
Total Recoverable Silver	B075654-BS1	LCS	39.553	40.000	ug/L	98.9		85 - 115		

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Metals Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075327	Used client sample: N										
Total Recoverable Iron	DUP	2010690-01	98.938	117.09		ug/L	16.8		20		
	MS	2010690-01	98.938	1235.6	1000.0	ug/L		114		75 - 125	
	MSD	2010690-01	98.938	1214.5	1000.0	ug/L	1.7	112	20	75 - 125	
Total Recoverable Manganese	DUP	2010690-01	4.4064	4.7616		ug/L	7.7		20		J
	MS	2010690-01	4.4064	532.46	500.00	ug/L		106		75 - 125	
	MSD	2010690-01	4.4064	517.87	500.00	ug/L	2.8	103	20	75 - 125	
QC Batch ID: B075555	Used client sample: N										
Total Recoverable Antimony	DUP	2010710-02	1.1120	1.0640		ug/L	4.4		20		J
	MS	2010710-02	1.1120	43.877	40.000	ug/L		107		70 - 130	
	MSD	2010710-02	1.1120	44.252	40.000	ug/L	0.9	108	20	70 - 130	
Total Recoverable Arsenic	DUP	2010710-02	ND	ND		ug/L			20		
	MS	2010710-02	ND	104.61	100.00	ug/L		105		70 - 130	
	MSD	2010710-02	ND	106.23	100.00	ug/L	1.5	106	20	70 - 130	
Total Recoverable Barium	DUP	2010710-02	6.6900	6.5450		ug/L	2.2		20		
	MS	2010710-02	6.6900	50.030	40.000	ug/L		108		70 - 130	
	MSD	2010710-02	6.6900	50.649	40.000	ug/L	1.2	110	20	70 - 130	
Total Recoverable Beryllium	DUP	2010710-02	ND	ND		ug/L			20		
	MS	2010710-02	ND	44.532	40.000	ug/L		111		70 - 130	
	MSD	2010710-02	ND	44.902	40.000	ug/L	0.8	112	20	70 - 130	
Total Recoverable Cadmium	DUP	2010710-02	ND	ND		ug/L			20		
	MS	2010710-02	ND	42.584	40.000	ug/L		106		70 - 130	
	MSD	2010710-02	ND	42.915	40.000	ug/L	0.8	107	20	70 - 130	
Total Recoverable Chromium	DUP	2010710-02	2.4390	2.3050		ug/L	5.6		20		J
	MS	2010710-02	2.4390	44.396	40.000	ug/L		105		70 - 130	
	MSD	2010710-02	2.4390	44.524	40.000	ug/L	0.3	105	20	70 - 130	
Total Recoverable Cobalt	DUP	2010710-02	0.14700	0.14700		ug/L	0		20		J
	MS	2010710-02	0.14700	42.808	40.000	ug/L		107		70 - 130	
	MSD	2010710-02	0.14700	42.969	40.000	ug/L	0.4	107	20	70 - 130	
Total Recoverable Copper	DUP	2010710-02	4.0050	3.6880		ug/L	8.2		20		
	MS	2010710-02	4.0050	112.20	100.00	ug/L		108		70 - 130	
	MSD	2010710-02	4.0050	115.20	100.00	ug/L	2.6	111	20	70 - 130	
Total Recoverable Lead	DUP	2010710-02	0.61100	0.54400		ug/L	11.6		20		J
	MS	2010710-02	0.61100	110.48	100.00	ug/L		110		70 - 130	
	MSD	2010710-02	0.61100	111.81	100.00	ug/L	1.2	111	20	70 - 130	
Total Recoverable Molybdenum	DUP	2010710-02	0.23900	0.21700		ug/L	9.6		20		J
	MS	2010710-02	0.23900	41.003	40.000	ug/L		102		70 - 130	
	MSD	2010710-02	0.23900	40.606	40.000	ug/L	1.0	101	20	70 - 130	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Metals Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075555	Used client sample: N										
Total Recoverable Nickel	DUP	2010710-02	2.6650	2.5580		ug/L	4.1		20		
	MS	2010710-02	2.6650	111.88	100.00	ug/L		109		70 - 130	
	MSD	2010710-02	2.6650	111.68	100.00	ug/L	0.2	109	20	70 - 130	
Total Recoverable Selenium	DUP	2010710-02	ND	ND		ug/L			20		
	MS	2010710-02	ND	103.91	100.00	ug/L		104		70 - 130	
	MSD	2010710-02	ND	104.97	100.00	ug/L	1.0	105	20	70 - 130	
Total Recoverable Thallium	DUP	2010710-02	ND	ND		ug/L			20		
	MS	2010710-02	ND	43.735	40.000	ug/L		109		70 - 130	
	MSD	2010710-02	ND	43.711	40.000	ug/L	0.1	109	20	70 - 130	
Total Recoverable Vanadium	DUP	2010710-02	ND	ND		ug/L			20		
	MS	2010710-02	ND	42.586	40.000	ug/L		106		70 - 130	
	MSD	2010710-02	ND	42.333	40.000	ug/L	0.6	106	20	70 - 130	
Total Recoverable Zinc	DUP	2010710-02	42.077	39.087		ug/L	7.4		20		
	MS	2010710-02	42.077	145.82	100.00	ug/L		104		70 - 130	
	MSD	2010710-02	42.077	150.76	100.00	ug/L	3.3	109	20	70 - 130	
QC Batch ID: B075618	Used client sample: N										
Total Recoverable Mercury	DUP	2010742-01	ND	ND		ug/L			20		
	MS	2010742-01	ND	0.94500	1.0000	ug/L		94.5		70 - 130	
	MSD	2010742-01	ND	0.97500	1.0000	ug/L	3.1	97.5	20	70 - 130	
QC Batch ID: B075654	Used client sample: N										
Total Recoverable Silver	DUP	2010966-01	ND	ND		ug/L			20		
	MS	2010966-01	ND	40.688	40.000	ug/L		102		70 - 130	
	MSD	2010966-01	ND	40.768	40.000	ug/L	0.2	102	20	70 - 130	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 04/30/2020 14:58
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Notes And Definitions

J	Estimated Value (CLP Flag)
MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A07	Detection and quantitation limits were raised due to sample dilution caused by high analyte concentration or matrix interference.
A20	Surrogate is low due to matrix interference. Interference verified through second extraction/analysis.
A26	Sample received past holding time.
L01	The Laboratory Control Sample Water (LCSW) recovery is not within laboratory established control limits.
Q03	Matrix spike recovery(s) was(were) not within the control limits.
S05	The sample holding time was exceeded.
S09	The surrogate recovery for this compound was not within the control limits.
V11	The Continuing Calibration Verification (CCV) recovery was not within established control limits.

Date of Report: 05/01/2020

Sarah Battelle

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Client Project:	S020.1016
BCL Project:	Cottonwood Sand Mine Project
BCL Work Order:	2011102
Invoice ID:	B378973

Enclosed are the results of analyses for samples received by the laboratory on 4/15/2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Natalie Serda
Client Service Rep

Stuart Buttram
Technical Director

Table of Contents

Chain of Custody and Cooler Receipt Form for 2011102 Page 1 of 2

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CHAIN-OF-CUSTODY RECORD 20-11102

EnviroMatrix (EMA) Analytical, Inc.
4340 Viewridge Ave., Ste. A - San Diego, CA 92123 - Phone (858) 560-7717 - Fax (858) 560-7763

EMA LOG #:
Client: GEO-LOGIC ASSOCIATES
Attn: SARAH BATELLE
Samplers(s): K. WELCHANS
Address: 11415 WEST BERNARDO COURT, #208
Phone: 858-451-1136 Fax:
Email: SBATELLE@GEO-LOGIC.COM
Billing Address: SAME
Project ID: COTTONWOOD
Project #: 2020.0016 PO #:

Requested Analysis (X = requested for sample 1)

- X Oil & Grease ☐413.1 ☐413.2 ☐1664
- 8015 (TPH) ☐Gas ☐Diesel ☐Ext
- X 624/8260 (VOC) Full ... (rows 1 and 2)
- X 625 / 8270 (SVOC) ☐PAH only
- X ~~608/8081~~ 508 (Organochlorine Pesticides) 525.2
- 608 / 8082 (Polychlorinated Biphenyls)
- X ~~8141~~ 507 (Organophosphorus Pesticides)
- TBT (Organotin Compounds)
- X ☐pH ☐EC TSS TDS
- X ☐Nitrate ☐Nitrite N-N ☐TKN ☐NH3
- CAC Title 22/CAM17 Metals ☐TTLC ☐STLC
- TCLP (RCRA) ☐Metals ☐Organics
- Cd Cr Cu Pb Ni Ag Zn ☐Dissolved
- Coliform ☐Total (MTF) ☐Fecal (MTF)
- Colilert, T+E Coli ☐P/A ☐Enumeration
- Enterococcus, ☐MTF ☐Enterolert
- Heterotrophic Plate Count (HPC)
- ☐BOD ☐COD ☐Cyanide
- X TOTAL PHOSPHORUS AS P
- X CHLORINATED HERBICIDES 515.1
- X CHLORIDE, SULFATE
- X TITLE 22 METALS + Fe
- X add MBAS per Sarah 4-15-20 TO

524.2 525.2 508 507 MW

ID #	Client Sample ID	Sample Date	Sample Time	Sample Matrix	Container # / Type
1	DOWN	4/14/20	1045	W	
2	TRIP BLANKS				
3					
4					
5					
6					
7					
8					
9					
10					

Stamps: CHK BY (initials); DISTRIBUTION; SUB-OUT; SHORT HOLDING TIME: Cr+6 NO2 NO3 OP SS DO Cl2 BOD MBAS COT

Matrix Codes: A = Air, DW = Drinking Water, GW = Groundwater, SW = Storm Water
WW = Wastewater, S = Soil, SED = Sediment, SD = Solid, T = Tissue, O = Oil, L = Liquid
Shipped By: ☒Courier ☐UPS ☐FedEx ☐USPS ☐Client Drop Off ☐Other
[1]Turn-Around-Time: ☐Same Day ☐1 day ☐2 day ☐3 day ☐4 day ☐5 day ☒STD (7-business days)
[1]Reporting Requirements: ☐Fax ☒PDF ☐Excel ☐Geotracker/EDF ☐Hard Copy ☐EDT ☐CEDEN ☐SDWIS
[2]Sample Disposal: ☒By Laboratory ☐Return to Client: P/U or Delivery ☐Archive

Sample Integrity

Correct Containers: Yes No N/A	Containers Properly Preserved: Yes No N/A
Custody Seals Intact: Yes No N/A	Temp @ Receipt:
COC/Labels Agree: Yes No N/A	Sampled By: Client EMA Autosampler

RELINQUISHED BY	DATE/TIME	RECEIVED BY
Signature: (signed) Print: KYLE WELCHANS Company: GEO-LOGIC ASSOC	4/14/20	Signature: (signed) Print: T. JACKSON Company: BCL 4-15-20 845
Signature: Print: Company:		Signature: Print: Company:
Signature: Print: Company:		Signature: Print: Company:

Project/Sample Location/Address:

Project/Sample Comments:

[1]Additional costs may apply. Please note there is a $35 minimum charge for all clients.
[2]EMA reserves the right to return any samples that do not match our waste profile.
NOTE: By relinquishing samples to EMA, Inc., client agrees to pay for the services requested on this COC form and any additional analyses performed on this project. Payment for services is due within 30 days from date of invoice. Samples will be disposed of 7 days after report has been finalized unless otherwise noted. All work is subject to EMA's terms and conditions.

Chain of Custody and Cooler Receipt Form for 2011102 Page 2 of 2

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 1

Submission #: 26-11102

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☐ Other ☒ (Specify) GSO	Ice Chest ☒ None ☐ Box ☐ Other ☐ (Specify)	YES ☐ NO ☐ W / S

Refrigerant: Ice ☒ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☒ Comments:

All samples received? Yes ☒ No ☐ All samples containers intact? Yes ☒ No ☐ Description(s) match COC? Yes ☒ No ☐

COC Received ☒ YES ☐ NO

Emissivity: 97 Container: PE Thermometer ID: 274 Date/Time 4/15/20 845

Temperature: (A) 0.9 °C / (C) 0.6 °C Analyst Init TK

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES	D,K									
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz	L									
PT CYANIDE										
PT NITROGEN FORMS	M									
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON	N									
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK		BTBC								
40ml VOA VIAL	A→I									
QT EPA 1664	O									
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA ~~508/608/8080~~ 8081	P									
QT EPA 515.1/8150	Q→S									
QT EPA 525	T									
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: JM Date/Time: 4/15/20 1211

A = Actual / C = Corrected

Rev 21 05/23/2016

S:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 21

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
2011102-01	**COC Number:**	---	**Receive Date:**	04/15/2020 08:45
	Project Number:	---	**Sampling Date:**	04/14/2020 10:45
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	Down	**Lab Matrix:**	Water
	Sampled By:	---	**Sample Type:**	Water
2011102-02	**COC Number:**	---	**Receive Date:**	04/15/2020 08:45
	Project Number:	---	**Sampling Date:**	04/14/2020 00:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	Trip Blanks	**Lab Matrix:**	Water
	Sampled By:	---	**Sample Type:**	Trip Blank

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides and PCB's (EPA Method 508)

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Aldrin	ND	ug/L	0.0050	0.00095	EPA-508	ND		1
alpha-BHC	ND	ug/L	0.0050	0.00050	EPA-508	ND		1
beta-BHC	ND	ug/L	0.0050	0.00064	EPA-508	ND		1
delta-BHC	ND	ug/L	0.0050	0.0015	EPA-508	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.0050	0.00067	EPA-508	ND		1
Chlordane (Technical)	ND	ug/L	0.10	0.045	EPA-508	ND		1
4,4'-DDD	ND	ug/L	0.0050	0.00086	EPA-508	ND		1
4,4'-DDE	ND	ug/L	0.0050	0.0013	EPA-508	ND		1
4,4'-DDT	ND	ug/L	0.0050	0.00096	EPA-508	ND		1
Dieldrin	ND	ug/L	0.0050	0.0011	EPA-508	ND		1
Endosulfan I	ND	ug/L	0.0050	0.00068	EPA-508	ND		1
Endosulfan II	ND	ug/L	0.0050	0.00098	EPA-508	ND		1
Endosulfan sulfate	ND	ug/L	0.0050	0.00055	EPA-508	ND		1
Endrin	ND	ug/L	0.0050	0.00069	EPA-508	ND		1
Endrin aldehyde	ND	ug/L	0.010	0.00054	EPA-508	ND		1
Heptachlor	ND	ug/L	0.0050	0.00094	EPA-508	ND		1
Heptachlor epoxide	ND	ug/L	0.0050	0.00064	EPA-508	ND		1
Methoxychlor	ND	ug/L	0.0050	0.0037	EPA-508	ND		1
Toxaphene	ND	ug/L	1.0	0.20	EPA-508	ND		1
PCB-1016	ND	ug/L	0.20	0.066	EPA-508	ND		1
PCB-1221	ND	ug/L	0.20	0.063	EPA-508	ND		1
PCB-1232	ND	ug/L	0.20	0.059	EPA-508	ND		1
PCB-1242	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1248	ND	ug/L	0.20	0.044	EPA-508	ND		1
PCB-1254	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1260	ND	ug/L	0.20	0.089	EPA-508	ND		1
Total PCB's (Summation)	ND	ug/L	0.20	0.10	EPA-508	ND		1
TCMX (Surrogate)	74.6	%	60 - 130 (LCL - UCL)		EPA-508			1
Decachlorobiphenyl (Surrogate)	63.1	%	60 - 130 (LCL - UCL)		EPA-508			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-508	04/20/20 21:00	04/24/20 04:22	HKS	GC-17	1	B076081	EPA 508

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis (EPA Method 515.1)

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Bentazon	ND	ug/L	0.80	0.22	EPA-515.1	ND		1
2,4-D	ND	ug/L	0.40	0.18	EPA-515.1	ND		1
2,4-DB	ND	ug/L	3.0	0.37	EPA-515.1	ND		1
Dalapon	ND	ug/L	5.0	0.31	EPA-515.1	ND		1
Dicamba	ND	ug/L	0.080	0.040	EPA-515.1	ND		1
Dichloroprop	ND	ug/L	0.50	0.11	EPA-515.1	ND		1
Dinoseb	ND	ug/L	0.20	0.057	EPA-515.1	ND		1
MCPA	ND	ug/L	10	6.0	EPA-515.1	ND		1
MCPP	ND	ug/L	10	6.0	EPA-515.1	ND		1
2,4,5-T	ND	ug/L	0.090	0.012	EPA-515.1	ND		1
2,4,5-TP (Silvex)	ND	ug/L	0.070	0.032	EPA-515.1	ND		1
2,4-Dichlorophenylacetic acid (Surrogate)	79.8	%	40 - 120 (LCL - UCL)		EPA-515.1			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-515.1	04/17/20 21:00	04/21/20 18:52	OLH	GC-8	1	B076077	EPA 515.1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
Bromobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Bromochloromethane	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Bromoform	ND	ug/L	0.50	0.46	EPA-524.2	ND		1
Bromomethane	ND	ug/L	0.50	0.20	EPA-524.2	ND	V11	1
n-Butylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chlorobenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chloroform	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloromethane	ND	ug/L	0.50	0.11	EPA-524.2	ND	V11	1
2-Chlorotoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.093	EPA-524.2	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.89	EPA-524.2	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
Dibromomethane	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.15	EPA-524.2	ND	V11	1
1,1-Dichloroethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
1,1-Dichloropropene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
Total 1,3-Dichloropropene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Ethylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Methylene chloride	ND	ug/L	0.50	0.21	EPA-524.2	ND	V11	1
Methyl t-butyl ether	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Naphthalene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
Styrene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
Toluene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Trichloroethene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.78	EPA-524.2	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Vinyl chloride	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Total Xylenes	ND	ug/L	0.50	0.47	EPA-524.2	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.97	EPA-524.2	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
t-Butyl alcohol	ND	ug/L	10	9.4	EPA-524.2	ND		1
Diisopropyl ether	ND	ug/L	0.50	0.36	EPA-524.2	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50	0.32	EPA-524.2	ND		1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
p- & m-Xylenes	ND	ug/L	0.50	0.34	EPA-524.2	ND		1
o-Xylene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
1,2-Dichloroethane-d4 (Surrogate)	116	%	75 - 125 (LCL - UCL)		EPA-524.2			1
Toluene-d8 (Surrogate)	98.6	%	80 - 120 (LCL - UCL)		EPA-524.2			1
4-Bromofluorobenzene (Surrogate)	98.6	%	80 - 120 (LCL - UCL)		EPA-524.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-524.2	04/16/20 06:00	04/17/20 12:57	ZZZ	MS-V15	1	B075616	EPA 524.2

Geologic Associates (Main)
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Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthylene	ND	ug/L	0.10	0.031	EPA-525.2	ND		1
Alachlor	ND	ug/L	0.20	0.090	EPA-525.2	ND		1
Anthracene	ND	ug/L	0.10	0.034	EPA-525.2	ND		1
Atraton	ND	ug/L	0.50	0.057	EPA-525.2	ND		1
Atrazine	ND	ug/L	0.30	0.14	EPA-525.2	ND		1
Benzo[a]anthracene	ND	ug/L	0.20	0.044	EPA-525.2	ND		1
Benzo[b]fluoranthene	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Benzo[k]fluoranthene	ND	ug/L	0.30	0.072	EPA-525.2	ND		1
Benzo[a]pyrene	ND	ug/L	0.10	0.050	EPA-525.2	ND		1
Benzo[g,h,i]perylene	ND	ug/L	0.30	0.065	EPA-525.2	ND		1
Benzyl butyl phthalate	ND	ug/L	4.0	0.047	EPA-525.2	ND		1
delta-BHC	ND	ug/L	0.20	0.048	EPA-525.2	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.20	0.063	EPA-525.2	ND		1
bis(2-Ethylhexyl)phthalate	ND	ug/L	3.0	0.030	EPA-525.2	ND		1
Bromacil	ND	ug/L	0.50	0.043	EPA-525.2	ND		1
Chrysene	ND	ug/L	0.30	0.060	EPA-525.2	ND		1
Diazinon	ND	ug/L	0.20	0.080	EPA-525.2	ND		1
Dibenzo[a,h]anthracene	ND	ug/L	0.30	0.051	EPA-525.2	ND		1
Di(2-ethylhexyl)adipate	ND	ug/L	1.0	0.025	EPA-525.2	ND		1
Dimethoate	ND	ug/L	2.0	0.050	EPA-525.2	ND		1
Dimethyl phthalate	ND	ug/L	1.0	0.034	EPA-525.2	ND		1
Di-n-butyl phthalate	ND	ug/L	1.0	0.063	EPA-525.2	ND		1
Fluorene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorobenzene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorocyclopentadiene	ND	ug/L	1.0	0.12	EPA-525.2	ND		1
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.30	0.032	EPA-525.2	ND		1
Methoxychlor	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Metolachlor	ND	ug/L	0.50	0.056	EPA-525.2	ND		1
Metribuzin	ND	ug/L	0.50	0.048	EPA-525.2	ND		1
Molinate	ND	ug/L	0.50	0.036	EPA-525.2	ND		1
Phenanthrene	ND	ug/L	0.10	0.020	EPA-525.2	ND		1
Prometon	ND	ug/L	0.50	0.11	EPA-525.2	ND		1
Prometryn	ND	ug/L	0.50	0.045	EPA-525.2	ND		1

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San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Pyrene	ND	ug/L	0.10	0.040	EPA-525.2	ND		1
Secbumeton	ND	ug/L	0.50	0.079	EPA-525.2	ND		1
Simazine	ND	ug/L	0.30	0.066	EPA-525.2	ND		1
Terbutryn	ND	ug/L	0.50	0.050	EPA-525.2	ND		1
Thiobencarb	ND	ug/L	0.50	0.044	EPA-525.2	ND		1
Perylene-d12 (Surrogate)	60.0	%	60 - 140 (LCL - UCL)		EPA-525.2			1
1,3-Dimethyl-2-nitrobenzene (Surrogate)	50.6	%	70 - 130 (LCL - UCL)		EPA-525.2		S09	1
Triphenylphosphate (Surrogate)	130	%	70 - 130 (LCL - UCL)		EPA-525.2			1
Pyrene-d10 (Surrogate)	100	%	70 - 130 (LCL - UCL)		EPA-525.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-525.2	04/20/20 07:30	04/23/20 15:23	MK	MS-B6	1	B076114	EPA 525.2

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Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

EPA Method 1664

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	ND	mg/L	5.0	0.66	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-1664A HEM	04/17/20 12:00	04/20/20 15:16	MAM	MAN-SV	1	B075919	EPA 1664/HEM

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Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Water Analysis (General Chemistry)

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Chloride	**150**	**mg/L**	**0.50**	**0.13**	**EPA-300.0**	ND		1
Nitrate as N	**0.42**	**mg/L**	**0.10**	**0.024**	**EPA-300.0**	ND		1
Sulfate	**58**	**mg/L**	**1.0**	**0.14**	**EPA-300.0**	ND		1
Total Dissolved Solids @ 180 C	**570**	**mg/L**	**33**	**17**	**EPA-160.1**	ND	**A07**	2
Total Suspended Solids (Glass Fiber)	**8.2**	**mg/L**	**0.62**	**0.62**	**EPA-160.2**	ND	**A07**	3
MBAS	**0.050**	**mg/L**	**0.10**	**0.025**	**EPA-425.1**	ND	**J**	4
Total Nitrogen	**1.0**	**mg/L**	**0.30**	**0.10**	**Calc**	ND		5
Total Kjeldahl Nitrogen	**0.60**	**mg/L**	**0.20**	**0.067**	**EPA-351.2**	ND		6
Total Phosphorus	**0.069**	**mg/L**	**0.050**	**0.017**	**EPA-365.4**	ND		7

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-300.0	04/15/20 17:00	04/15/20 22:26	CMM	IC7	1	B075611	No Prep
2	EPA-160.1	04/20/20 14:00	04/20/20 14:00	CAD	MANUAL	3.333	B075881	No Prep
3	EPA-160.2	04/17/20 08:47	04/17/20 08:47	OJP	MANUAL	1.250	B075800	No Prep
4	EPA-425.1	04/15/20 10:15	04/15/20 10:15	JMN	SPEC06	1	B075549	No Prep
5	Calc	04/17/20 10:01	04/30/20 15:01	AMM	Calc	1	B^D0186	Calc
6	EPA-351.2	04/28/20 17:00	04/29/20 13:13	JMH2	SC-2	1	B076644	EPA 351.2
7	EPA-365.4	04/28/20 17:00	05/01/20 11:28	JMH2	SC-1	1	B076645	EPA 365.4

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Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Metals Analysis

BCL Sample ID: 2011102-01 | **Client Sample Name:** Down, 4/14/2020 10:45:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Antimony	**0.16**	**ug/L**	**2.0**	**0.11**	**EPA-200.8**	ND	**J**	1
Total Recoverable Arsenic	**1.5**	**ug/L**	**2.0**	**0.70**	**EPA-200.8**	ND	**J**	1
Total Recoverable Barium	**62**	**ug/L**	**1.0**	**0.21**	**EPA-200.8**	ND		1
Total Recoverable Beryllium	ND	ug/L	1.0	0.14	EPA-200.8	ND		1
Total Recoverable Cadmium	ND	ug/L	1.0	0.11	EPA-200.8	ND		1
Total Recoverable Chromium	ND	ug/L	3.0	0.50	EPA-200.8	ND		1
Total Recoverable Cobalt	**0.49**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND	**J**	1
Total Recoverable Copper	**2.5**	**ug/L**	**2.0**	**0.22**	**EPA-200.8**	0.35		1
Total Recoverable Iron	**240**	**ug/L**	**50**	**30**	**EPA-200.7**	ND		2
Total Recoverable Lead	**0.28**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND	**J**	1
Total Recoverable Manganese	**49**	**ug/L**	**10**	**4.0**	**EPA-200.7**	ND		2
Total Recoverable Mercury	ND	ug/L	0.20	0.022	EPA-245.1	ND		3
Total Recoverable Molybdenum	**3.3**	**ug/L**	**1.0**	**0.11**	**EPA-200.8**	ND		1
Total Recoverable Nickel	**2.1**	**ug/L**	**2.0**	**0.19**	**EPA-200.8**	ND		1
Total Recoverable Selenium	**1.9**	**ug/L**	**2.0**	**0.19**	**EPA-200.8**	ND	**J**	1
Total Recoverable Silver	ND	ug/L	1.0	0.10	EPA-200.8	ND		1
Total Recoverable Thallium	ND	ug/L	1.0	0.10	EPA-200.8	ND		1
Total Recoverable Vanadium	**6.3**	**ug/L**	**3.0**	**0.78**	**EPA-200.8**	ND		1
Total Recoverable Zinc	**3.0**	**ug/L**	**10**	**1.7**	**EPA-200.8**	ND	**J**	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-200.8	04/20/20 09:30	04/20/20 18:59	AS1	PE-EL4	1	B075898	EPA 200.2
2	EPA-200.7	04/17/20 20:00	04/20/20 14:47	JRG	PE-OP4	1	B075819	EPA 200.2
3	EPA-245.1	04/20/20 10:00	04/21/20 09:18	TMT	CETAC3	1	B075879	EPA 245.1

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San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2011102-02 | **Client Sample Name:** Trip Blanks, 4/14/2020 12:00:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
Bromobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Bromochloromethane	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Bromoform	ND	ug/L	0.50	0.46	EPA-524.2	ND		1
Bromomethane	ND	ug/L	0.50	0.20	EPA-524.2	ND	V11	1
n-Butylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chlorobenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chloroform	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloromethane	ND	ug/L	0.50	0.11	EPA-524.2	ND	V11	1
2-Chlorotoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.093	EPA-524.2	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.89	EPA-524.2	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
Dibromomethane	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.15	EPA-524.2	ND	V11	1
1,1-Dichloroethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
1,1-Dichloropropene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1

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Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2011102-02 | **Client Sample Name:** Trip Blanks, 4/14/2020 12:00:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
Total 1,3-Dichloropropene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Ethylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Methylene chloride	ND	ug/L	0.50	0.21	EPA-524.2	ND	V11	1
Methyl t-butyl ether	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Naphthalene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
Styrene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
Toluene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Trichloroethene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.78	EPA-524.2	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Vinyl chloride	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Total Xylenes	ND	ug/L	0.50	0.47	EPA-524.2	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.97	EPA-524.2	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
t-Butyl alcohol	ND	ug/L	10	9.4	EPA-524.2	ND		1
Diisopropyl ether	ND	ug/L	0.50	0.36	EPA-524.2	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50	0.32	EPA-524.2	ND		1

Geologic Associates (Main)
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Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2011102-02 | **Client Sample Name:** Trip Blanks, 4/14/2020 12:00:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
p- & m-Xylenes	ND	ug/L	0.50	0.34	EPA-524.2	ND		1
o-Xylene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
1,2-Dichloroethane-d4 (Surrogate)	120	%	75 - 125 (LCL - UCL)		EPA-524.2			1
Toluene-d8 (Surrogate)	98.4	%	80 - 120 (LCL - UCL)		EPA-524.2			1
4-Bromofluorobenzene (Surrogate)	101	%	80 - 120 (LCL - UCL)		EPA-524.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-524.2	04/16/20 06:00	04/17/20 12:13	ZZZ	MS-V15	1	B075616	EPA 524.2

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides and PCB's (EPA Method 508)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B076081						
Aldrin	B076081-BLK1	ND	ug/L	0.0050	0.00095	
alpha-BHC	B076081-BLK1	ND	ug/L	0.0050	0.00050	
beta-BHC	B076081-BLK1	ND	ug/L	0.0050	0.00064	
delta-BHC	B076081-BLK1	ND	ug/L	0.0050	0.0015	
gamma-BHC (Lindane)	B076081-BLK1	ND	ug/L	0.0050	0.00067	
Chlordane (Technical)	B076081-BLK1	ND	ug/L	0.10	0.045	
4,4'-DDD	B076081-BLK1	ND	ug/L	0.0050	0.00086	
4,4'-DDE	B076081-BLK1	ND	ug/L	0.0050	0.0013	
4,4'-DDT	B076081-BLK1	ND	ug/L	0.0050	0.00096	
Dieldrin	B076081-BLK1	ND	ug/L	0.0050	0.0011	
Endosulfan I	B076081-BLK1	ND	ug/L	0.0050	0.00068	
Endosulfan II	B076081-BLK1	ND	ug/L	0.0050	0.00098	
Endosulfan sulfate	B076081-BLK1	ND	ug/L	0.0050	0.00055	
Endrin	B076081-BLK1	ND	ug/L	0.0050	0.00069	
Endrin aldehyde	B076081-BLK1	ND	ug/L	0.010	0.00054	
Heptachlor	B076081-BLK1	ND	ug/L	0.0050	0.00094	
Heptachlor epoxide	B076081-BLK1	ND	ug/L	0.0050	0.00064	
Methoxychlor	B076081-BLK1	ND	ug/L	0.0050	0.0037	
Toxaphene	B076081-BLK1	ND	ug/L	1.0	0.20	
PCB-1016	B076081-BLK1	ND	ug/L	0.20	0.066	
PCB-1221	B076081-BLK1	ND	ug/L	0.20	0.063	
PCB-1232	B076081-BLK1	ND	ug/L	0.20	0.059	
PCB-1242	B076081-BLK1	ND	ug/L	0.20	0.037	
PCB-1248	B076081-BLK1	ND	ug/L	0.20	0.044	
PCB-1254	B076081-BLK1	ND	ug/L	0.20	0.037	
PCB-1260	B076081-BLK1	ND	ug/L	0.20	0.089	
Total PCB's (Summation)	B076081-BLK1	ND	ug/L	0.20	0.10	
TCMX (Surrogate)	**B076081-BLK1**	**91.3**	%	**60 - 130 (LCL - UCL)**		
Decachlorobiphenyl (Surrogate)	**B076081-BLK1**	**75.7**	%	**60 - 130 (LCL - UCL)**		

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Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Organochlorine Pesticides and PCB's (EPA Method 508)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B076081										
Aldrin	B076081-BS1	LCS	0.14340	0.15000	ug/L	95.6		60 - 130		
gamma-BHC (Lindane)	B076081-BS1	LCS	0.16051	0.15000	ug/L	107		60 - 130		
4,4'-DDT	B076081-BS1	LCS	0.13075	0.15000	ug/L	87.2		60 - 130		
Dieldrin	B076081-BS1	LCS	0.12209	0.15000	ug/L	81.4		60 - 130		
Endrin	B076081-BS1	LCS	0.16905	0.15000	ug/L	113		60 - 130		
Heptachlor	B076081-BS1	LCS	0.14368	0.15000	ug/L	95.8		60 - 130		
TCMX (Surrogate)	B076081-BS1	LCS	0.25616	0.30000	ug/L	85.4		60 - 130		
Decachlorobiphenyl (Surrogate)	B076081-BS1	LCS	0.48190	0.60000	ug/L	80.3		60 - 130		

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Organochlorine Pesticides and PCB's (EPA Method 508)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B076081	Used client sample: N										
Aldrin	MS	2009671-44	ND	0.13804	0.15000	ug/L		92.0		60 - 130	
	MSD	2009671-44	ND	0.14247	0.15000	ug/L	3.2	95.0	30	60 - 130	
gamma-BHC (Lindane)	MS	2009671-44	ND	0.14952	0.15000	ug/L		99.7		60 - 130	
	MSD	2009671-44	ND	0.15828	0.15000	ug/L	5.7	106	30	60 - 130	
4,4'-DDT	MS	2009671-44	ND	0.11181	0.15000	ug/L		74.5		60 - 130	
	MSD	2009671-44	ND	0.12809	0.15000	ug/L	13.6	85.4	30	60 - 130	
Dieldrin	MS	2009671-44	ND	0.11415	0.15000	ug/L		76.1		60 - 130	
	MSD	2009671-44	ND	0.12154	0.15000	ug/L	6.3	81.0	30	60 - 130	
Endrin	MS	2009671-44	ND	0.14961	0.15000	ug/L		99.7		60 - 130	
	MSD	2009671-44	ND	0.16963	0.15000	ug/L	12.5	113	30	60 - 130	
Heptachlor	MS	2009671-44	ND	0.13164	0.15000	ug/L		87.8		60 - 130	
	MSD	2009671-44	ND	0.14129	0.15000	ug/L	7.1	94.2	30	60 - 130	
TCMX (Surrogate)	MS	2009671-44	ND	0.25435	0.30000	ug/L		84.8		60 - 130	
	MSD	2009671-44	ND	0.25467	0.30000	ug/L	0.1	84.9		60 - 130	
Decachlorobiphenyl (Surrogate)	MS	2009671-44	ND	0.39149	0.60000	ug/L		65.2		60 - 130	
	MSD	2009671-44	ND	0.46038	0.60000	ug/L	16.2	76.7		60 - 130	

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Organic Analysis (EPA Method 515.1)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B076077						
Bentazon	B076077-BLK1	ND	ug/L	0.80	0.22	
2,4-D	B076077-BLK1	ND	ug/L	0.40	0.18	
2,4-DB	B076077-BLK1	ND	ug/L	3.0	0.37	
Dalapon	B076077-BLK1	ND	ug/L	5.0	0.31	
Dicamba	B076077-BLK1	ND	ug/L	0.080	0.040	
Dichloroprop	B076077-BLK1	ND	ug/L	0.50	0.11	
Dinoseb	B076077-BLK1	ND	ug/L	0.20	0.057	
MCPA	B076077-BLK1	ND	ug/L	10	6.0	
MCPP	B076077-BLK1	ND	ug/L	10	6.0	
2,4,5-T	B076077-BLK1	ND	ug/L	0.090	0.012	
2,4,5-TP (Silvex)	B076077-BLK1	ND	ug/L	0.070	0.032	
2,4-Dichlorophenylacetic acid (Surrogate)	**B076077-BLK1**	**96.5**	%	**40 - 120 (LCL - UCL)**		

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Organic Analysis (EPA Method 515.1)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B076077										
2,4-D	B076077-BS1	LCS	2.5000	2.4000	ug/L	104		50 - 120		
2,4-DB	B076077-BS1	LCS	5.6300	5.4000	ug/L	104		50 - 120		
Dicamba	B076077-BS1	LCS	0.64000	0.60000	ug/L	107		50 - 120		
Dichloroprop	B076077-BS1	LCS	2.5600	2.4000	ug/L	107		50 - 120		
Dinoseb	B076077-BS1	LCS	1.0000	1.2000	ug/L	83.3		50 - 120		
2,4,5-T	B076077-BS1	LCS	0.37000	0.60000	ug/L	61.7		40 - 120		
2,4,5-TP (Silvex)	B076077-BS1	LCS	0.60000	0.60000	ug/L	100		50 - 120		
2,4-Dichlorophenylacetic acid (Surrogate)	B076077-BS1	LCS	4.1700	4.0000	ug/L	104		40 - 120		

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Organic Analysis (EPA Method 515.1)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B076077	Used client sample: N										
2,4-D	MS	2009671-11	ND	2.6900	2.4000	ug/L		112		40 - 120	
	MSD	2009671-11	ND	2.4200	2.4000	ug/L	10.6	101	30	40 - 120	
2,4-DB	MS	2009671-11	ND	6.0900	5.4000	ug/L		113		50 - 120	
	MSD	2009671-11	ND	5.4900	5.4000	ug/L	10.4	102	30	50 - 120	
Dicamba	MS	2009671-11	ND	0.67000	0.60000	ug/L		112		50 - 120	
	MSD	2009671-11	ND	0.64000	0.60000	ug/L	4.6	107	30	50 - 120	
Dichloroprop	MS	2009671-11	ND	2.7100	2.4000	ug/L		113		40 - 120	
	MSD	2009671-11	ND	2.3600	2.4000	ug/L	13.8	98.3	30	40 - 120	
Dinoseb	MS	2009671-11	ND	1.0100	1.2000	ug/L		84.2		40 - 130	
	MSD	2009671-11	ND	1.0200	1.2000	ug/L	1.0	85.0	30	40 - 130	
2,4,5-T	MS	2009671-11	ND	0.36000	0.60000	ug/L		60.0		40 - 120	
	MSD	2009671-11	ND	0.35000	0.60000	ug/L	2.8	58.3	30	40 - 120	
2,4,5-TP (Silvex)	MS	2009671-11	ND	0.65000	0.60000	ug/L		108		40 - 120	
	MSD	2009671-11	ND	0.58000	0.60000	ug/L	11.4	96.7	30	40 - 120	
2,4-Dichlorophenylacetic acid (Surrogate	MS	2009671-11	ND	4.2600	4.0000	ug/L		106		40 - 120	
	MSD	2009671-11	ND	4.1100	4.0000	ug/L	3.6	103		40 - 120	

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075616						
Benzene	B075616-BLK1	ND	ug/L	0.50	0.11	
Bromobenzene	B075616-BLK1	ND	ug/L	0.50	0.15	
Bromochloromethane	B075616-BLK1	ND	ug/L	0.50	0.27	
Bromodichloromethane	B075616-BLK1	ND	ug/L	0.50	0.20	
Bromoform	B075616-BLK1	ND	ug/L	0.50	0.46	
Bromomethane	B075616-BLK1	ND	ug/L	0.50	0.20	
n-Butylbenzene	B075616-BLK1	ND	ug/L	0.50	0.15	
sec-Butylbenzene	B075616-BLK1	ND	ug/L	0.50	0.13	
tert-Butylbenzene	B075616-BLK1	ND	ug/L	0.50	0.18	
Carbon tetrachloride	B075616-BLK1	ND	ug/L	0.50	0.17	
Chlorobenzene	B075616-BLK1	ND	ug/L	0.50	0.14	
Chloroethane	B075616-BLK1	ND	ug/L	0.50	0.17	
Chloroform	B075616-BLK1	ND	ug/L	0.50	0.14	
Chloromethane	B075616-BLK1	ND	ug/L	0.50	0.11	
2-Chlorotoluene	B075616-BLK1	ND	ug/L	0.50	0.14	
4-Chlorotoluene	B075616-BLK1	ND	ug/L	0.50	0.093	
Dibromochloromethane	B075616-BLK1	ND	ug/L	0.50	0.22	
1,2-Dibromo-3-chloropropane	B075616-BLK1	ND	ug/L	1.0	0.89	
1,2-Dibromoethane	B075616-BLK1	ND	ug/L	0.50	0.22	
Dibromomethane	B075616-BLK1	ND	ug/L	0.50	0.23	
1,2-Dichlorobenzene	B075616-BLK1	ND	ug/L	0.50	0.21	
1,3-Dichlorobenzene	B075616-BLK1	ND	ug/L	0.50	0.16	
1,4-Dichlorobenzene	B075616-BLK1	ND	ug/L	0.50	0.15	
Dichlorodifluoromethane	B075616-BLK1	ND	ug/L	0.50	0.15	
1,1-Dichloroethane	B075616-BLK1	ND	ug/L	0.50	0.15	
1,2-Dichloroethane	B075616-BLK1	ND	ug/L	0.50	0.17	
1,1-Dichloroethene	B075616-BLK1	ND	ug/L	0.50	0.27	
cis-1,2-Dichloroethene	B075616-BLK1	ND	ug/L	0.50	0.27	
trans-1,2-Dichloroethene	B075616-BLK1	ND	ug/L	0.50	0.17	
1,2-Dichloropropane	B075616-BLK1	ND	ug/L	0.50	0.15	
1,3-Dichloropropane	B075616-BLK1	ND	ug/L	0.50	0.13	
2,2-Dichloropropane	B075616-BLK1	ND	ug/L	0.50	0.18	
1,1-Dichloropropene	B075616-BLK1	ND	ug/L	0.50	0.19	
cis-1,3-Dichloropropene	B075616-BLK1	ND	ug/L	0.50	0.14	

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075616						
trans-1,3-Dichloropropene	B075616-BLK1	ND	ug/L	0.50	0.13	
Total 1,3-Dichloropropene	B075616-BLK1	ND	ug/L	0.50	0.27	
Ethylbenzene	B075616-BLK1	ND	ug/L	0.50	0.15	
Hexachlorobutadiene	B075616-BLK1	ND	ug/L	0.50	0.20	
Isopropylbenzene	B075616-BLK1	ND	ug/L	0.50	0.14	
p-Isopropyltoluene	B075616-BLK1	ND	ug/L	0.50	0.14	
Methylene chloride	B075616-BLK1	ND	ug/L	0.50	0.21	
Methyl t-butyl ether	B075616-BLK1	ND	ug/L	0.50	0.14	
Naphthalene	B075616-BLK1	ND	ug/L	0.50	0.16	
n-Propylbenzene	B075616-BLK1	ND	ug/L	0.50	0.12	
Styrene	B075616-BLK1	ND	ug/L	0.50	0.12	
1,1,1,2-Tetrachloroethane	B075616-BLK1	ND	ug/L	0.50	0.21	
1,1,2,2-Tetrachloroethane	B075616-BLK1	ND	ug/L	0.50	0.17	
Tetrachloroethene	B075616-BLK1	ND	ug/L	0.50	0.23	
Toluene	B075616-BLK1	ND	ug/L	0.50	0.17	
1,2,3-Trichlorobenzene	B075616-BLK1	ND	ug/L	0.50	0.19	
1,2,4-Trichlorobenzene	B075616-BLK1	ND	ug/L	0.50	0.15	
1,1,1-Trichloroethane	B075616-BLK1	ND	ug/L	0.50	0.21	
1,1,2-Trichloroethane	B075616-BLK1	ND	ug/L	0.50	0.21	
Trichloroethene	B075616-BLK1	ND	ug/L	0.50	0.19	
Trichlorofluoromethane	B075616-BLK1	ND	ug/L	0.50	0.14	
1,2,3-Trichloropropane	B075616-BLK1	ND	ug/L	1.0	0.78	
1,1,2-Trichloro-1,2,2-trifluoroethane	B075616-BLK1	ND	ug/L	0.50	0.19	
1,2,4-Trimethylbenzene	B075616-BLK1	ND	ug/L	0.50	0.17	
1,3,5-Trimethylbenzene	B075616-BLK1	ND	ug/L	0.50	0.14	
Vinyl chloride	B075616-BLK1	ND	ug/L	0.50	0.18	
Total Xylenes	B075616-BLK1	ND	ug/L	0.50	0.47	
Total Trihalomethanes	B075616-BLK1	ND	ug/L	2.0	0.97	
t-Amyl Methyl ether	B075616-BLK1	ND	ug/L	0.50	0.19	
t-Butyl alcohol	B075616-BLK1	ND	ug/L	10	9.4	
Diisopropyl ether	B075616-BLK1	ND	ug/L	0.50	0.36	
Ethyl t-butyl ether	B075616-BLK1	ND	ug/L	0.50	0.32	
p- & m-Xylenes	B075616-BLK1	ND	ug/L	0.50	0.34	
o-Xylene	B075616-BLK1	ND	ug/L	0.50	0.13	

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075616						
1,2-Dichloroethane-d4 (Surrogate)	B075616-BLK1	124	%	75 - 125 (LCL - UCL)		
Toluene-d8 (Surrogate)	B075616-BLK1	99.3	%	80 - 120 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	B075616-BLK1	95.7	%	80 - 120 (LCL - UCL)		

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075616										
Benzene	B075616-BS1	LCS	29.120	25.000	ug/L	116		70 - 130		
Bromodichloromethane	B075616-BS1	LCS	31.700	25.000	ug/L	127		70 - 130		
Chlorobenzene	B075616-BS1	LCS	25.390	25.000	ug/L	102		70 - 130		
Chloroethane	B075616-BS1	LCS	27.820	25.000	ug/L	111		70 - 130		
1,4-Dichlorobenzene	B075616-BS1	LCS	25.850	25.000	ug/L	103		70 - 130		
1,1-Dichloroethane	B075616-BS1	LCS	29.660	25.000	ug/L	119		70 - 130		
1,1-Dichloroethene	B075616-BS1	LCS	32.040	25.000	ug/L	128		70 - 130		
Toluene	B075616-BS1	LCS	27.050	25.000	ug/L	108		70 - 130		
Trichloroethene	B075616-BS1	LCS	26.460	25.000	ug/L	106		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	B075616-BS1	LCS	12.440	10.000	ug/L	124		75 - 125		
Toluene-d8 (Surrogate)	B075616-BS1	LCS	10.120	10.000	ug/L	101		80 - 120		
4-Bromofluorobenzene (Surrogate)	B075616-BS1	LCS	10.660	10.000	ug/L	107		80 - 120		

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075616	Used client sample: N										
Benzene	MS	2009671-09	ND	27.470	25.000	ug/L		110		70 - 130	
	MSD	2009671-09	ND	26.470	25.000	ug/L	3.7	106	20	70 - 130	
Bromodichloromethane	MS	2009671-09	ND	32.280	25.000	ug/L		129		70 - 130	
	MSD	2009671-09	ND	30.950	25.000	ug/L	4.2	124	20	70 - 130	
Chlorobenzene	MS	2009671-09	ND	25.540	25.000	ug/L		102		70 - 130	
	MSD	2009671-09	ND	24.850	25.000	ug/L	2.7	99.4	20	70 - 130	
Chloroethane	MS	2009671-09	ND	26.450	25.000	ug/L		106		70 - 130	
	MSD	2009671-09	ND	25.880	25.000	ug/L	2.2	104	20	70 - 130	
1,4-Dichlorobenzene	MS	2009671-09	ND	26.310	25.000	ug/L		105		70 - 130	
	MSD	2009671-09	ND	25.500	25.000	ug/L	3.1	102	20	70 - 130	
1,1-Dichloroethane	MS	2009671-09	ND	28.250	25.000	ug/L		113		70 - 130	
	MSD	2009671-09	ND	27.320	25.000	ug/L	3.3	109	20	70 - 130	
1,1-Dichloroethene	MS	2009671-09	ND	31.230	25.000	ug/L		125		70 - 130	
	MSD	2009671-09	ND	30.430	25.000	ug/L	2.6	122	20	70 - 130	
Toluene	MS	2009671-09	ND	26.800	25.000	ug/L		107		70 - 130	
	MSD	2009671-09	ND	26.050	25.000	ug/L	2.8	104	20	70 - 130	
Trichloroethene	MS	2009671-09	ND	26.760	25.000	ug/L		107		70 - 130	
	MSD	2009671-09	ND	26.140	25.000	ug/L	2.3	105	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	2009671-09	ND	11.860	10.000	ug/L		119		75 - 125	
	MSD	2009671-09	ND	11.430	10.000	ug/L	3.7	114		75 - 125	
Toluene-d8 (Surrogate)	MS	2009671-09	ND	10.070	10.000	ug/L		101		80 - 120	
	MSD	2009671-09	ND	10.000	10.000	ug/L	0.7	100		80 - 120	
4-Bromofluorobenzene (Surrogate)	MS	2009671-09	ND	10.720	10.000	ug/L		107		80 - 120	
	MSD	2009671-09	ND	10.640	10.000	ug/L	0.7	106		80 - 120	

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B076114						
Acenaphthylene	B076114-BLK1	ND	ug/L	0.10	0.031	
Alachlor	B076114-BLK1	ND	ug/L	0.20	0.090	
Anthracene	B076114-BLK1	ND	ug/L	0.10	0.034	
Atraton	B076114-BLK1	ND	ug/L	0.50	0.057	
Atrazine	B076114-BLK1	ND	ug/L	0.30	0.14	
Benzo[a]anthracene	B076114-BLK1	ND	ug/L	0.20	0.044	
Benzo[b]fluoranthene	B076114-BLK1	ND	ug/L	0.30	0.034	
Benzo[k]fluoranthene	B076114-BLK1	ND	ug/L	0.30	0.072	
Benzo[a]pyrene	B076114-BLK1	ND	ug/L	0.10	0.050	
Benzo[g,h,i]perylene	B076114-BLK1	ND	ug/L	0.30	0.065	
Benzyl butyl phthalate	B076114-BLK1	ND	ug/L	4.0	0.047	
delta-BHC	B076114-BLK1	ND	ug/L	0.20	0.048	
gamma-BHC (Lindane)	B076114-BLK1	ND	ug/L	0.20	0.063	
bis(2-Ethylhexyl)phthalate	B076114-BLK1	ND	ug/L	3.0	0.030	
Bromacil	B076114-BLK1	ND	ug/L	0.50	0.043	
Chrysene	B076114-BLK1	ND	ug/L	0.30	0.060	
Diazinon	B076114-BLK1	ND	ug/L	0.20	0.080	
Dibenzo[a,h]anthracene	B076114-BLK1	ND	ug/L	0.30	0.051	
Di(2-ethylhexyl)adipate	B076114-BLK1	ND	ug/L	1.0	0.025	
Dimethoate	B076114-BLK1	ND	ug/L	2.0	0.050	
Dimethyl phthalate	B076114-BLK1	ND	ug/L	1.0	0.034	
Di-n-butyl phthalate	B076114-BLK1	ND	ug/L	1.0	0.063	
Fluorene	B076114-BLK1	ND	ug/L	0.20	0.029	
Hexachlorobenzene	B076114-BLK1	ND	ug/L	0.20	0.029	
Hexachlorocyclopentadiene	B076114-BLK1	ND	ug/L	1.0	0.12	
Indeno[1,2,3-cd]pyrene	B076114-BLK1	ND	ug/L	0.30	0.032	
Methoxychlor	B076114-BLK1	ND	ug/L	0.30	0.034	
Metolachlor	B076114-BLK1	ND	ug/L	0.50	0.056	
Metribuzin	B076114-BLK1	ND	ug/L	0.50	0.048	
Molinate	B076114-BLK1	ND	ug/L	0.50	0.036	
Phenanthrene	B076114-BLK1	ND	ug/L	0.10	0.020	
Prometon	B076114-BLK1	ND	ug/L	0.50	0.11	
Prometryn	B076114-BLK1	ND	ug/L	0.50	0.045	
Pyrene	B076114-BLK1	ND	ug/L	0.10	0.040	

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B076114						
Secbumeton	B076114-BLK1	ND	ug/L	0.50	0.079	
Simazine	B076114-BLK1	ND	ug/L	0.30	0.066	
Terbutryn	B076114-BLK1	ND	ug/L	0.50	0.050	
Thiobencarb	B076114-BLK1	ND	ug/L	0.50	0.044	
Perylene-d12 (Surrogate)	**B076114-BLK1**	**32.0**	%	**60 - 140 (LCL - UCL)**		**S09**
1,3-Dimethyl-2-nitrobenzene (Surrogate)	**B076114-BLK1**	**50.4**	%	**70 - 130 (LCL - UCL)**		**S09**
Triphenylphosphate (Surrogate)	**B076114-BLK1**	**130**	%	**70 - 130 (LCL - UCL)**		
Pyrene-d10 (Surrogate)	**B076114-BLK1**	**93.4**	%	**70 - 130 (LCL - UCL)**		

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B076114										
Acenaphthylene	B076114-BS1	LCS	0.90000	2.0000	ug/L	45.0		60 - 120		L01
Alachlor	B076114-BS1	LCS	2.3600	2.0000	ug/L	118		60 - 120		
Atrazine	B076114-BS1	LCS	1.3100	2.0000	ug/L	65.5		60 - 120		
Benzo[a]pyrene	B076114-BS1	LCS	1.7000	2.0000	ug/L	85.0		60 - 120		
Chrysene	B076114-BS1	LCS	1.4600	2.0000	ug/L	73.0		60 - 120		
Pyrene	B076114-BS1	LCS	1.9800	2.0000	ug/L	99.0		60 - 120		
Simazine	B076114-BS1	LCS	1.7000	2.0000	ug/L	85.0		60 - 120		
Perylene-d12 (Surrogate)	B076114-BS1	LCS	1.8200	5.0000	ug/L	36.4		60 - 140		S09
1,3-Dimethyl-2-nitrobenzene (Surrogate)	B076114-BS1	LCS	2.5000	5.0000	ug/L	50.0		70 - 130		S09
Triphenylphosphate (Surrogate)	B076114-BS1	LCS	6.3500	5.0000	ug/L	127		70 - 130		
Pyrene-d10 (Surrogate)	B076114-BS1	LCS	4.9500	5.0000	ug/L	99.0		70 - 130		

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B076114	Used client sample: N										
Acenaphthylene	MS	**2009671-35**	**ND**	**0.87000**	**2.0000**	**ug/L**		**43.5**		**50 - 120**	**Q03**
	MSD	**2009671-35**	**ND**	**0.88000**	**2.0000**	**ug/L**	**1.1**	**44.0**	**30**	**50 - 120**	**Q03**
Alachlor	MS	**2009671-35**	**ND**	**2.6300**	**2.0000**	**ug/L**		**132**		**50 - 120**	**Q03**
	MSD	**2009671-35**	**ND**	**2.3000**	**2.0000**	**ug/L**	**13.4**	**115**	**30**	**50 - 120**	
Atrazine	MS	2009671-35	ND	1.2800	2.0000	ug/L		64.0		50 - 120	
	MSD	2009671-35	ND	1.1500	2.0000	ug/L	10.7	57.5	30	50 - 120	
Benzo[a]pyrene	MS	2009671-35	ND	1.5600	2.0000	ug/L		78.0		50 - 120	
	MSD	2009671-35	ND	1.5500	2.0000	ug/L	0.6	77.5	30	50 - 120	
Chrysene	MS	2009671-35	ND	1.5200	2.0000	ug/L		76.0		50 - 120	
	MSD	2009671-35	ND	1.9200	2.0000	ug/L	23.3	96.0	30	50 - 120	
Pyrene	MS	2009671-35	ND	1.9700	2.0000	ug/L		98.5		50 - 120	
	MSD	2009671-35	ND	1.9100	2.0000	ug/L	3.1	95.5	30	50 - 120	
Simazine	MS	2009671-35	ND	1.7500	2.0000	ug/L		87.5		50 - 120	
	MSD	2009671-35	ND	1.5700	2.0000	ug/L	10.8	78.5	30	50 - 120	
Perylene-d12 (Surrogate)	MS	**2009671-35**	**ND**	**1.5900**	**5.0000**	**ug/L**		**31.8**		**60 - 140**	**S09**
	MSD	**2009671-35**	**ND**	**1.6300**	**5.0000**	**ug/L**	**2.5**	**32.6**		**60 - 140**	**S09**
1,3-Dimethyl-2-nitrobenzene (Surrogate	MS	**2009671-35**	**ND**	**2.5100**	**5.0000**	**ug/L**		**50.2**		**70 - 130**	**S09**
	MSD	**2009671-35**	**ND**	**2.4500**	**5.0000**	**ug/L**	**2.4**	**49.0**		**70 - 130**	**S09**
Triphenylphosphate (Surrogate)	MS	**2009671-35**	**ND**	**6.6600**	**5.0000**	**ug/L**		**133**		**70 - 130**	**S09**
	MSD	**2009671-35**	**ND**	**4.9300**	**5.0000**	**ug/L**	**29.9**	**98.6**		**70 - 130**	
Pyrene-d10 (Surrogate)	MS	2009671-35	ND	4.9400	5.0000	ug/L		98.8		70 - 130	
	MSD	2009671-35	ND	4.9200	5.0000	ug/L	0.4	98.4		70 - 130	

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EPA Method 1664

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075919						
Oil and Grease	B075919-BLK1	ND	mg/L	5.0	0.66	

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EPA Method 1664

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075919										
Oil and Grease	B075919-BS1	LCS	40.900	40.300	mg/L	101		78 - 114		

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EPA Method 1664

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075919	Used client sample: N										
Oil and Grease	DUP	2009671-08	ND	ND		mg/L			18		
	MS	2009671-08	ND	41.600	40.300	mg/L		103		78 - 114	
	MSD	2009671-08	ND	41.700	40.300	mg/L	0.2	103	18	78 - 114	

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Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B^D0186						
Total Nitrogen	B^D0186-BLK1	ND	mg/L	0.30	0.10	
QC Batch ID: B075549						
MBAS	B075549-BLK1	ND	mg/L	0.10	0.025	
QC Batch ID: B075611						
Chloride	B075611-BLK1	ND	mg/L	0.50	0.13	
Nitrate as N	B075611-BLK1	ND	mg/L	0.10	0.024	
Sulfate	B075611-BLK1	ND	mg/L	1.0	0.14	
QC Batch ID: B075800						
Total Suspended Solids (Glass Fiber)	B075800-BLK1	ND	mg/L	0.50	0.50	
QC Batch ID: B075881						
Total Dissolved Solids @ 180 C	B075881-BLK1	ND	mg/L	6.7	3.3	
QC Batch ID: B076644						
Total Kjeldahl Nitrogen	B076644-BLK1	ND	mg/L	0.20	0.067	
QC Batch ID: B076645						
Total Phosphorus	B076645-BLK1	ND	mg/L	0.050	0.017	

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Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075549										
MBAS	B075549-BS1	LCS	0.19370	0.20000	mg/L	96.8		85 - 115		
QC Batch ID: B075611										
Chloride	B075611-BS1	LCS	51.942	50.000	mg/L	104		90 - 110		
Nitrate as N	B075611-BS1	LCS	5.1070	5.0000	mg/L	102		90 - 110		
Sulfate	B075611-BS1	LCS	104.15	100.00	mg/L	104		90 - 110		
QC Batch ID: B075881										
Total Dissolved Solids @ 180 C	B075881-BS1	LCS	560.00	586.00	mg/L	95.6		90 - 110		
QC Batch ID: B076644										
Total Kjeldahl Nitrogen	B076644-BS1	LCS	2.0818	2.0000	mg/L	104		90 - 110		
QC Batch ID: B076645										
Total Phosphorus	B076645-BS1	LCS	0.99090	1.0000	mg/L	99.1		85 - 115		

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Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075549	Used client sample: N										
MBAS	DUP	2010954-05	ND	ND		mg/L			20		
	MS	2010954-05	ND	0.43940	0.40000	mg/L		110		80 - 120	
	MSD	2010954-05	ND	0.45680	0.40000	mg/L	3.9	114	20	80 - 120	
QC Batch ID: B075611	Used client sample: N										
Chloride	DUP	2011111-01RE1	362.57	367.77		mg/L	1.4		10		
	MS	2011111-01RE1	362.57	463.94	101.01	mg/L		100		80 - 120	
	MSD	2011111-01RE1	362.57	464.28	101.01	mg/L	0.1	101	10	80 - 120	
Nitrate as N	DUP	2011111-01RE1	2.7140	2.7560		mg/L	1.5		10		
	MS	2011111-01RE1	2.7140	13.440	10.101	mg/L		106		80 - 120	
	MSD	2011111-01RE1	2.7140	13.451	10.101	mg/L	0.1	106	10	80 - 120	
Sulfate	DUP	2011111-01RE1	95.622	96.620		mg/L	1.0		10		
	MS	2011111-01RE1	95.622	321.28	202.02	mg/L		112		80 - 120	
	MSD	2011111-01RE1	95.622	321.46	202.02	mg/L	0.1	112	10	80 - 120	
QC Batch ID: B075800	Used client sample: N										
Total Suspended Solids (Glass Fiber)	DUP	2010948-02	300.00	300.00		mg/L	0		10		
QC Batch ID: B075881	Used client sample: N										
Total Dissolved Solids @ 180 C	DUP	2011014-01	14100	14200		mg/L	0.7		10		
QC Batch ID: B076644	Used client sample: N										
Total Kjeldahl Nitrogen	DUP	2011406-04	0.10610	0.087200		mg/L	19.6		20		J
	MS	2011406-04	0.10610	2.0990	2.0000	mg/L		99.6		90 - 110	
	MSD	2011406-04	0.10610	1.9382	2.0000	mg/L	8.0	91.6	20	90 - 110	
QC Batch ID: B076645	Used client sample: N										
Total Phosphorus	DUP	2011406-04	ND	ND		mg/L			20		
	MS	2011406-04	ND	1.0552	1.0000	mg/L		106		80 - 120	
	MSD	2011406-04	ND	1.0131	1.0000	mg/L	4.1	101	20	80 - 120	

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Metals Analysis

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B075819						
Total Recoverable Iron	B075819-BLK1	ND	ug/L	50	30	
Total Recoverable Manganese	B075819-BLK1	ND	ug/L	10	4.0	
QC Batch ID: B075879						
Total Recoverable Mercury	B075879-BLK1	ND	ug/L	0.20	0.022	
QC Batch ID: B075898						
Total Recoverable Antimony	B075898-BLK1	ND	ug/L	2.0	0.11	
Total Recoverable Arsenic	B075898-BLK1	ND	ug/L	2.0	0.70	
Total Recoverable Barium	B075898-BLK1	ND	ug/L	1.0	0.21	
Total Recoverable Beryllium	B075898-BLK1	ND	ug/L	1.0	0.14	
Total Recoverable Cadmium	B075898-BLK1	ND	ug/L	1.0	0.11	
Total Recoverable Chromium	B075898-BLK1	ND	ug/L	3.0	0.50	
Total Recoverable Cobalt	B075898-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Copper	**B075898-BLK1**	**0.34900**	**ug/L**	**2.0**	**0.22**	**J**
Total Recoverable Lead	B075898-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Molybdenum	B075898-BLK1	ND	ug/L	1.0	0.11	
Total Recoverable Nickel	B075898-BLK1	ND	ug/L	2.0	0.19	
Total Recoverable Selenium	B075898-BLK1	ND	ug/L	2.0	0.19	
Total Recoverable Silver	B075898-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Thallium	B075898-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Vanadium	B075898-BLK1	ND	ug/L	3.0	0.78	
Total Recoverable Zinc	B075898-BLK1	ND	ug/L	10	1.7	

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Metals Analysis

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B075819										
Total Recoverable Iron	B075819-BS1	LCS	990.43	1000.0	ug/L	99.0		85 - 115		
Total Recoverable Manganese	B075819-BS1	LCS	496.21	500.00	ug/L	99.2		85 - 115		
QC Batch ID: B075879										
Total Recoverable Mercury	B075879-BS1	LCS	0.99750	1.0000	ug/L	99.8		85 - 115		
QC Batch ID: B075898										
Total Recoverable Antimony	B075898-BS1	LCS	42.747	40.000	ug/L	107		85 - 115		
Total Recoverable Arsenic	B075898-BS1	LCS	107.41	100.00	ug/L	107		85 - 115		
Total Recoverable Barium	B075898-BS1	LCS	43.368	40.000	ug/L	108		85 - 115		
Total Recoverable Beryllium	B075898-BS1	LCS	44.435	40.000	ug/L	111		85 - 115		
Total Recoverable Cadmium	B075898-BS1	LCS	44.983	40.000	ug/L	112		85 - 115		
Total Recoverable Chromium	B075898-BS1	LCS	43.049	40.000	ug/L	108		85 - 115		
Total Recoverable Cobalt	B075898-BS1	LCS	43.146	40.000	ug/L	108		85 - 115		
Total Recoverable Copper	B075898-BS1	LCS	110.72	100.00	ug/L	111		85 - 115		
Total Recoverable Lead	B075898-BS1	LCS	109.75	100.00	ug/L	110		85 - 115		
Total Recoverable Molybdenum	B075898-BS1	LCS	40.192	40.000	ug/L	100		85 - 115		
Total Recoverable Nickel	B075898-BS1	LCS	109.02	100.00	ug/L	109		85 - 115		
Total Recoverable Selenium	B075898-BS1	LCS	109.50	100.00	ug/L	110		85 - 115		
Total Recoverable Silver	B075898-BS1	LCS	42.271	40.000	ug/L	106		85 - 115		
Total Recoverable Thallium	B075898-BS1	LCS	42.372	40.000	ug/L	106		85 - 115		
Total Recoverable Vanadium	B075898-BS1	LCS	40.861	40.000	ug/L	102		85 - 115		
Total Recoverable Zinc	B075898-BS1	LCS	112.56	100.00	ug/L	113		85 - 115		

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Metals Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075819	Used client sample: N										
Total Recoverable Iron	DUP	2011121-01	ND	ND		ug/L			20		
	MS	2011121-01	ND	1026.8	1000.0	ug/L		103		75 - 125	
	MSD	2011121-01	ND	1055.3	1000.0	ug/L	2.7	106	20	75 - 125	
Total Recoverable Manganese	DUP	2011121-01	21.243	20.892		ug/L	1.7		20		
	MS	2011121-01	21.243	504.01	500.00	ug/L		96.6		75 - 125	
	MSD	2011121-01	21.243	515.33	500.00	ug/L	2.2	98.8	20	75 - 125	
QC Batch ID: B075879	Used client sample: N										
Total Recoverable Mercury	DUP	2010862-01	ND	ND		ug/L			20		
	MS	2010862-01	ND	1.0675	1.0000	ug/L		107		70 - 130	
	MSD	2010862-01	ND	1.0775	1.0000	ug/L	0.9	108	20	70 - 130	
QC Batch ID: B075898	Used client sample: N										
Total Recoverable Antimony	DUP	2011043-01	0.18400	0.16100		ug/L	13.3		20		J
	MS	2011043-01	0.18400	43.304	40.000	ug/L		108		70 - 130	
	MSD	2011043-01	0.18400	43.159	40.000	ug/L	0.3	107	20	70 - 130	
Total Recoverable Arsenic	DUP	2011043-01	13.535	11.246		ug/L	18.5		20		
	MS	2011043-01	13.535	121.28	100.00	ug/L		108		70 - 130	
	MSD	2011043-01	13.535	121.12	100.00	ug/L	0.1	108	20	70 - 130	
Total Recoverable Barium	DUP	**2011043-01**	**1348.5**	**1360.3**		**ug/L**	**0.9**		**20**		
	MS	**2011043-01**	**1348.5**	**1399.4**	**40.000**	**ug/L**		**127**		**70 - 130**	
	MSD	**2011043-01**	**1348.5**	**1330.1**	**40.000**	**ug/L**	**5.1**	**-46.0**	**20**	**70 - 130**	**A03**
Total Recoverable Beryllium	DUP	2011043-01	ND	ND		ug/L			20		
	MS	2011043-01	ND	38.174	40.000	ug/L		95.4		70 - 130	
	MSD	2011043-01	ND	38.389	40.000	ug/L	0.6	96.0	20	70 - 130	
Total Recoverable Cadmium	DUP	2011043-01	ND	ND		ug/L			20		
	MS	2011043-01	ND	39.941	40.000	ug/L		99.9		70 - 130	
	MSD	2011043-01	ND	38.574	40.000	ug/L	3.5	96.4	20	70 - 130	
Total Recoverable Chromium	DUP	2011043-01	0.53800	0.52100		ug/L	3.2		20		J
	MS	2011043-01	0.53800	39.635	40.000	ug/L		97.7		70 - 130	
	MSD	2011043-01	0.53800	38.206	40.000	ug/L	3.7	94.2	20	70 - 130	
Total Recoverable Cobalt	DUP	2011043-01	4.2760	4.4370		ug/L	3.7		20		
	MS	2011043-01	4.2760	39.738	40.000	ug/L		88.7		70 - 130	
	MSD	2011043-01	4.2760	39.584	40.000	ug/L	0.4	88.3	20	70 - 130	
Total Recoverable Copper	DUP	2011043-01	3.1070	3.3680		ug/L	8.1		20		
	MS	2011043-01	3.1070	107.35	100.00	ug/L		104		70 - 130	
	MSD	2011043-01	3.1070	106.28	100.00	ug/L	1.0	103	20	70 - 130	
Total Recoverable Lead	DUP	2011043-01	ND	ND		ug/L			20		
	MS	2011043-01	ND	104.66	100.00	ug/L		105		70 - 130	
	MSD	2011043-01	ND	100.10	100.00	ug/L	4.5	100	20	70 - 130	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Metals Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B075898	Used client sample: N										
Total Recoverable Molybdenum	DUP	2011043-01	16.074	16.646		ug/L	3.5		20		
	MS	2011043-01	16.074	65.575	40.000	ug/L		124		70 - 130	
	MSD	2011043-01	16.074	64.112	40.000	ug/L	2.3	120	20	70 - 130	
Total Recoverable Nickel	DUP	2011043-01	12.222	12.381		ug/L	1.3		20		
	MS	2011043-01	12.222	97.164	100.00	ug/L		84.9		70 - 130	
	MSD	2011043-01	12.222	96.248	100.00	ug/L	0.9	84.0	20	70 - 130	
Total Recoverable Selenium	DUP	2011043-01	20.708	22.158		ug/L	6.8		20		
	MS	2011043-01	20.708	128.01	100.00	ug/L		107		70 - 130	
	MSD	2011043-01	20.708	127.20	100.00	ug/L	0.6	106	20	70 - 130	
Total Recoverable Silver	DUP	2011043-01	ND	ND		ug/L			20		
	MS	2011043-01	ND	38.649	40.000	ug/L		96.6		70 - 130	
	MSD	2011043-01	ND	38.418	40.000	ug/L	0.6	96.0	20	70 - 130	
Total Recoverable Thallium	DUP	2011043-01	ND	ND		ug/L			20		
	MS	2011043-01	ND	41.257	40.000	ug/L		103		70 - 130	
	MSD	2011043-01	ND	39.906	40.000	ug/L	3.3	99.8	20	70 - 130	
Total Recoverable Vanadium	DUP	**2011043-01**	**1.1680**	**1.5310**		**ug/L**	**26.9**		**20**		**J,A02**
	MS	**2011043-01**	**1.1680**	**41.769**	**40.000**	**ug/L**		**102**		**70 - 130**	
	MSD	**2011043-01**	**1.1680**	**40.385**	**40.000**	**ug/L**	**3.4**	**98.0**	**20**	**70 - 130**	
Total Recoverable Zinc	DUP	2011043-01	2.6700	2.8210		ug/L	5.5		20		J
	MS	2011043-01	2.6700	99.325	100.00	ug/L		96.7		70 - 130	
	MSD	2011043-01	2.6700	98.856	100.00	ug/L	0.5	96.2	20	70 - 130	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 05/01/2020 16:27
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Sarah Battelle

Notes And Definitions

J	Estimated Value (CLP Flag)
MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A02	The difference between duplicate readings is less than the quantitation limit.
A03	The sample concentration was more than 4 times the spike level.
A07	Detection and quantitation limits were raised due to sample dilution caused by high analyte concentration or matrix interference.
L01	The Laboratory Control Sample Water (LCSW) recovery is not within laboratory established control limits.
Q03	Matrix spike recovery(s) was(were) not within the control limits.
S09	The surrogate recovery for this compound was not within the control limits.
V11	The Continuing Calibration Verification (CCV) recovery was not within established control limits.

BC LABORATORIES, INC.

4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody Form

Page 1 of 1

Report To:			
Client:	Geo-Logic Associates	Project #:	S020.1016
Attn:	Kyle Welchans	Project Name:	Cottonwood Sand Mine
Street Address:	11415 W. Bernardo Ct		
City, State, Zip:	San Diego CA 92127	Sampler(s):	N. Reason
Phone:	(858) 451-1136	Fax:	
Email:			
Work Order #:			

Analysis Requested

Sample #	Description	Date Sampled	Time Sampled	VOCs (EPA 524.2)	Nitrate-N, Nitrite-N; Total Nitrogen as N	Chloride, Sulfate; TDS, TSS	Total Phosphorus as P; TOC	Oil & Grease; MBAS	Title 22 Metals (including iron and manganese)	Organochlorine Pesticides (508)	Chlorinated Herbicides (515.1)	SVOCs (525.2M)	Total Coliform & E. Coli (SM9223B)	Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Notes
	Ivanhoe #11	10/1/20	1050	X	X	X	X	X	X	X	X	X	X				X			
	Lake #11	10/1/20	1040	X	X	X	X	X	X	X	X	X	X				X			Oil and grease needs to be preserved in lab
	Ivanhoe #8	10/1/20	1000	X	X	X	X	X	X	X	X	X	X				X			

Comments: *24 hour hold on Total Coliform and E. Coli*

Result Request **Surcharge

☒ STD (10 Days) ☐ 5 Day** ☐ 4 Day** ☐ 3 Day** ☐ 2 Day** ☐ 1 Day**

Billing ☒ Same as above

Client: ______

Address: ______

City: ______ State ____ Zip ____

Attn: ______

P.O. #: ______

*Send Copy to State of CA? (EDT) ☐ Yes ☒ No

System # (Needed for EDT)

EDF Required Geotracker ☒ Yes ☐ No **Global ID**

Relinquished By	Date	Time	Received By	Date	Time
1. [signature]	10-1-2020	1403	1. Gabe Greenberg	10-1-20	1403
2.			2.		
3.			3.		

*For Drinking Water, mark "EDT - yes or no." If marked no, BCL will not upload at a future date.

Geo-Logic ASSOCIATES

Geologists • Hydrogeologists • Engineers

GROUNDWATER MONITORING PROGRAM
WELL DATA SHEET

Site Name.:	COTTONWOOD	**Project No.:**	5020.1016
Well I.D.:	WARHOG #11	**Sampling Date:**	10/11/20
Collected By:	KW	**Purge start Time:**	1030
Casing Diameter (inches):	—	**Purge Stop time:**	1050
Starting Water Level:	—	**Sampling Time:**	1050
Total Depth (feet):	—	**Ending Water Level (feet):**	—
Water column (feet):	—	**Total Purged (gallons):**	20
Screen Length (feet):	—	**PID/FID Reading:**	—
Purge Volume (gallons):	—	**Duplicate Sample:**	YES (NO)
Horiba Model S/N:	U52		

GALLONS PURGED	WATER LEVEL	pH	CONDUCTIVITY ms/cm	TURBIDITY NTU	D.O. mg/L	TEMPERATURE °C	O.R.P. mV
FLUSHED	DRY	FIELD WATER ~~QUALITY~~					
1	—	8.20	0.735	5.9	—	29.27	153
4	—	8.09	0.730	239	—	26.88	163
7	—	7.52	0.782	OOR	—	25.97	177
10	—	7.18	1.83	11	—	25.63	208
12	—	7.11	2.28	11	—	25.01	211
14	—	7.07	2.39	244	—	24.73	212
16	—	7.06	2.43	70	~~700~~ —	24.62	214
18	—	7.06	2.44	79	—	24.51	213
20	—	7.07	2.45	72	—	24.40	213

Purge Sampling Rates:

Well condition: SAMPLE PORT ON 4" PIPE ~~WELL MONUMENT~~

Additional Info/Comments:

Name: KYLE WILLIAMS **Signature:**

Geo-Logic ASSOCIATES

Geologists • Hydrogeologists • Engineers

GROUNDWATER MONITORING PROGRAM
WELL DATA SHEET

Site Name.:	KK COTTONWOOD	**Project No.:**	520.1016
Well I.D.:	IVANHOE #8	**Sampling Date:**	10/1/20
Collected By:	KW	**Purge start Time:**	945
Casing Diameter (inches):	—	**Purge Stop time:**	958
Starting Water Level:	—	**Sampling Time:**	1000
Total Depth (feet):	—	**Ending Water Level (feet):**	—
Water column (feet):	—	**Total Purged (gallons):**	10
Screen Length (feet):	—	**PID/FID Reading:**	—
Purge Volume (gallons):	—	**Duplicate Sample:**	YES (NO)
Horiba Model S/N:	U52		

GALLONS PURGED	WATER LEVEL	pH	CONDUCTIVITY ms/cm	TURBIDITY NTU	D.O. mg/L	TEMPERATURE °C	O.R.P. mV
FLUSHED OUT DIRTY WATER AFTER REMOVING							
PRESSURE GAUGE. PUMP IS ACTIVELY RUNNING							
1	—	6.45	2.39	0.0	—	24.02	256
2	—	6.53	2.38	2.6	—	22.02	247
4	—	6.56	2.40	0.3	—	21.26	247
6	—	6.54	2.43	0.7	—	21.01	245
8	—	6.57	2.44	0.8	—	20.88	241
10	—	6.56	2.45	1.3	—	20.83	244

Purge Sampling Rates:

Well condition: REMOVED PRESSURE GAUGE & SAMPLED FROM VALVE ON 4" PIPE

Additional Info/Comments:

Name: KYLE WELCHANS **Signature:**

Geo-Logic ASSOCIATES

Geologists • Hydrogeologists • Engineers

GROUNDWATER MONITORING PROGRAM
WELL DATA SHEET

Site Name.:	COTTONWOOD	**Project No.:**	S020.1016
Well I.D.:	LAKE #11	**Sampling Date:**	10/1/2020
Collected By:	NR	**Purge start Time:**	0924
Casing Diameter (inches):	12	**Purge Stop time:**	1019
Starting Water Level:	5.95	**Sampling Time:**	1040
Total Depth (feet):	21.30	**Ending Water Level (feet):**	7.89
Water column (feet):	15.35	**Total Purged (gallons):**	155
Screen Length (feet):	–	**PID/FID Reading:**	N/A
Purge Volume (gallons):	135.26	**Duplicate Sample:**	YES (NO)
Horiba Model S/N:	U-52/DLLC4V06	* BLANKS COLLECTED HERE *	

GALLONS PURGED	WATER LEVEL	pH	CONDUCTIVITY ms/cm	TURBIDITY NTU	D.O. mg/L	TEMPERATURE °C	O.R.P. mV
30	7.80	6.73	3.15	9.6	4.62	23.86	132
60	7.83	7.95	3.06	8.9	3.53	23.60	-77
90	7.86	7.87	2.97	5.9	2.19	23.75	-88
120	7.88	7.76	2.93	4.8	1.34	23.75	-104
135	7.88	7.68	2.93	4.9	1.38	23.44	-96
145	7.89	7.72	2.92	4.7	1.42	23.30	-93
155	7.89	7.71	2.92	4.7	1.36	23.29	-89

Purge Sampling Rates: PURGE WELL AT APPROX 3 GPM USING GRUNDFOS PUMP WITH EZ-Reel. SAMPLE COLLECTED USING NEW 1½" DISPOSABLE BAILER

Well condition: POOR - NO LID, PROTECTIVE METAL CASING HAS RUSTED AWAY ON ONE SIDE, APPROX 17" x 19"

Additional Info/Comments: SUNNY, CLEAR, WARM

Name: NICHOLAS REASON **Signature:**

Geo-Logic ASSOCIATES

FIELD CALIBRATION DOCUMENTATION FORM

LOCATION (Site/Facility Name) Cottonwood **PROJECT NAME / NUMBER** 5020.1016

Instrument Make/Model #	HORIBA U-52 (DLLCYV06)					
Date/Time 10/1/2020 0900	**pH**	**Electrical Conductivity (µMhos/cm)** (4.49 mg/Kg)	**Turbidity (NTU)** (0)	**DO (mg/L or %)**	**Guidance Remarks**	**Comments**
Pre. Cal	3.92	4.43	0.1	6.67		
Calibration	4.00	4.49	0.0	9.03		
Calibration Successful? (Y/N)	Y				enter YES or NO	
Satifies Protocol?	Y				Did calibration meet criteria in the sampling protocol? (Y or N)	
Calibration by	NR				Signature or initials	
Physical Condition of Unit			Good			

Geo-Logic ASSOCIATES

FIELD CALIBRATION DOCUMENTATION FORM

LOCATION (Site/Facility Name) COTTONWOOD **PROJECT NAME / NUMBER** 5020.1016

Instrument Make/Model # HORIBA U-52						
Date/Time 10/1/20 900	**pH**	**Electrical Conductivity (µMhos/cm) (4.49 mg/Kg)**	**Turbidity (NTU) (0)**	**DO (mg/L or %)**	**Guidance Remarks**	**Comments**
Pre. Cal	3.85	4.41	0.0	9.56		
Calibration	4.00	4.47	0.0	8.44		
Calibration Successful? (Y/N)	Y				enter YES or NO	
Satifies Protocol?	Y				Did calibration meet criteria in the sampling protocol? (Y or N)	
Calibration by	KW				Signature or initials	
Physical Condition of Unit			GOOD			

Date of Report: 10/21/2020

Kyle Welchans

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Client Project:	S020.1016
BCL Project:	Cottonwood Sand Mine Project
BCL Work Order:	2028653
Invoice ID:	B395439

Enclosed are the results of analyses for samples received by the laboratory on 10/1/2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Natalie Serda
Client Service Rep

Stuart Buttram
Technical Director

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BC LABORATORIES, INC.
4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody Form

Page 1 of 1

Report To:
Client: Geo-Logic Associates
Attn: Kyle Williams
Street Address: 11415 W. Bernardo Ct
City, State, Zip: San Diego CA 92127
Phone: (858) 451-1136 Fax:
Email:
Project #: S020.1016
Project Name: Cottonwood Sand Mine
Sampler(s): N. Reason
Work Order #: 20-28653 (20-28654) Bact.

Comments: *24 Hour Hold on Total Coliform and E. Coli*

Analysis Requested

Sample #	Description		Date Sampled	Time Sampled	VOCs (EPA 524.2)	Nitrate-N, Nitrite-N, Total Nitrogen as N	Chloride, Sulfate, TDS, TSS	Total Phosphorus as P, TOC	Oil & Grease, MBAS	Title 22 Metals (including Iron and Manganese)	Organochlorine Pesticides (508)	Chlorinated Herbicides (515.1)	SVOCs (525.2M)	Total Coliform; E. Coli (SM9223B)	Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Notes
-1	Ivanhoe #11	(-1)	10/1/20	1050	X	X	X	X	X	X	X	X	X	X				X			
-2	Lake #11	(-2)	10/1/20	1040	X	X	X	X	X	X	X	X	X	X				X			Oil and Grease needs to be preserved in lab
-3	Ivanhoe #8	(-3)	10/1/20	1000	X	X	X	X	X	X	X	X	X	X				X			

Result Request **Surcharge
☒ STD (10 Days) ☐ 5 Day** ☐ 4 Day** ☐ 3 Day** ☐ 2 Day** ☐ 1 Day**

CHK BY [initials] DISTRIBUTION [initials] SUB OUT ☐

SHORT HOLDING TIME: Cr6 NO2 NO3 OP SS DO Cl2 BOD MBAS COT

Billing
☒ Same as above
Client:
Address:
City: State Zip
Attn:
P.O. #:

*Send Copy to State of CA? (EDT) ☐ Yes ☒ No
System # (Needed for EDT)

EDF Required Geotracker ☒ Yes ☐ No
Global ID

Relinquished By	Date	Time	Received By	Date	Time
1. [signature]	10-1-2020	1403	1. Gabe Greenberg	10-1-20	1403
2. Gabe Greenberg	10-1-20	3:15	2. [signature]	10-1-20	1515
3. [signature]	10/1/20	1747	3. [signature]	10/1	1747

*For Drinking Water, mark "EDT - yes or no." If marked no, BCL will not upload at a future date.

Chain of Custody and Cooler Receipt Form for 2028653 Page 2 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 2

Submission #: 20-28653 (20-28654)

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☑ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☑ Other ☐ (Specify)_____	Other ☐ (Specify)_____	W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☐ YES ☐ NO

Emissivity: 0.98 Container: PE Thermometer ID: 208 Date/Time 10/1 1747

Temperature: (A) 1.7 °C / (C) 1.5 °C Analyst Init VP

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES	DE	DE	DE							
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / (16oz)	F	F								
PT CYANIDE										
PT NITROGEN FORMS	~~Kyp~~	G								
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON		H								
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK					AB					
40ml VOA VIAL		ABC		AB						
QT EPA 1664		I								
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL	(AB)	(AB)	(AB)							
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
~~QT EPA 525~~ 020		J								
QT EPA 525 TRAVEL BLANK										
~~40ml EPA 547~~ 024		K								
40ml EPA 531.1										
~~8oz EPA 548~~ 028		LM								
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments: -4A QCAB, -5AB QCTB

Sample Numbering Completed By: VP Date/Time: 10/1 2013

A = Actual / C = Corrected

Rev 21 05/23/2016

I:\WPDocs\WordPerfect\LAB_DOCS\FORMS\SAMREC rev 20

Chain of Custody and Cooler Receipt Form for 2028653 Page 3 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 2 Of 2

Submission #: 20-28653 (20-28654)

SHIPPING INFORMATION: Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☑ Other ☐ (Specify)_____

SHIPPING CONTAINER: Ice Chest ☑ None ☐ Box ☐ Other ☐ (Specify)_____

FREE LIQUID: YES ☐ NO ☐ W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 0.98 Container: PE Thermometer ID: 208 Date/Time: 9/10/1747

Temperature: (A) 1.4 °C / (C) 1.2 °C Analyst Init: VP

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / (16oz)			F							
PT CYANIDE										
PT NITROGEN FORMS	G		G							
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON	H		H							
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL	ABL		ABL							
QT EPA 1664	I		I							
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
~~QT EPA 525~~ 020	JKL									
QT EPA 525 TRAVEL BLANK	M									
~~40ml EPA 547~~ 024	ML		J							
40ml EPA 531.1										
~~8oz EPA 548~~ 028 VP	NOP									
~~QT EPA 549~~ 028	MN		KL							
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: VP Date/Time: 10/2 1756

A = Actual / C = Corrected

Rev 21

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Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
2028653-01	**COC Number:**	---	**Receive Date:**	10/01/2020 17:47
	Project Number:	---	**Sampling Date:**	10/01/2020 10:50
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	Ivanhoe #11	**Lab Matrix:**	Water
	Sampled By:	Nick Reason	**Sample Type:**	Groundwater
2028653-02	**COC Number:**	---	**Receive Date:**	10/01/2020 17:47
	Project Number:	---	**Sampling Date:**	10/01/2020 10:40
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	Lake #11	**Lab Matrix:**	Water
	Sampled By:	Nick Reason	**Sample Type:**	Groundwater
2028653-03	**COC Number:**	---	**Receive Date:**	10/01/2020 17:47
	Project Number:	---	**Sampling Date:**	10/01/2020 10:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	Ivanhoe #8	**Lab Matrix:**	Water
	Sampled By:	Nick Reason	**Sample Type:**	Groundwater
2028653-04	**COC Number:**	---	**Receive Date:**	10/01/2020 17:47
	Project Number:	---	**Sampling Date:**	10/01/2020 00:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	QCAB	**Lab Matrix:**	Water
	Sampled By:	Nick Reason	**Sample Type:**	Water
2028653-05	**COC Number:**	---	**Receive Date:**	10/01/2020 17:47
	Project Number:	---	**Sampling Date:**	10/01/2020 00:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	QCTB	**Lab Matrix:**	Water
	Sampled By:	Nick Reason	**Sample Type:**	Blank Water

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organochlorine Pesticides and PCB's (EPA Method 508)

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Aldrin	ND	ug/L	0.0050	0.00095	EPA-508	ND		1
alpha-BHC	ND	ug/L	0.0050	0.00050	EPA-508	ND		1
beta-BHC	ND	ug/L	0.0050	0.00064	EPA-508	ND		1
delta-BHC	ND	ug/L	0.0050	0.0015	EPA-508	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.0050	0.00067	EPA-508	ND		1
Chlordane (Technical)	ND	ug/L	0.10	0.045	EPA-508	ND		1
4,4'-DDD	ND	ug/L	0.0050	0.00086	EPA-508	ND		1
4,4'-DDE	ND	ug/L	0.0050	0.0013	EPA-508	ND		1
4,4'-DDT	ND	ug/L	0.0050	0.00096	EPA-508	ND		1
Dieldrin	ND	ug/L	0.0050	0.0011	EPA-508	ND		1
Endosulfan I	ND	ug/L	0.0050	0.00068	EPA-508	ND		1
Endosulfan II	ND	ug/L	0.0050	0.00098	EPA-508	ND		1
Endosulfan sulfate	ND	ug/L	0.0050	0.00055	EPA-508	ND		1
Endrin	ND	ug/L	0.0050	0.00069	EPA-508	ND		1
Endrin aldehyde	ND	ug/L	0.010	0.00054	EPA-508	ND		1
Heptachlor	ND	ug/L	0.0050	0.00094	EPA-508	ND		1
Heptachlor epoxide	ND	ug/L	0.0050	0.00064	EPA-508	ND		1
Methoxychlor	ND	ug/L	0.0050	0.0037	EPA-508	ND		1
Toxaphene	ND	ug/L	1.0	0.20	EPA-508	ND		1
PCB-1016	ND	ug/L	0.20	0.066	EPA-508	ND		1
PCB-1221	ND	ug/L	0.20	0.063	EPA-508	ND		1
PCB-1232	ND	ug/L	0.20	0.059	EPA-508	ND		1
PCB-1242	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1248	ND	ug/L	0.20	0.044	EPA-508	ND		1
PCB-1254	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1260	ND	ug/L	0.20	0.089	EPA-508	ND		1
Total PCB's (Summation)	ND	ug/L	0.20	0.10	EPA-508	ND		1
TCMX (Surrogate)	80.8	%	60 - 130 (LCL - UCL)		EPA-508			1
Decachlorobiphenyl (Surrogate)	90.9	%	60 - 130 (LCL - UCL)		EPA-508			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-508	10/07/20 20:30	10/08/20 23:54	HKS	GC-17	1.099	B089404	EPA 508

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organic Analysis (EPA Method 515.1)

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Bentazon	ND	ug/L	0.80	0.22	EPA-515.1	ND		1
2,4-D	ND	ug/L	0.40	0.18	EPA-515.1	ND		1
2,4-DB	ND	ug/L	3.0	0.37	EPA-515.1	ND		1
Dalapon	ND	ug/L	5.0	0.31	EPA-515.1	ND		1
Dicamba	ND	ug/L	0.080	0.040	EPA-515.1	ND		1
Dichloroprop	ND	ug/L	0.50	0.11	EPA-515.1	ND		1
Dinoseb	ND	ug/L	0.20	0.057	EPA-515.1	ND		1
MCPA	ND	ug/L	10	6.0	EPA-515.1	ND		1
MCPP	ND	ug/L	10	6.0	EPA-515.1	ND		1
2,4,5-T	ND	ug/L	0.090	0.012	EPA-515.1	ND		1
2,4,5-TP (Silvex)	ND	ug/L	0.070	0.032	EPA-515.1	ND		1
2,4-Dichlorophenylacetic acid (Surrogate)	88.2	%	40 - 120 (LCL - UCL)		EPA-515.1			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-515.1	10/07/20 21:00	10/08/20 16:16	OLH	GC-8	1	B089375	EPA 515.1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
Bromobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Bromochloromethane	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Bromoform	ND	ug/L	0.50	0.46	EPA-524.2	ND		1
Bromomethane	ND	ug/L	0.50	0.20	EPA-524.2	ND	V11	1
n-Butylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chlorobenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chloroform	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloromethane	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
2-Chlorotoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.093	EPA-524.2	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.89	EPA-524.2	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
Dibromomethane	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1-Dichloroethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
1,1-Dichloropropene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1

Geologic Associates (Main)
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San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
Total 1,3-Dichloropropene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Ethylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Methylene chloride	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Naphthalene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
Styrene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
Toluene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Trichloroethene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.78	EPA-524.2	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Vinyl chloride	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Total Xylenes	ND	ug/L	0.50	0.47	EPA-524.2	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.97	EPA-524.2	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
t-Butyl alcohol	ND	ug/L	10	9.4	EPA-524.2	ND		1
Diisopropyl ether	ND	ug/L	0.50	0.36	EPA-524.2	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50	0.32	EPA-524.2	ND		1

Geologic Associates (Main)
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San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
p- & m-Xylenes	ND	ug/L	0.50	0.34	EPA-524.2	ND		1
o-Xylene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
1,2-Dichloroethane-d4 (Surrogate)	93.9	%	75 - 125 (LCL - UCL)		EPA-524.2			1
Toluene-d8 (Surrogate)	97.4	%	80 - 120 (LCL - UCL)		EPA-524.2			1
4-Bromofluorobenzene (Surrogate)	99.1	%	80 - 120 (LCL - UCL)		EPA-524.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-524.2	10/05/20 07:00	10/05/20 13:21	MGC	MS-V5	1	B088874	EPA 524.2

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthylene	ND	ug/L	0.10	0.031	EPA-525.2	ND		1
Alachlor	ND	ug/L	0.20	0.090	EPA-525.2	ND		1
Anthracene	ND	ug/L	0.10	0.034	EPA-525.2	ND		1
Atraton	ND	ug/L	0.50	0.057	EPA-525.2	ND		1
Atrazine	ND	ug/L	0.30	0.14	EPA-525.2	ND		1
Benzo[a]anthracene	ND	ug/L	0.20	0.044	EPA-525.2	ND		1
Benzo[b]fluoranthene	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Benzo[k]fluoranthene	ND	ug/L	0.30	0.072	EPA-525.2	ND		1
Benzo[a]pyrene	ND	ug/L	0.10	0.050	EPA-525.2	ND		1
Benzo[g,h,i]perylene	ND	ug/L	0.30	0.065	EPA-525.2	ND		1
Benzyl butyl phthalate	ND	ug/L	4.0	0.047	EPA-525.2	ND		1
delta-BHC	ND	ug/L	0.20	0.048	EPA-525.2	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.20	0.063	EPA-525.2	ND		1
bis(2-Ethylhexyl)phthalate	ND	ug/L	3.0	0.030	EPA-525.2	ND		1
Bromacil	ND	ug/L	0.50	0.043	EPA-525.2	ND		1
Chrysene	ND	ug/L	0.30	0.060	EPA-525.2	ND		1
Diazinon	ND	ug/L	0.20	0.080	EPA-525.2	ND		1
Dibenzo[a,h]anthracene	ND	ug/L	0.30	0.051	EPA-525.2	ND		1
Di(2-ethylhexyl)adipate	ND	ug/L	1.0	0.025	EPA-525.2	ND		1
Dimethoate	ND	ug/L	2.0	0.050	EPA-525.2	ND		1
Dimethyl phthalate	ND	ug/L	1.0	0.034	EPA-525.2	ND		1
Di-n-butyl phthalate	ND	ug/L	1.0	0.063	EPA-525.2	ND		1
Fluorene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorobenzene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorocyclopentadiene	ND	ug/L	1.0	0.12	EPA-525.2	ND		1
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.30	0.032	EPA-525.2	ND		1
Methoxychlor	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Metolachlor	ND	ug/L	0.50	0.056	EPA-525.2	ND		1
Metribuzin	ND	ug/L	0.50	0.048	EPA-525.2	ND		1
Molinate	ND	ug/L	0.50	0.036	EPA-525.2	ND		1
Phenanthrene	ND	ug/L	0.10	0.020	EPA-525.2	ND		1
Prometon	ND	ug/L	0.50	0.11	EPA-525.2	ND		1
Prometryn	ND	ug/L	0.50	0.045	EPA-525.2	ND		1

Geologic Associates (Main)
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San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Pyrene	ND	ug/L	0.10	0.040	EPA-525.2	ND		1
Secbumeton	ND	ug/L	0.50	0.079	EPA-525.2	ND		1
Simazine	ND	ug/L	0.30	0.066	EPA-525.2	ND		1
Terbutryn	ND	ug/L	0.50	0.050	EPA-525.2	ND		1
Thiobencarb	ND	ug/L	0.50	0.044	EPA-525.2	ND		1
Perylene-d12 (Surrogate)	101	%	60 - 140 (LCL - UCL)		EPA-525.2			1
1,3-Dimethyl-2-nitrobenzene (Surrogate)	102	%	70 - 130 (LCL - UCL)		EPA-525.2			1
Triphenylphosphate (Surrogate)	98.8	%	70 - 130 (LCL - UCL)		EPA-525.2			1
Pyrene-d10 (Surrogate)	86.2	%	70 - 130 (LCL - UCL)		EPA-525.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-525.2	10/06/20 08:00	10/07/20 20:00	MK1	MS-B6	1	B089066	EPA 525.2

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

EPA Method 1664

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	ND	mg/L	5.0	0.74	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-1664A HEM	10/07/20 09:00	10/07/20 13:44	MAM	Inst	1	B089179	EPA 1664/HEM

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Water Analysis (General Chemistry)

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Chloride	**390**	**mg/L**	**1.0**	**0.26**	**EPA-300.0**	0.43	**A07**	1
Nitrate as N	**2.0**	**mg/L**	**0.20**	**0.048**	**EPA-300.0**	ND	**A07**	1
Sulfate	**410**	**mg/L**	**2.0**	**0.28**	**EPA-300.0**	ND	**A07**	1
Total Dissolved Solids @ 180 C	**1500**	**mg/L**	**100**	**50**	**EPA-160.1**	ND	**A07**	2
Total Suspended Solids (Glass Fiber)	**6.0**	**mg/L**	**0.56**	**0.56**	**EPA-160.2**	ND	**A07**	3
MBAS	ND	mg/L	0.20	0.048	EPA-425.1	ND	A07	4
Total Nitrogen	**2.6**	**mg/L**	**0.30**	**0.10**	**Calc**	ND		5
Total Kjeldahl Nitrogen	**0.57**	**mg/L**	**0.20**	**0.088**	**EPA-351.2**	ND		6
Nitrite as N	ND	ug/L	50	10	EPA-353.2	ND		7
Total Phosphorus	**0.12**	**mg/L**	**0.050**	**0.018**	**EPA-365.4**	ND		8
Non-Volatile Organic Carbon	**4.2**	**mg/L**	**1.0**	**0.30**	**EPA-415.1**	ND		9

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-300.0	10/01/20 22:00	10/02/20 02:58	SAV	IC7	2	B088791	No Prep
2	EPA-160.1	10/05/20 15:30	10/05/20 15:30	CAD	MANUAL	10	B088971	No Prep
3	EPA-160.2	10/05/20 09:20	10/05/20 09:20	OJP	MANUAL	1.111	B088940	No Prep
4	EPA-425.1	10/02/20 11:15	10/02/20 11:15	JMN	MANUAL	2	B088830	No Prep
5	Calc	10/02/20 10:01	10/20/20 16:01	AMM	Calc	1	B^J0012	Calc
6	EPA-351.2	10/19/20 10:30	10/20/20 09:37	JMH2	SC-2	1	B090236	EPA 351.2
7	EPA-353.2	10/02/20 10:01	10/02/20 10:05	MC1	KONE-1	1	B088957	No Prep
8	EPA-365.4	10/19/20 10:30	10/20/20 09:19	JMH2	SC-1	1	B090237	EPA 365.4
9	EPA-415.1	10/05/20 07:00	10/05/20 07:47	ALW	TOC2	1	B088760	No Prep

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Metals Analysis

BCL Sample ID: 2028653-01 | **Client Sample Name:** Ivanhoe #11, 10/1/2020 10:50:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Antimony	**0.16**	**ug/L**	**2.0**	**0.11**	**EPA-200.8**	ND	**J**	1
Total Recoverable Arsenic	**2.0**	**ug/L**	**2.0**	**0.70**	**EPA-200.8**	ND		1
Total Recoverable Barium	**180**	**ug/L**	**1.0**	**0.21**	**EPA-200.8**	0.27		1
Total Recoverable Beryllium	ND	ug/L	1.0	0.14	EPA-200.8	ND		1
Total Recoverable Cadmium	**0.32**	**ug/L**	**1.0**	**0.11**	**EPA-200.8**	0.16	**J**	1
Total Recoverable Chromium	**1.9**	**ug/L**	**3.0**	**0.50**	**EPA-200.8**	0.64	**J**	1
Total Recoverable Cobalt	**5.3**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND		1
Total Recoverable Copper	**62**	**ug/L**	**2.0**	**0.22**	**EPA-200.8**	0.69		1
Total Recoverable Iron	**2900**	**ug/L**	**50**	**30**	**EPA-200.7**	ND		2
Total Recoverable Lead	**6.4**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND		1
Total Recoverable Manganese	**1700**	**ug/L**	**10**	**4.0**	**EPA-200.7**	ND		2
Total Recoverable Mercury	**0.40**	**ug/L**	**0.20**	**0.022**	**EPA-245.1**	ND		3
Total Recoverable Molybdenum	**17**	**ug/L**	**1.0**	**0.11**	**EPA-200.8**	ND		1
Total Recoverable Nickel	**5.8**	**ug/L**	**2.0**	**0.19**	**EPA-200.8**	ND		1
Total Recoverable Selenium	**11**	**ug/L**	**2.0**	**0.19**	**EPA-200.8**	ND		1
Total Recoverable Silver	ND	ug/L	1.0	0.10	EPA-200.8	ND		1
Total Recoverable Thallium	ND	ug/L	1.0	0.10	EPA-200.8	ND		1
Total Recoverable Vanadium	**120**	**ug/L**	**3.0**	**0.78**	**EPA-200.8**	ND		1
Total Recoverable Zinc	**120**	**ug/L**	**10**	**1.7**	**EPA-200.8**	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-200.8	10/08/20 10:30	10/09/20 09:45	JNC	PE-EL2	1	B089329	EPA 200.2
2	EPA-200.7	10/09/20 07:45	10/09/20 17:48	JRG	PE-OP4	1	B089436	EPA 200.2
3	EPA-245.1	10/07/20 08:00	10/07/20 16:21	TMT	CETAC3	1	B089142	EPA 245.1

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Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organochlorine Pesticides and PCB's (EPA Method 508)

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Aldrin	ND	ug/L	0.0050	0.00095	EPA-508	ND		1
alpha-BHC	ND	ug/L	0.0050	0.00050	EPA-508	ND		1
beta-BHC	ND	ug/L	0.0050	0.00064	EPA-508	ND		1
delta-BHC	ND	ug/L	0.0050	0.0015	EPA-508	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.0050	0.00067	EPA-508	ND		1
Chlordane (Technical)	ND	ug/L	0.10	0.045	EPA-508	ND		1
4,4'-DDD	ND	ug/L	0.0050	0.00086	EPA-508	ND		1
4,4'-DDE	ND	ug/L	0.0050	0.0013	EPA-508	ND		1
4,4'-DDT	ND	ug/L	0.0050	0.00096	EPA-508	ND		1
Dieldrin	ND	ug/L	0.0050	0.0011	EPA-508	ND		1
Endosulfan I	ND	ug/L	0.0050	0.00068	EPA-508	ND		1
Endosulfan II	ND	ug/L	0.0050	0.00098	EPA-508	ND		1
Endosulfan sulfate	ND	ug/L	0.0050	0.00055	EPA-508	ND		1
Endrin	ND	ug/L	0.0050	0.00069	EPA-508	ND		1
Endrin aldehyde	ND	ug/L	0.010	0.00054	EPA-508	ND		1
Heptachlor	ND	ug/L	0.0050	0.00094	EPA-508	ND		1
Heptachlor epoxide	ND	ug/L	0.0050	0.00064	EPA-508	ND		1
Methoxychlor	ND	ug/L	0.0050	0.0037	EPA-508	ND		1
Toxaphene	ND	ug/L	1.0	0.20	EPA-508	ND		1
PCB-1016	ND	ug/L	0.20	0.066	EPA-508	ND		1
PCB-1221	ND	ug/L	0.20	0.063	EPA-508	ND		1
PCB-1232	ND	ug/L	0.20	0.059	EPA-508	ND		1
PCB-1242	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1248	ND	ug/L	0.20	0.044	EPA-508	ND		1
PCB-1254	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1260	ND	ug/L	0.20	0.089	EPA-508	ND		1
Total PCB's (Summation)	ND	ug/L	0.20	0.10	EPA-508	ND		1
TCMX (Surrogate)	90.6	%	60 - 130 (LCL - UCL)		EPA-508			1
Decachlorobiphenyl (Surrogate)	137	%	60 - 130 (LCL - UCL)		EPA-508		A19	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-508	10/07/20 20:30	10/09/20 00:10	HKS	GC-17	1.075	B089404	EPA 508

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Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organic Analysis (EPA Method 515.1)

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Bentazon	ND	ug/L	0.80	0.22	EPA-515.1	ND		1
2,4-D	ND	ug/L	0.40	0.18	EPA-515.1	ND		1
2,4-DB	ND	ug/L	3.0	0.37	EPA-515.1	ND		1
Dalapon	ND	ug/L	5.0	0.31	EPA-515.1	ND		1
Dicamba	ND	ug/L	0.080	0.040	EPA-515.1	ND		1
Dichloroprop	ND	ug/L	0.50	0.11	EPA-515.1	ND		1
Dinoseb	ND	ug/L	0.20	0.057	EPA-515.1	ND		1
MCPA	ND	ug/L	10	6.0	EPA-515.1	ND		1
MCPP	ND	ug/L	10	6.0	EPA-515.1	ND		1
2,4,5-T	ND	ug/L	0.090	0.012	EPA-515.1	ND		1
2,4,5-TP (Silvex)	ND	ug/L	0.070	0.032	EPA-515.1	ND		1
2,4-Dichlorophenylacetic acid (Surrogate)	69.3	%	40 - 120 (LCL - UCL)		EPA-515.1			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-515.1	10/07/20 21:00	10/08/20 16:37	OLH	GC-8	1.031	B089375	EPA 515.1

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Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
Bromobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Bromochloromethane	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Bromoform	ND	ug/L	0.50	0.46	EPA-524.2	ND		1
Bromomethane	ND	ug/L	0.50	0.20	EPA-524.2	ND	V11	1
n-Butylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chlorobenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chloroform	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloromethane	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
2-Chlorotoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.093	EPA-524.2	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.89	EPA-524.2	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
Dibromomethane	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1-Dichloroethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
1,1-Dichloropropene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
Total 1,3-Dichloropropene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Ethylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Methylene chloride	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Naphthalene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
Styrene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
Toluene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Trichloroethene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.78	EPA-524.2	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Vinyl chloride	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Total Xylenes	ND	ug/L	0.50	0.47	EPA-524.2	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.97	EPA-524.2	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
t-Butyl alcohol	ND	ug/L	10	9.4	EPA-524.2	ND		1
Diisopropyl ether	ND	ug/L	0.50	0.36	EPA-524.2	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50	0.32	EPA-524.2	ND		1

Geologic Associates (Main)
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San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
p- & m-Xylenes	ND	ug/L	0.50	0.34	EPA-524.2	ND		1
o-Xylene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
1,2-Dichloroethane-d4 (Surrogate)	98.7	%	75 - 125 (LCL - UCL)		EPA-524.2			1
Toluene-d8 (Surrogate)	97.1	%	80 - 120 (LCL - UCL)		EPA-524.2			1
4-Bromofluorobenzene (Surrogate)	97.4	%	80 - 120 (LCL - UCL)		EPA-524.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-524.2	10/05/20 07:00	10/05/20 13:45	MGC	MS-V5	1	B088874	EPA 524.2

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Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthylene	ND	ug/L	0.10	0.031	EPA-525.2	ND		1
Alachlor	ND	ug/L	0.20	0.090	EPA-525.2	ND		1
Anthracene	ND	ug/L	0.10	0.034	EPA-525.2	ND		1
Atraton	ND	ug/L	0.50	0.057	EPA-525.2	ND		1
Atrazine	ND	ug/L	0.30	0.14	EPA-525.2	ND		1
Benzo[a]anthracene	ND	ug/L	0.20	0.044	EPA-525.2	ND		1
Benzo[b]fluoranthene	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Benzo[k]fluoranthene	ND	ug/L	0.30	0.072	EPA-525.2	ND		1
Benzo[a]pyrene	ND	ug/L	0.10	0.050	EPA-525.2	ND		1
Benzo[g,h,i]perylene	ND	ug/L	0.30	0.065	EPA-525.2	ND		1
Benzyl butyl phthalate	ND	ug/L	4.0	0.047	EPA-525.2	ND		1
delta-BHC	ND	ug/L	0.20	0.048	EPA-525.2	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.20	0.063	EPA-525.2	ND		1
bis(2-Ethylhexyl)phthalate	ND	ug/L	3.0	0.030	EPA-525.2	ND		1
Bromacil	ND	ug/L	0.50	0.043	EPA-525.2	ND		1
Chrysene	ND	ug/L	0.30	0.060	EPA-525.2	ND		1
Diazinon	ND	ug/L	0.20	0.080	EPA-525.2	ND		1
Dibenzo[a,h]anthracene	ND	ug/L	0.30	0.051	EPA-525.2	ND		1
Di(2-ethylhexyl)adipate	ND	ug/L	1.0	0.025	EPA-525.2	ND		1
Dimethoate	ND	ug/L	2.0	0.050	EPA-525.2	ND		1
Dimethyl phthalate	ND	ug/L	1.0	0.034	EPA-525.2	ND		1
Di-n-butyl phthalate	ND	ug/L	1.0	0.063	EPA-525.2	ND		1
Fluorene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorobenzene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorocyclopentadiene	ND	ug/L	1.0	0.12	EPA-525.2	ND		1
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.30	0.032	EPA-525.2	ND		1
Methoxychlor	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Metolachlor	ND	ug/L	0.50	0.056	EPA-525.2	ND		1
Metribuzin	ND	ug/L	0.50	0.048	EPA-525.2	ND		1
Molinate	ND	ug/L	0.50	0.036	EPA-525.2	ND		1
Phenanthrene	ND	ug/L	0.10	0.020	EPA-525.2	ND		1
Prometon	ND	ug/L	0.50	0.11	EPA-525.2	ND		1
Prometryn	ND	ug/L	0.50	0.045	EPA-525.2	ND		1

Geologic Associates (Main)
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San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Pyrene	ND	ug/L	0.10	0.040	EPA-525.2	ND		1
Secbumeton	ND	ug/L	0.50	0.079	EPA-525.2	ND		1
Simazine	ND	ug/L	0.30	0.066	EPA-525.2	ND		1
Terbutryn	ND	ug/L	0.50	0.050	EPA-525.2	ND		1
Thiobencarb	ND	ug/L	0.50	0.044	EPA-525.2	ND		1
Perylene-d12 (Surrogate)	105	%	60 - 140 (LCL - UCL)		EPA-525.2			1
1,3-Dimethyl-2-nitrobenzene (Surrogate)	123	%	70 - 130 (LCL - UCL)		EPA-525.2			1
Triphenylphosphate (Surrogate)	115	%	70 - 130 (LCL - UCL)		EPA-525.2			1
Pyrene-d10 (Surrogate)	89.2	%	70 - 130 (LCL - UCL)		EPA-525.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-525.2	10/06/20 08:00	10/07/20 20:27	MK1	MS-B6	1	B089066	EPA 525.2

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

EPA Method 1664

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	ND	mg/L	5.0	0.74	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-1664A HEM	10/07/20 09:00	10/07/20 13:44	MAM	Inst	1	B089179	EPA 1664/HEM

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Water Analysis (General Chemistry)

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Chloride	**630**	**mg/L**	**2.5**	**0.65**	**EPA-300.0**	1.1	**A07**	1
Nitrate as N	**0.61**	**mg/L**	**0.20**	**0.048**	**EPA-300.0**	ND	**A07**	2
Sulfate	**310**	**mg/L**	**2.0**	**0.28**	**EPA-300.0**	ND	**A07**	2
Total Dissolved Solids @ 180 C	**1900**	**mg/L**	**100**	**50**	**EPA-160.1**	ND	**A07**	3
Total Suspended Solids (Glass Fiber)	**7.6**	**mg/L**	**0.66**	**0.66**	**EPA-160.2**	ND	**A07**	4
MBAS	**0.024**	**mg/L**	**0.10**	**0.024**	**EPA-425.1**	ND	**J**	5
Total Nitrogen	**24**	**mg/L**	**0.30**	**0.10**	**Calc**	ND		6
Total Kjeldahl Nitrogen	**23**	**mg/L**	**1.0**	**0.44**	**EPA-351.2**	ND	**A07**	7
Nitrite as N	**100**	**ug/L**	**50**	**10**	**EPA-353.2**	ND		8
Total Phosphorus	ND	mg/L	0.25	0.090	EPA-365.4	ND	A07	9
Non-Volatile Organic Carbon	**8.4**	**mg/L**	**2.0**	**0.60**	**EPA-415.1**	ND	**A07**	10

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-300.0	10/01/20 22:00	10/02/20 08:56	SAV	IC7	5	B088791	No Prep
2	EPA-300.0	10/01/20 22:00	10/02/20 03:16	SAV	IC7	2	B088791	No Prep
3	EPA-160.1	10/05/20 15:30	10/05/20 15:30	CAD	MANUAL	10	B088971	No Prep
4	EPA-160.2	10/05/20 09:20	10/05/20 09:20	OJP	MANUAL	1.316	B088940	No Prep
5	EPA-425.1	10/02/20 11:15	10/02/20 11:15	JMN	MANUAL	1	B088830	No Prep
6	Calc	10/02/20 10:01	10/20/20 16:01	AMM	Calc	1	B^J0012	Calc
7	EPA-351.2	10/19/20 10:30	10/20/20 09:41	JMH2	SC-2	5	B090236	EPA 351.2
8	EPA-353.2	10/02/20 10:01	10/02/20 10:05	MC1	KONE-1	1	B088957	No Prep
9	EPA-365.4	10/19/20 10:30	10/20/20 09:21	JMH2	SC-1	5	B090237	EPA 365.4
10	EPA-415.1	10/02/20 10:00	10/02/20 17:12	ALW	TOC2	2	B088760	No Prep

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Metals Analysis

BCL Sample ID: 2028653-02 | **Client Sample Name:** Lake #11, 10/1/2020 10:40:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Antimony	**0.13**	**ug/L**	**2.0**	**0.11**	**EPA-200.8**	ND	**J**	1
Total Recoverable Arsenic	**2.4**	**ug/L**	**2.0**	**0.70**	**EPA-200.8**	ND		1
Total Recoverable Barium	**120**	**ug/L**	**1.0**	**0.21**	**EPA-200.8**	0.27		1
Total Recoverable Beryllium	ND	ug/L	1.0	0.14	EPA-200.8	ND		1
Total Recoverable Cadmium	**0.19**	**ug/L**	**1.0**	**0.11**	**EPA-200.8**	0.16	**J**	1
Total Recoverable Chromium	ND	ug/L	3.0	0.50	EPA-200.8	0.64		1
Total Recoverable Cobalt	**11**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND		1
Total Recoverable Copper	**2.8**	**ug/L**	**2.0**	**0.22**	**EPA-200.8**	0.69		1
Total Recoverable Iron	**1100**	**ug/L**	**50**	**30**	**EPA-200.7**	ND		2
Total Recoverable Lead	**0.16**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND	**J**	1
Total Recoverable Manganese	**1200**	**ug/L**	**10**	**4.0**	**EPA-200.7**	ND		2
Total Recoverable Mercury	**0.20**	**ug/L**	**0.20**	**0.022**	**EPA-245.1**	ND		3
Total Recoverable Molybdenum	**310**	**ug/L**	**1.0**	**0.11**	**EPA-200.8**	ND		1
Total Recoverable Nickel	**4.8**	**ug/L**	**2.0**	**0.19**	**EPA-200.8**	ND		1
Total Recoverable Selenium	**2.2**	**ug/L**	**2.0**	**0.19**	**EPA-200.8**	ND		1
Total Recoverable Silver	ND	ug/L	1.0	0.10	EPA-200.8	ND		1
Total Recoverable Thallium	ND	ug/L	1.0	0.10	EPA-200.8	ND		1
Total Recoverable Vanadium	**3.6**	**ug/L**	**3.0**	**0.78**	**EPA-200.8**	ND		1
Total Recoverable Zinc	**19**	**ug/L**	**10**	**1.7**	**EPA-200.8**	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-200.8	10/08/20 10:30	10/09/20 09:47	JNC	PE-EL2	1	B089329	EPA 200.2
2	EPA-200.7	10/09/20 07:45	10/09/20 17:50	JRG	PE-OP4	1	B089436	EPA 200.2
3	EPA-245.1	10/07/20 08:00	10/07/20 16:23	TMT	CETAC3	1	B089142	EPA 245.1

Geologic Associates (Main)
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San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organochlorine Pesticides and PCB's (EPA Method 508)

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Aldrin	ND	ug/L	0.0050	0.00095	EPA-508	ND		1
alpha-BHC	ND	ug/L	0.0050	0.00050	EPA-508	ND		1
beta-BHC	ND	ug/L	0.0050	0.00064	EPA-508	ND		1
delta-BHC	ND	ug/L	0.0050	0.0015	EPA-508	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.0050	0.00067	EPA-508	ND		1
Chlordane (Technical)	ND	ug/L	0.10	0.045	EPA-508	ND		1
4,4'-DDD	ND	ug/L	0.0050	0.00086	EPA-508	ND		1
4,4'-DDE	ND	ug/L	0.0050	0.0013	EPA-508	ND		1
4,4'-DDT	ND	ug/L	0.0050	0.00096	EPA-508	ND		1
Dieldrin	ND	ug/L	0.0050	0.0011	EPA-508	ND		1
Endosulfan I	ND	ug/L	0.0050	0.00068	EPA-508	ND		1
Endosulfan II	ND	ug/L	0.0050	0.00098	EPA-508	ND		1
Endosulfan sulfate	ND	ug/L	0.0050	0.00055	EPA-508	ND		1
Endrin	ND	ug/L	0.0050	0.00069	EPA-508	ND		1
Endrin aldehyde	ND	ug/L	0.010	0.00054	EPA-508	ND		1
Heptachlor	ND	ug/L	0.0050	0.00094	EPA-508	ND		1
Heptachlor epoxide	ND	ug/L	0.0050	0.00064	EPA-508	ND		1
Methoxychlor	ND	ug/L	0.0050	0.0037	EPA-508	ND		1
Toxaphene	ND	ug/L	1.0	0.20	EPA-508	ND		1
PCB-1016	ND	ug/L	0.20	0.066	EPA-508	ND		1
PCB-1221	ND	ug/L	0.20	0.063	EPA-508	ND		1
PCB-1232	ND	ug/L	0.20	0.059	EPA-508	ND		1
PCB-1242	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1248	ND	ug/L	0.20	0.044	EPA-508	ND		1
PCB-1254	ND	ug/L	0.20	0.037	EPA-508	ND		1
PCB-1260	ND	ug/L	0.20	0.089	EPA-508	ND		1
Total PCB's (Summation)	ND	ug/L	0.20	0.10	EPA-508	ND		1
TCMX (Surrogate)	78.5	%	60 - 130 (LCL - UCL)		EPA-508			1
Decachlorobiphenyl (Surrogate)	88.7	%	60 - 130 (LCL - UCL)		EPA-508			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-508	10/07/20 20:30	10/09/20 00:27	HKS	GC-17	1.087	B089404	EPA 508

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Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organic Analysis (EPA Method 515.1)

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Bentazon	ND	ug/L	0.80	0.22	EPA-515.1	ND		1
2,4-D	ND	ug/L	0.40	0.18	EPA-515.1	ND		1
2,4-DB	ND	ug/L	3.0	0.37	EPA-515.1	ND		1
Dalapon	ND	ug/L	5.0	0.31	EPA-515.1	ND		1
Dicamba	ND	ug/L	0.080	0.040	EPA-515.1	ND		1
Dichloroprop	ND	ug/L	0.50	0.11	EPA-515.1	ND		1
Dinoseb	ND	ug/L	0.20	0.057	EPA-515.1	ND		1
MCPA	ND	ug/L	10	6.0	EPA-515.1	ND		1
MCPP	ND	ug/L	10	6.0	EPA-515.1	ND		1
2,4,5-T	ND	ug/L	0.090	0.012	EPA-515.1	ND		1
2,4,5-TP (Silvex)	ND	ug/L	0.070	0.032	EPA-515.1	ND		1
2,4-Dichlorophenylacetic acid (Surrogate)	99.5	%	40 - 120 (LCL - UCL)		EPA-515.1			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-515.1	10/07/20 21:00	10/08/20 16:58	OLH	GC-8	1.053	B089375	EPA 515.1

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Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
Bromobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Bromochloromethane	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Bromoform	ND	ug/L	0.50	0.46	EPA-524.2	ND		1
Bromomethane	ND	ug/L	0.50	0.20	EPA-524.2	ND	V11	1
n-Butylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chlorobenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chloroform	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloromethane	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
2-Chlorotoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.093	EPA-524.2	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.89	EPA-524.2	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
Dibromomethane	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1-Dichloroethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
1,1-Dichloropropene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
Total 1,3-Dichloropropene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Ethylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Methylene chloride	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Naphthalene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
Styrene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
Toluene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Trichloroethene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.78	EPA-524.2	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Vinyl chloride	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Total Xylenes	ND	ug/L	0.50	0.47	EPA-524.2	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.97	EPA-524.2	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
t-Butyl alcohol	ND	ug/L	10	9.4	EPA-524.2	ND		1
Diisopropyl ether	ND	ug/L	0.50	0.36	EPA-524.2	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50	0.32	EPA-524.2	ND		1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
p- & m-Xylenes	ND	ug/L	0.50	0.34	EPA-524.2	ND		1
o-Xylene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
1,2-Dichloroethane-d4 (Surrogate)	94.0	%	75 - 125 (LCL - UCL)		EPA-524.2			1
Toluene-d8 (Surrogate)	97.0	%	80 - 120 (LCL - UCL)		EPA-524.2			1
4-Bromofluorobenzene (Surrogate)	96.5	%	80 - 120 (LCL - UCL)		EPA-524.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-524.2	10/05/20 07:00	10/05/20 14:09	MGC	MS-V5	1	B088874	EPA 524.2

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Acenaphthylene	ND	ug/L	0.10	0.031	EPA-525.2	ND		1
Alachlor	ND	ug/L	0.20	0.090	EPA-525.2	ND		1
Anthracene	ND	ug/L	0.10	0.034	EPA-525.2	ND		1
Atraton	ND	ug/L	0.50	0.057	EPA-525.2	ND		1
Atrazine	ND	ug/L	0.30	0.14	EPA-525.2	ND		1
Benzo[a]anthracene	ND	ug/L	0.20	0.044	EPA-525.2	ND		1
Benzo[b]fluoranthene	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Benzo[k]fluoranthene	ND	ug/L	0.30	0.072	EPA-525.2	ND		1
Benzo[a]pyrene	ND	ug/L	0.10	0.050	EPA-525.2	ND		1
Benzo[g,h,i]perylene	ND	ug/L	0.30	0.065	EPA-525.2	ND		1
Benzyl butyl phthalate	ND	ug/L	4.0	0.047	EPA-525.2	ND		1
delta-BHC	ND	ug/L	0.20	0.048	EPA-525.2	ND		1
gamma-BHC (Lindane)	ND	ug/L	0.20	0.063	EPA-525.2	ND		1
bis(2-Ethylhexyl)phthalate	ND	ug/L	3.0	0.030	EPA-525.2	ND		1
Bromacil	ND	ug/L	0.50	0.043	EPA-525.2	ND		1
Chrysene	ND	ug/L	0.30	0.060	EPA-525.2	ND		1
Diazinon	ND	ug/L	0.20	0.080	EPA-525.2	ND		1
Dibenzo[a,h]anthracene	ND	ug/L	0.30	0.051	EPA-525.2	ND		1
Di(2-ethylhexyl)adipate	ND	ug/L	1.0	0.025	EPA-525.2	ND		1
Dimethoate	ND	ug/L	2.0	0.050	EPA-525.2	ND		1
Dimethyl phthalate	ND	ug/L	1.0	0.034	EPA-525.2	ND		1
Di-n-butyl phthalate	ND	ug/L	1.0	0.063	EPA-525.2	ND		1
Fluorene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorobenzene	ND	ug/L	0.20	0.029	EPA-525.2	ND		1
Hexachlorocyclopentadiene	ND	ug/L	1.0	0.12	EPA-525.2	ND		1
Indeno[1,2,3-cd]pyrene	ND	ug/L	0.30	0.032	EPA-525.2	ND		1
Methoxychlor	ND	ug/L	0.30	0.034	EPA-525.2	ND		1
Metolachlor	ND	ug/L	0.50	0.056	EPA-525.2	ND		1
Metribuzin	ND	ug/L	0.50	0.048	EPA-525.2	ND		1
Molinate	ND	ug/L	0.50	0.036	EPA-525.2	ND		1
Phenanthrene	ND	ug/L	0.10	0.020	EPA-525.2	ND		1
Prometon	ND	ug/L	0.50	0.11	EPA-525.2	ND		1
Prometryn	ND	ug/L	0.50	0.045	EPA-525.2	ND		1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Pyrene	ND	ug/L	0.10	0.040	EPA-525.2	ND		1
Secbumeton	ND	ug/L	0.50	0.079	EPA-525.2	ND		1
Simazine	ND	ug/L	0.30	0.066	EPA-525.2	ND		1
Terbutryn	ND	ug/L	0.50	0.050	EPA-525.2	ND		1
Thiobencarb	ND	ug/L	0.50	0.044	EPA-525.2	ND		1
Perylene-d12 (Surrogate)	98.4	%	60 - 140 (LCL - UCL)		EPA-525.2			1
1,3-Dimethyl-2-nitrobenzene (Surrogate)	103	%	70 - 130 (LCL - UCL)		EPA-525.2			1
Triphenylphosphate (Surrogate)	110	%	70 - 130 (LCL - UCL)		EPA-525.2			1
Pyrene-d10 (Surrogate)	91.8	%	70 - 130 (LCL - UCL)		EPA-525.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-525.2	10/06/20 08:00	10/07/20 20:53	MK1	MS-B6	1	B089066	EPA 525.2

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

EPA Method 1664

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Oil and Grease	ND	mg/L	5.0	0.74	EPA-1664A HEM	ND		1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-1664A HEM	10/07/20 09:00	10/07/20 13:44	MAM	Inst	1.087	B089179	EPA 1664/HEM

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Water Analysis (General Chemistry)

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Chloride	**380**	**mg/L**	**1.0**	**0.26**	**EPA-300.0**	0.43	**A07**	1
Nitrate as N	**2.6**	**mg/L**	**0.20**	**0.048**	**EPA-300.0**	ND	**A07**	1
Sulfate	**400**	**mg/L**	**2.0**	**0.28**	**EPA-300.0**	ND	**A07**	1
Total Dissolved Solids @ 180 C	**1600**	**mg/L**	**100**	**50**	**EPA-160.1**	ND	**A07**	2
Total Suspended Solids (Glass Fiber)	ND	mg/L	0.56	0.56	EPA-160.2	ND	A07	3
MBAS	ND	mg/L	0.10	0.024	EPA-425.1	ND		4
Total Nitrogen	**3.1**	**mg/L**	**0.30**	**0.10**	**Calc**	ND		5
Total Kjeldahl Nitrogen	**0.39**	**mg/L**	**0.20**	**0.088**	**EPA-351.2**	ND		6
Nitrite as N	**64**	**ug/L**	**50**	**10**	**EPA-353.2**	ND		7
Total Phosphorus	ND	mg/L	0.050	0.018	EPA-365.4	ND		8
Non-Volatile Organic Carbon	**3.9**	**mg/L**	**1.0**	**0.30**	**EPA-415.1**	ND		9

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-300.0	10/01/20 22:00	10/02/20 03:34	SAV	IC7	2	B088791	No Prep
2	EPA-160.1	10/05/20 15:30	10/05/20 15:30	CAD	MANUAL	10	B088971	No Prep
3	EPA-160.2	10/05/20 09:20	10/05/20 09:20	OJP	MANUAL	1.111	B088940	No Prep
4	EPA-425.1	10/02/20 11:15	10/02/20 11:15	JMN	MANUAL	1	B088830	No Prep
5	Calc	10/02/20 10:01	10/20/20 16:01	AMM	Calc	1	B^J0012	Calc
6	EPA-351.2	10/19/20 10:30	10/20/20 09:42	JMH2	SC-2	1	B090236	EPA 351.2
7	EPA-353.2	10/02/20 10:01	10/02/20 10:05	MC1	KONE-1	1	B088957	No Prep
8	EPA-365.4	10/19/20 10:30	10/20/20 09:22	JMH2	SC-1	1	B090237	EPA 365.4
9	EPA-415.1	10/05/20 07:00	10/05/20 08:02	ALW	TOC2	1	B088760	No Prep

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Metals Analysis

BCL Sample ID: 2028653-03 | **Client Sample Name:** Ivanhoe #8, 10/1/2020 10:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Total Recoverable Antimony	ND	ug/L	2.0	0.11	EPA-200.8	ND		1
Total Recoverable Arsenic	ND	ug/L	2.0	0.70	EPA-200.8	ND		1
Total Recoverable Barium	**140**	**ug/L**	**1.0**	**0.21**	**EPA-200.8**	0.27		1
Total Recoverable Beryllium	ND	ug/L	1.0	0.14	EPA-200.8	ND		1
Total Recoverable Cadmium	**0.15**	**ug/L**	**1.0**	**0.11**	**EPA-200.8**	0.16	**J**	1
Total Recoverable Chromium	ND	ug/L	3.0	0.50	EPA-200.8	0.64		1
Total Recoverable Cobalt	**2.5**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND		1
Total Recoverable Copper	**3.7**	**ug/L**	**2.0**	**0.22**	**EPA-200.8**	0.69		1
Total Recoverable Iron	ND	ug/L	50	30	EPA-200.7	ND		2
Total Recoverable Lead	**0.17**	**ug/L**	**1.0**	**0.10**	**EPA-200.8**	ND	**J**	1
Total Recoverable Manganese	**140**	**ug/L**	**10**	**4.0**	**EPA-200.7**	ND		2
Total Recoverable Mercury	**0.13**	**ug/L**	**0.20**	**0.022**	**EPA-245.1**	ND	**J**	3
Total Recoverable Molybdenum	**9.5**	**ug/L**	**1.0**	**0.11**	**EPA-200.8**	ND		1
Total Recoverable Nickel	**4.1**	**ug/L**	**2.0**	**0.19**	**EPA-200.8**	ND		1
Total Recoverable Selenium	**14**	**ug/L**	**2.0**	**0.19**	**EPA-200.8**	ND		1
Total Recoverable Silver	ND	ug/L	1.0	0.10	EPA-200.8	ND		1
Total Recoverable Thallium	ND	ug/L	1.0	0.10	EPA-200.8	ND		1
Total Recoverable Vanadium	**41**	**ug/L**	**3.0**	**0.78**	**EPA-200.8**	ND		1
Total Recoverable Zinc	**3.9**	**ug/L**	**10**	**1.7**	**EPA-200.8**	ND	**J**	1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-200.8	10/08/20 10:30	10/09/20 09:48	JNC	PE-EL2	1	B089329	EPA 200.2
2	EPA-200.7	10/12/20 09:30	10/12/20 15:06	JRG	PE-OP4	1	B089534	EPA 200.2
3	EPA-245.1	10/07/20 08:00	10/07/20 16:25	TMT	CETAC3	1	B089142	EPA 245.1

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San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-04 | **Client Sample Name:** QCAB, 10/1/2020 12:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
Bromobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Bromochloromethane	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Bromoform	ND	ug/L	0.50	0.46	EPA-524.2	ND		1
Bromomethane	ND	ug/L	0.50	0.20	EPA-524.2	ND	V11	1
n-Butylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chlorobenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chloroform	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloromethane	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
2-Chlorotoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.093	EPA-524.2	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.89	EPA-524.2	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
Dibromomethane	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1-Dichloroethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
1,1-Dichloropropene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-04 | **Client Sample Name:** QCAB, 10/1/2020 12:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
Total 1,3-Dichloropropene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Ethylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Methylene chloride	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Naphthalene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
Styrene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
Toluene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Trichloroethene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.78	EPA-524.2	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Vinyl chloride	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Total Xylenes	ND	ug/L	0.50	0.47	EPA-524.2	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.97	EPA-524.2	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
t-Butyl alcohol	ND	ug/L	10	9.4	EPA-524.2	ND		1
Diisopropyl ether	ND	ug/L	0.50	0.36	EPA-524.2	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50	0.32	EPA-524.2	ND		1

Geologic Associates (Main)
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San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-04 | **Client Sample Name:** QCAB, 10/1/2020 12:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
p- & m-Xylenes	ND	ug/L	0.50	0.34	EPA-524.2	ND		1
o-Xylene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
1,2-Dichloroethane-d4 (Surrogate)	96.3	%	75 - 125 (LCL - UCL)		EPA-524.2			1
Toluene-d8 (Surrogate)	98.2	%	80 - 120 (LCL - UCL)		EPA-524.2			1
4-Bromofluorobenzene (Surrogate)	95.7	%	80 - 120 (LCL - UCL)		EPA-524.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-524.2	10/05/20 07:00	10/05/20 14:33	MGC	MS-V5	1	B088874	EPA 524.2

Geologic Associates (Main)
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San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-05 | **Client Sample Name:** QCTB, 10/1/2020 12:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
Bromobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Bromochloromethane	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Bromodichloromethane	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Bromoform	ND	ug/L	0.50	0.46	EPA-524.2	ND		1
Bromomethane	ND	ug/L	0.50	0.20	EPA-524.2	ND	V11	1
n-Butylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
sec-Butylbenzene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
tert-Butylbenzene	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Carbon tetrachloride	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chlorobenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Chloroform	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Chloromethane	ND	ug/L	0.50	0.11	EPA-524.2	ND		1
2-Chlorotoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
4-Chlorotoluene	ND	ug/L	0.50	0.093	EPA-524.2	ND		1
Dibromochloromethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.89	EPA-524.2	ND		1
1,2-Dibromoethane	ND	ug/L	0.50	0.22	EPA-524.2	ND		1
Dibromomethane	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
1,2-Dichlorobenzene	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,3-Dichlorobenzene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
1,4-Dichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Dichlorodifluoromethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1-Dichloroethane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,2-Dichloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,1-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2-Dichloropropane	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,3-Dichloropropane	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
2,2-Dichloropropane	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
1,1-Dichloropropene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1

Geologic Associates (Main)
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Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-05 | **Client Sample Name:** QCTB, 10/1/2020 12:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
Total 1,3-Dichloropropene	ND	ug/L	0.50	0.27	EPA-524.2	ND		1
Ethylbenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
Hexachlorobutadiene	ND	ug/L	0.50	0.20	EPA-524.2	ND		1
Isopropylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
p-Isopropyltoluene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Methylene chloride	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Methyl t-butyl ether	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Naphthalene	ND	ug/L	0.50	0.16	EPA-524.2	ND		1
n-Propylbenzene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
Styrene	ND	ug/L	0.50	0.12	EPA-524.2	ND		1
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
Tetrachloroethene	ND	ug/L	0.50	0.23	EPA-524.2	ND		1
Toluene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,2,3-Trichlorobenzene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trichlorobenzene	ND	ug/L	0.50	0.15	EPA-524.2	ND		1
1,1,1-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
1,1,2-Trichloroethane	ND	ug/L	0.50	0.21	EPA-524.2	ND		1
Trichloroethene	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
Trichlorofluoromethane	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
1,2,3-Trichloropropane	ND	ug/L	1.0	0.78	EPA-524.2	ND		1
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.17	EPA-524.2	ND		1
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.14	EPA-524.2	ND		1
Vinyl chloride	ND	ug/L	0.50	0.18	EPA-524.2	ND		1
Total Xylenes	ND	ug/L	0.50	0.47	EPA-524.2	ND		1
Total Trihalomethanes	ND	ug/L	2.0	0.97	EPA-524.2	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50	0.19	EPA-524.2	ND		1
t-Butyl alcohol	ND	ug/L	10	9.4	EPA-524.2	ND		1
Diisopropyl ether	ND	ug/L	0.50	0.36	EPA-524.2	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50	0.32	EPA-524.2	ND		1

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Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

BCL Sample ID: 2028653-05 | **Client Sample Name:** QCTB, 10/1/2020 12:00:00AM, Nick Reason

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
p- & m-Xylenes	ND	ug/L	0.50	0.34	EPA-524.2	ND		1
o-Xylene	ND	ug/L	0.50	0.13	EPA-524.2	ND		1
1,2-Dichloroethane-d4 (Surrogate)	95.8	%	75 - 125 (LCL - UCL)		EPA-524.2			1
Toluene-d8 (Surrogate)	98.8	%	80 - 120 (LCL - UCL)		EPA-524.2			1
4-Bromofluorobenzene (Surrogate)	98.0	%	80 - 120 (LCL - UCL)		EPA-524.2			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID	Prep Method
1	EPA-524.2	10/05/20 07:00	10/05/20 14:57	MGC	MS-V5	1	B088874	EPA 524.2

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Organochlorine Pesticides and PCB's (EPA Method 508)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B089404						
Aldrin	B089404-BLK1	ND	ug/L	0.0050	0.00095	
alpha-BHC	B089404-BLK1	ND	ug/L	0.0050	0.00050	
beta-BHC	B089404-BLK1	ND	ug/L	0.0050	0.00064	
delta-BHC	B089404-BLK1	ND	ug/L	0.0050	0.0015	
gamma-BHC (Lindane)	B089404-BLK1	ND	ug/L	0.0050	0.00067	
Chlordane (Technical)	B089404-BLK1	ND	ug/L	0.10	0.045	
4,4'-DDD	B089404-BLK1	ND	ug/L	0.0050	0.00086	
4,4'-DDE	B089404-BLK1	ND	ug/L	0.0050	0.0013	
4,4'-DDT	B089404-BLK1	ND	ug/L	0.0050	0.00096	
Dieldrin	B089404-BLK1	ND	ug/L	0.0050	0.0011	
Endosulfan I	B089404-BLK1	ND	ug/L	0.0050	0.00068	
Endosulfan II	B089404-BLK1	ND	ug/L	0.0050	0.00098	
Endosulfan sulfate	B089404-BLK1	ND	ug/L	0.0050	0.00055	
Endrin	B089404-BLK1	ND	ug/L	0.0050	0.00069	
Endrin aldehyde	B089404-BLK1	ND	ug/L	0.010	0.00054	
Heptachlor	B089404-BLK1	ND	ug/L	0.0050	0.00094	
Heptachlor epoxide	B089404-BLK1	ND	ug/L	0.0050	0.00064	
Methoxychlor	B089404-BLK1	ND	ug/L	0.0050	0.0037	
Toxaphene	B089404-BLK1	ND	ug/L	1.0	0.20	
PCB-1016	B089404-BLK1	ND	ug/L	0.20	0.066	
PCB-1221	B089404-BLK1	ND	ug/L	0.20	0.063	
PCB-1232	B089404-BLK1	ND	ug/L	0.20	0.059	
PCB-1242	B089404-BLK1	ND	ug/L	0.20	0.037	
PCB-1248	B089404-BLK1	ND	ug/L	0.20	0.044	
PCB-1254	B089404-BLK1	ND	ug/L	0.20	0.037	
PCB-1260	B089404-BLK1	ND	ug/L	0.20	0.089	
Total PCB's (Summation)	B089404-BLK1	ND	ug/L	0.20	0.10	
TCMX (Surrogate)	**B089404-BLK1**	**73.8**	%	**60 - 130 (LCL - UCL)**		
Decachlorobiphenyl (Surrogate)	**B089404-BLK1**	**79.5**	%	**60 - 130 (LCL - UCL)**		

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Organochlorine Pesticides and PCB's (EPA Method 508)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B089404										
Aldrin	B089404-BS1	LCS	0.16619	0.15000	ug/L	111		60 - 130		
gamma-BHC (Lindane)	B089404-BS1	LCS	0.16878	0.15000	ug/L	113		60 - 130		
4,4'-DDT	B089404-BS1	LCS	0.17878	0.15000	ug/L	119		60 - 130		
Dieldrin	B089404-BS1	LCS	0.17648	0.15000	ug/L	118		60 - 130		
Endrin	B089404-BS1	LCS	0.18392	0.15000	ug/L	123		60 - 130		
Heptachlor	B089404-BS1	LCS	0.16713	0.15000	ug/L	111		60 - 130		
TCMX (Surrogate)	B089404-BS1	LCS	0.29799	0.30000	ug/L	99.3		60 - 130		
Decachlorobiphenyl (Surrogate)	B089404-BS1	LCS	0.70285	0.60000	ug/L	117		60 - 130		

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Organochlorine Pesticides and PCB's (EPA Method 508)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B089404	Used client sample: N										
Aldrin	MS	2026568-96	ND	0.15504	0.15000	ug/L		103		60 - 130	
	MSD	2026568-96	ND	0.15460	0.15000	ug/L	0.3	103	30	60 - 130	
gamma-BHC (Lindane)	MS	2026568-96	ND	0.16051	0.15000	ug/L		107		60 - 130	
	MSD	2026568-96	ND	0.16562	0.15000	ug/L	3.1	110	30	60 - 130	
4,4'-DDT	MS	2026568-96	ND	0.15614	0.15000	ug/L		104		60 - 130	
	MSD	2026568-96	ND	0.17316	0.15000	ug/L	10.3	115	30	60 - 130	
Dieldrin	MS	2026568-96	ND	0.16517	0.15000	ug/L		110		60 - 130	
	MSD	2026568-96	ND	0.17275	0.15000	ug/L	4.5	115	30	60 - 130	
Endrin	MS	2026568-96	ND	0.15429	0.15000	ug/L		103		60 - 130	
	MSD	2026568-96	ND	0.16884	0.15000	ug/L	9.0	113	30	60 - 130	
Heptachlor	MS	2026568-96	ND	0.15644	0.15000	ug/L		104		60 - 130	
	MSD	2026568-96	ND	0.16410	0.15000	ug/L	4.8	109	30	60 - 130	
TCMX (Surrogate)	MS	2026568-96	ND	0.27596	0.30000	ug/L		92.0		60 - 130	
	MSD	2026568-96	ND	0.28807	0.30000	ug/L	4.3	96.0		60 - 130	
Decachlorobiphenyl (Surrogate)	MS	2026568-96	ND	0.60919	0.60000	ug/L		102		60 - 130	
	MSD	2026568-96	ND	0.64215	0.60000	ug/L	5.3	107		60 - 130	

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Organic Analysis (EPA Method 515.1)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B089375						
Bentazon	B089375-BLK1	ND	ug/L	0.80	0.22	
2,4-D	B089375-BLK1	ND	ug/L	0.40	0.18	
2,4-DB	B089375-BLK1	ND	ug/L	3.0	0.37	
Dalapon	B089375-BLK1	ND	ug/L	5.0	0.31	
Dicamba	B089375-BLK1	ND	ug/L	0.080	0.040	
Dichloroprop	B089375-BLK1	ND	ug/L	0.50	0.11	
Dinoseb	B089375-BLK1	ND	ug/L	0.20	0.057	
MCPA	B089375-BLK1	ND	ug/L	10	6.0	
MCPP	B089375-BLK1	ND	ug/L	10	6.0	
2,4,5-T	B089375-BLK1	ND	ug/L	0.090	0.012	
2,4,5-TP (Silvex)	B089375-BLK1	ND	ug/L	0.070	0.032	
2,4-Dichlorophenylacetic acid (Surrogate)	**B089375-BLK1**	**99.2**	%	**40 - 120 (LCL - UCL)**		

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Project Manager: Kyle Welchans

Organic Analysis (EPA Method 515.1)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B089375										
2,4-D	B089375-BS1	LCS	2.4700	2.4000	ug/L	103		50 - 120		
2,4-DB	B089375-BS1	LCS	5.6300	5.4000	ug/L	104		50 - 120		
Dicamba	B089375-BS1	LCS	0.48000	0.60000	ug/L	80.0		50 - 120		
Dichloroprop	B089375-BS1	LCS	2.2100	2.4000	ug/L	92.1		50 - 120		
Dinoseb	B089375-BS1	LCS	1.0600	1.2000	ug/L	88.3		50 - 120		
2,4,5-T	B089375-BS1	LCS	0.64000	0.60000	ug/L	107		40 - 120		
2,4,5-TP (Silvex)	B089375-BS1	LCS	0.54000	0.60000	ug/L	90.0		50 - 120		
2,4-Dichlorophenylacetic acid (Surrogate)	B089375-BS1	LCS	3.1500	4.0000	ug/L	78.8		40 - 120		

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Organic Analysis (EPA Method 515.1)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B089375	Used client sample: N										
2,4-D	MS	**2026568-82**	**ND**	**2.5600**	**2.4000**	**ug/L**		**107**		**40 - 120**	
	MSD	**2026568-82**	**ND**	**3.1000**	**2.4000**	**ug/L**	**19.1**	**129**	**30**	**40 - 120**	**Q03**
2,4-DB	MS	**2026568-82**	**ND**	**6.0500**	**5.4000**	**ug/L**		**112**		**50 - 120**	
	MSD	**2026568-82**	**ND**	**7.3900**	**5.4000**	**ug/L**	**19.9**	**137**	**30**	**50 - 120**	**Q03**
Dicamba	MS	2026568-82	ND	0.53000	0.60000	ug/L		88.3		50 - 120	
	MSD	2026568-82	ND	0.62000	0.60000	ug/L	15.7	103	30	50 - 120	
Dichloroprop	MS	2026568-82	ND	2.3100	2.4000	ug/L		96.2		40 - 120	
	MSD	2026568-82	ND	2.7800	2.4000	ug/L	18.5	116	30	40 - 120	
Dinoseb	MS	2026568-82	ND	1.1700	1.2000	ug/L		97.5		40 - 130	
	MSD	2026568-82	ND	1.3600	1.2000	ug/L	15.0	113	30	40 - 130	
2,4,5-T	MS	**2026568-82**	**ND**	**0.66000**	**0.60000**	**ug/L**		**110**		**40 - 120**	
	MSD	**2026568-82**	**ND**	**0.79000**	**0.60000**	**ug/L**	**17.9**	**132**	**30**	**40 - 120**	**Q03**
2,4,5-TP (Silvex)	MS	2026568-82	ND	0.58000	0.60000	ug/L		96.7		40 - 120	
	MSD	2026568-82	ND	0.69000	0.60000	ug/L	17.3	115	30	40 - 120	
2,4-Dichlorophenylacetic acid (Surrogate	MS	2026568-82	ND	3.4300	4.0000	ug/L		85.8		40 - 120	
	MSD	2026568-82	ND	4.0500	4.0000	ug/L	16.6	101		40 - 120	

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B088874						
Benzene	B088874-BLK1	ND	ug/L	0.50	0.11	
Bromobenzene	B088874-BLK1	ND	ug/L	0.50	0.15	
Bromochloromethane	B088874-BLK1	ND	ug/L	0.50	0.27	
Bromodichloromethane	B088874-BLK1	ND	ug/L	0.50	0.20	
Bromoform	B088874-BLK1	ND	ug/L	0.50	0.46	
Bromomethane	B088874-BLK1	ND	ug/L	0.50	0.20	
n-Butylbenzene	B088874-BLK1	ND	ug/L	0.50	0.15	
sec-Butylbenzene	B088874-BLK1	ND	ug/L	0.50	0.13	
tert-Butylbenzene	B088874-BLK1	ND	ug/L	0.50	0.18	
Carbon tetrachloride	B088874-BLK1	ND	ug/L	0.50	0.17	
Chlorobenzene	B088874-BLK1	ND	ug/L	0.50	0.14	
Chloroethane	B088874-BLK1	ND	ug/L	0.50	0.17	
Chloroform	B088874-BLK1	ND	ug/L	0.50	0.14	
Chloromethane	B088874-BLK1	ND	ug/L	0.50	0.11	
2-Chlorotoluene	B088874-BLK1	ND	ug/L	0.50	0.14	
4-Chlorotoluene	B088874-BLK1	ND	ug/L	0.50	0.093	
Dibromochloromethane	B088874-BLK1	ND	ug/L	0.50	0.22	
1,2-Dibromo-3-chloropropane	B088874-BLK1	ND	ug/L	1.0	0.89	
1,2-Dibromoethane	B088874-BLK1	ND	ug/L	0.50	0.22	
Dibromomethane	B088874-BLK1	ND	ug/L	0.50	0.23	
1,2-Dichlorobenzene	B088874-BLK1	ND	ug/L	0.50	0.21	
1,3-Dichlorobenzene	B088874-BLK1	ND	ug/L	0.50	0.16	
1,4-Dichlorobenzene	B088874-BLK1	ND	ug/L	0.50	0.15	
Dichlorodifluoromethane	B088874-BLK1	ND	ug/L	0.50	0.15	
1,1-Dichloroethane	B088874-BLK1	ND	ug/L	0.50	0.15	
1,2-Dichloroethane	B088874-BLK1	ND	ug/L	0.50	0.17	
1,1-Dichloroethene	B088874-BLK1	ND	ug/L	0.50	0.27	
cis-1,2-Dichloroethene	B088874-BLK1	ND	ug/L	0.50	0.27	
trans-1,2-Dichloroethene	B088874-BLK1	ND	ug/L	0.50	0.17	
1,2-Dichloropropane	B088874-BLK1	ND	ug/L	0.50	0.15	
1,3-Dichloropropane	B088874-BLK1	ND	ug/L	0.50	0.13	
2,2-Dichloropropane	B088874-BLK1	ND	ug/L	0.50	0.18	
1,1-Dichloropropene	B088874-BLK1	ND	ug/L	0.50	0.19	
cis-1,3-Dichloropropene	B088874-BLK1	ND	ug/L	0.50	0.14	

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Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B088874						
trans-1,3-Dichloropropene	B088874-BLK1	ND	ug/L	0.50	0.13	
Total 1,3-Dichloropropene	B088874-BLK1	ND	ug/L	0.50	0.27	
Ethylbenzene	B088874-BLK1	ND	ug/L	0.50	0.15	
Hexachlorobutadiene	B088874-BLK1	ND	ug/L	0.50	0.20	
Isopropylbenzene	B088874-BLK1	ND	ug/L	0.50	0.14	
p-Isopropyltoluene	B088874-BLK1	ND	ug/L	0.50	0.14	
Methylene chloride	B088874-BLK1	ND	ug/L	0.50	0.21	
Methyl t-butyl ether	B088874-BLK1	ND	ug/L	0.50	0.14	
Naphthalene	B088874-BLK1	ND	ug/L	0.50	0.16	
n-Propylbenzene	B088874-BLK1	ND	ug/L	0.50	0.12	
Styrene	B088874-BLK1	ND	ug/L	0.50	0.12	
1,1,1,2-Tetrachloroethane	B088874-BLK1	ND	ug/L	0.50	0.21	
1,1,2,2-Tetrachloroethane	B088874-BLK1	ND	ug/L	0.50	0.17	
Tetrachloroethene	B088874-BLK1	ND	ug/L	0.50	0.23	
Toluene	B088874-BLK1	ND	ug/L	0.50	0.17	
1,2,3-Trichlorobenzene	B088874-BLK1	ND	ug/L	0.50	0.19	
1,2,4-Trichlorobenzene	B088874-BLK1	ND	ug/L	0.50	0.15	
1,1,1-Trichloroethane	B088874-BLK1	ND	ug/L	0.50	0.21	
1,1,2-Trichloroethane	B088874-BLK1	ND	ug/L	0.50	0.21	
Trichloroethene	B088874-BLK1	ND	ug/L	0.50	0.19	
Trichlorofluoromethane	B088874-BLK1	ND	ug/L	0.50	0.14	
1,2,3-Trichloropropane	B088874-BLK1	ND	ug/L	1.0	0.78	
1,1,2-Trichloro-1,2,2-trifluoroethane	B088874-BLK1	ND	ug/L	0.50	0.19	
1,2,4-Trimethylbenzene	B088874-BLK1	ND	ug/L	0.50	0.17	
1,3,5-Trimethylbenzene	B088874-BLK1	ND	ug/L	0.50	0.14	
Vinyl chloride	B088874-BLK1	ND	ug/L	0.50	0.18	
Total Xylenes	B088874-BLK1	ND	ug/L	0.50	0.47	
Total Trihalomethanes	B088874-BLK1	ND	ug/L	2.0	0.97	
t-Amyl Methyl ether	B088874-BLK1	ND	ug/L	0.50	0.19	
t-Butyl alcohol	B088874-BLK1	ND	ug/L	10	9.4	
Diisopropyl ether	B088874-BLK1	ND	ug/L	0.50	0.36	
Ethyl t-butyl ether	B088874-BLK1	ND	ug/L	0.50	0.32	
p- & m-Xylenes	B088874-BLK1	ND	ug/L	0.50	0.34	
o-Xylene	B088874-BLK1	ND	ug/L	0.50	0.13	

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Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B088874						
1,2-Dichloroethane-d4 (Surrogate)	B088874-BLK1	99.6	%	75 - 125 (LCL - UCL)		
Toluene-d8 (Surrogate)	B088874-BLK1	100	%	80 - 120 (LCL - UCL)		
4-Bromofluorobenzene (Surrogate)	B088874-BLK1	97.4	%	80 - 120 (LCL - UCL)		

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Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B088874										
Benzene	B088874-BS1	LCS	23.180	25.000	ug/L	92.7		70 - 130		
Bromodichloromethane	B088874-BS1	LCS	25.310	25.000	ug/L	101		70 - 130		
Chlorobenzene	B088874-BS1	LCS	22.700	25.000	ug/L	90.8		70 - 130		
Chloroethane	B088874-BS1	LCS	23.120	25.000	ug/L	92.5		70 - 130		
1,4-Dichlorobenzene	B088874-BS1	LCS	23.150	25.000	ug/L	92.6		70 - 130		
1,1-Dichloroethane	B088874-BS1	LCS	22.890	25.000	ug/L	91.6		70 - 130		
1,1-Dichloroethene	B088874-BS1	LCS	24.130	25.000	ug/L	96.5		70 - 130		
Toluene	B088874-BS1	LCS	23.580	25.000	ug/L	94.3		70 - 130		
Trichloroethene	B088874-BS1	LCS	23.130	25.000	ug/L	92.5		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	B088874-BS1	LCS	10.230	10.000	ug/L	102		75 - 125		
Toluene-d8 (Surrogate)	B088874-BS1	LCS	9.8700	10.000	ug/L	98.7		80 - 120		
4-Bromofluorobenzene (Surrogate)	B088874-BS1	LCS	10.200	10.000	ug/L	102		80 - 120		

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Project Number: S020.1016
Project Manager: Kyle Welchans

Volatile Organic Analysis (EPA Method 524.2)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B088874	Used client sample: N										
Benzene	MS	2028435-01	ND	23.110	25.000	ug/L		92.4		70 - 130	
	MSD	2028435-01	ND	22.410	25.000	ug/L	3.1	89.6	20	70 - 130	
Bromodichloromethane	MS	2028435-01	ND	25.260	25.000	ug/L		101		70 - 130	
	MSD	2028435-01	ND	24.890	25.000	ug/L	1.5	99.6	20	70 - 130	
Chlorobenzene	MS	2028435-01	ND	22.810	25.000	ug/L		91.2		70 - 130	
	MSD	2028435-01	ND	21.930	25.000	ug/L	3.9	87.7	20	70 - 130	
Chloroethane	MS	2028435-01	ND	22.730	25.000	ug/L		90.9		70 - 130	
	MSD	2028435-01	ND	22.780	25.000	ug/L	0.2	91.1	20	70 - 130	
1,4-Dichlorobenzene	MS	2028435-01	ND	23.350	25.000	ug/L		93.4		70 - 130	
	MSD	2028435-01	ND	22.240	25.000	ug/L	4.9	89.0	20	70 - 130	
1,1-Dichloroethane	MS	2028435-01	ND	23.120	25.000	ug/L		92.5		70 - 130	
	MSD	2028435-01	ND	22.780	25.000	ug/L	1.5	91.1	20	70 - 130	
1,1-Dichloroethene	MS	2028435-01	ND	23.730	25.000	ug/L		94.9		70 - 130	
	MSD	2028435-01	ND	23.130	25.000	ug/L	2.6	92.5	20	70 - 130	
Toluene	MS	2028435-01	ND	24.140	25.000	ug/L		96.6		70 - 130	
	MSD	2028435-01	ND	23.610	25.000	ug/L	2.2	94.4	20	70 - 130	
Trichloroethene	MS	2028435-01	ND	23.890	25.000	ug/L		95.6		70 - 130	
	MSD	2028435-01	ND	22.860	25.000	ug/L	4.4	91.4	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	2028435-01	ND	9.7900	10.000	ug/L		97.9		75 - 125	
	MSD	2028435-01	ND	9.7000	10.000	ug/L	0.9	97.0		75 - 125	
Toluene-d8 (Surrogate)	MS	2028435-01	ND	9.9900	10.000	ug/L		99.9		80 - 120	
	MSD	2028435-01	ND	9.9700	10.000	ug/L	0.2	99.7		80 - 120	
4-Bromofluorobenzene (Surrogate)	MS	2028435-01	ND	10.050	10.000	ug/L		100		80 - 120	
	MSD	2028435-01	ND	9.8600	10.000	ug/L	1.9	98.6		80 - 120	

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B089066						
Acenaphthylene	B089066-BLK1	ND	ug/L	0.10	0.031	
Alachlor	B089066-BLK1	ND	ug/L	0.20	0.090	
Anthracene	B089066-BLK1	ND	ug/L	0.10	0.034	
Atraton	B089066-BLK1	ND	ug/L	0.50	0.057	
Atrazine	B089066-BLK1	ND	ug/L	0.30	0.14	
Benzo[a]anthracene	B089066-BLK1	ND	ug/L	0.20	0.044	
Benzo[b]fluoranthene	B089066-BLK1	ND	ug/L	0.30	0.034	
Benzo[k]fluoranthene	B089066-BLK1	ND	ug/L	0.30	0.072	
Benzo[a]pyrene	B089066-BLK1	ND	ug/L	0.10	0.050	
Benzo[g,h,i]perylene	B089066-BLK1	ND	ug/L	0.30	0.065	
Benzyl butyl phthalate	B089066-BLK1	ND	ug/L	4.0	0.047	
delta-BHC	B089066-BLK1	ND	ug/L	0.20	0.048	
gamma-BHC (Lindane)	B089066-BLK1	ND	ug/L	0.20	0.063	
bis(2-Ethylhexyl)phthalate	B089066-BLK1	ND	ug/L	3.0	0.030	
Bromacil	B089066-BLK1	ND	ug/L	0.50	0.043	
Chrysene	B089066-BLK1	ND	ug/L	0.30	0.060	
Diazinon	B089066-BLK1	ND	ug/L	0.20	0.080	
Dibenzo[a,h]anthracene	B089066-BLK1	ND	ug/L	0.30	0.051	
Di(2-ethylhexyl)adipate	B089066-BLK1	ND	ug/L	1.0	0.025	
Dimethoate	B089066-BLK1	ND	ug/L	2.0	0.050	
Dimethyl phthalate	B089066-BLK1	ND	ug/L	1.0	0.034	
Di-n-butyl phthalate	B089066-BLK1	ND	ug/L	1.0	0.063	
Fluorene	B089066-BLK1	ND	ug/L	0.20	0.029	
Hexachlorobenzene	B089066-BLK1	ND	ug/L	0.20	0.029	
Hexachlorocyclopentadiene	B089066-BLK1	ND	ug/L	1.0	0.12	
Indeno[1,2,3-cd]pyrene	B089066-BLK1	ND	ug/L	0.30	0.032	
Methoxychlor	B089066-BLK1	ND	ug/L	0.30	0.034	
Metolachlor	B089066-BLK1	ND	ug/L	0.50	0.056	
Metribuzin	B089066-BLK1	ND	ug/L	0.50	0.048	
Molinate	B089066-BLK1	ND	ug/L	0.50	0.036	
Phenanthrene	B089066-BLK1	ND	ug/L	0.10	0.020	
Prometon	B089066-BLK1	ND	ug/L	0.50	0.11	
Prometryn	B089066-BLK1	ND	ug/L	0.50	0.045	
Pyrene	B089066-BLK1	ND	ug/L	0.10	0.040	

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B089066						
Secbumeton	B089066-BLK1	ND	ug/L	0.50	0.079	
Simazine	B089066-BLK1	ND	ug/L	0.30	0.066	
Terbutryn	B089066-BLK1	ND	ug/L	0.50	0.050	
Thiobencarb	B089066-BLK1	ND	ug/L	0.50	0.044	
Perylene-d12 (Surrogate)	**B089066-BLK1**	**53.0**	%	**60 - 140 (LCL - UCL)**		**S09**
1,3-Dimethyl-2-nitrobenzene (Surrogate)	**B089066-BLK1**	**104**	%	**70 - 130 (LCL - UCL)**		
Triphenylphosphate (Surrogate)	**B089066-BLK1**	**116**	%	**70 - 130 (LCL - UCL)**		
Pyrene-d10 (Surrogate)	**B089066-BLK1**	**78.8**	%	**70 - 130 (LCL - UCL)**		

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B089066										
Acenaphthylene	B089066-BS1	LCS	0.51000	2.0000	ug/L	25.5		60 - 120		L01
Alachlor	B089066-BS1	LCS	2.1800	2.0000	ug/L	109		60 - 120		
Atrazine	B089066-BS1	LCS	2.5000	2.0000	ug/L	125		60 - 120		L01
Benzo[a]pyrene	B089066-BS1	LCS	0.91000	2.0000	ug/L	45.5		60 - 120		L01
Chrysene	B089066-BS1	LCS	2.7100	2.0000	ug/L	136		60 - 120		L01
Pyrene	B089066-BS1	LCS	1.6800	2.0000	ug/L	84.0		60 - 120		
Simazine	B089066-BS1	LCS	1.2100	2.0000	ug/L	60.5		60 - 120		
Perylene-d12 (Surrogate)	B089066-BS1	LCS	2.8800	5.0000	ug/L	57.6		60 - 140		S09
1,3-Dimethyl-2-nitrobenzene (Surrogate)	B089066-BS1	LCS	5.1900	5.0000	ug/L	104		70 - 130		
Triphenylphosphate (Surrogate)	B089066-BS1	LCS	4.8300	5.0000	ug/L	96.6		70 - 130		
Pyrene-d10 (Surrogate)	B089066-BS1	LCS	4.0900	5.0000	ug/L	81.8		70 - 130		

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Organic Analysis by Liquid Solids Extraction (EPA Method 525.2)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B089066	Used client sample: N										
Acenaphthylene	MS	**2026568-53**	**ND**	**0.62000**	**2.0000**	**ug/L**		**31.0**		**50 - 120**	**Q03**
	MSD	**2026568-53**	**ND**	**0.45000**	**2.0000**	**ug/L**	**31.8**	**22.5**	**30**	**50 - 120**	**Q02,Q03**
Alachlor	MS	2026568-53	ND	2.2800	2.0000	ug/L		114		50 - 120	
	MSD	2026568-53	ND	2.0100	2.0000	ug/L	12.6	100	30	50 - 120	
Atrazine	MS	**2026568-53**	**ND**	**2.5200**	**2.0000**	**ug/L**		**126**		**50 - 120**	**Q03**
	MSD	**2026568-53**	**ND**	**2.3500**	**2.0000**	**ug/L**	**7.0**	**118**	**30**	**50 - 120**	
Benzo[a]pyrene	MS	**2026568-53**	**ND**	**0.68000**	**2.0000**	**ug/L**		**34.0**		**50 - 120**	**Q03**
	MSD	**2026568-53**	**ND**	**0.87000**	**2.0000**	**ug/L**	**24.5**	**43.5**	**30**	**50 - 120**	**Q03**
Chrysene	MS	2026568-53	ND	2.3100	2.0000	ug/L		116		50 - 120	
	MSD	2026568-53	ND	1.9400	2.0000	ug/L	17.4	97.0	30	50 - 120	
Pyrene	MS	2026568-53	ND	1.6500	2.0000	ug/L		82.5		50 - 120	
	MSD	2026568-53	ND	1.6100	2.0000	ug/L	2.5	80.5	30	50 - 120	
Simazine	MS	2026568-53	ND	1.3500	2.0000	ug/L		67.5		50 - 120	
	MSD	2026568-53	ND	1.1100	2.0000	ug/L	19.5	55.5	30	50 - 120	
Perylene-d12 (Surrogate)	MS	**2026568-53**	**ND**	**2.6000**	**5.0000**	**ug/L**		**52.0**		**60 - 140**	**S09**
	MSD	**2026568-53**	**ND**	**3.2600**	**5.0000**	**ug/L**	**22.5**	**65.2**		**60 - 140**	
1,3-Dimethyl-2-nitrobenzene (Surrogate)	MS	2026568-53	ND	5.4900	5.0000	ug/L		110		70 - 130	
	MSD	2026568-53	ND	5.4100	5.0000	ug/L	1.5	108		70 - 130	
Triphenylphosphate (Surrogate)	MS	2026568-53	ND	5.0900	5.0000	ug/L		102		70 - 130	
	MSD	2026568-53	ND	4.7700	5.0000	ug/L	6.5	95.4		70 - 130	
Pyrene-d10 (Surrogate)	MS	2026568-53	ND	4.1900	5.0000	ug/L		83.8		70 - 130	
	MSD	2026568-53	ND	4.3000	5.0000	ug/L	2.6	86.0		70 - 130	

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EPA Method 1664

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B089179						
Oil and Grease	B089179-BLK1	ND	mg/L	5.0	0.74	

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EPA Method 1664

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B089179										
Oil and Grease	B089179-BS1	LCS	38.750	37.000	mg/L	105		78 - 114		

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EPA Method 1664

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B089179	Used client sample: N										
Oil and Grease	DUP	2026568-86	ND	ND		mg/L			18		
	MS	2026568-86	ND	38.700	37.000	mg/L		105		78 - 114	
	MSD	2026568-86	ND	37.950	37.000	mg/L	2.0	103	18	78 - 114	

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Water Analysis (General Chemistry)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B^J0012						
Total Nitrogen	B^J0012-BLK1	ND	mg/L	0.30	0.10	
QC Batch ID: B088760						
Non-Volatile Organic Carbon	B088760-BLK1	ND	mg/L	1.0	0.30	
QC Batch ID: B088791						
Chloride	**B088791-BLK1**	**0.21400**	**mg/L**	**0.50**	**0.13**	**J**
Nitrate as N	B088791-BLK1	ND	mg/L	0.10	0.024	
Sulfate	B088791-BLK1	ND	mg/L	1.0	0.14	
QC Batch ID: B088830						
MBAS	B088830-BLK1	ND	mg/L	0.10	0.024	
QC Batch ID: B088940						
Total Suspended Solids (Glass Fiber)	B088940-BLK1	ND	mg/L	0.50	0.50	
QC Batch ID: B088957						
Nitrite as N	B088957-BLK1	ND	ug/L	50	10	
QC Batch ID: B088971						
Total Dissolved Solids @ 180 C	B088971-BLK1	ND	mg/L	6.7	3.3	
QC Batch ID: B090236						
Total Kjeldahl Nitrogen	B090236-BLK1	ND	mg/L	0.20	0.088	
QC Batch ID: B090237						
Total Phosphorus	B090237-BLK1	ND	mg/L	0.050	0.018	

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Water Analysis (General Chemistry)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B088760										
Non-Volatile Organic Carbon	B088760-BS1	LCS	5.0370	5.0000	mg/L	101		85 - 115		
QC Batch ID: B088791										
Chloride	B088791-BS1	LCS	50.362	50.000	mg/L	101		90 - 110		
Nitrate as N	B088791-BS1	LCS	4.8810	5.0000	mg/L	97.6		90 - 110		
Sulfate	B088791-BS1	LCS	100.86	100.00	mg/L	101		90 - 110		
QC Batch ID: B088830										
MBAS	B088830-BS1	LCS	0.19280	0.20000	mg/L	96.4		85 - 115		
QC Batch ID: B088957										
Nitrite as N	B088957-BS1	LCS	492.99	500.00	ug/L	98.6		90 - 110		
QC Batch ID: B088971										
Total Dissolved Solids @ 180 C	B088971-BS1	LCS	590.00	586.00	mg/L	101		90 - 110		
QC Batch ID: B090236										
Total Kjeldahl Nitrogen	B090236-BS1	LCS	2.0409	2.0000	mg/L	102		90 - 110		
QC Batch ID: B090237										
Total Phosphorus	B090237-BS1	LCS	1.0284	1.0000	mg/L	103		85 - 115		

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Water Analysis (General Chemistry)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B088760	Used client sample: N										
Non-Volatile Organic Carbon	DUP	2028631-01	0.39400	0.38900		mg/L	1.3		10		J
	MS	2028631-01	0.39400	5.7126	5.0251	mg/L		106		80 - 120	
	MSD	2028631-01	0.39400	5.6935	5.0251	mg/L	0.3	105	10	80 - 120	
QC Batch ID: B088791	Used client sample: N										
Chloride	DUP	2028651-06	50.448	50.418		mg/L	0.1		10		
	MS	2028651-06	50.448	105.26	50.505	mg/L		109		80 - 120	
	MSD	2028651-06	50.448	105.48	50.505	mg/L	0.2	109	10	80 - 120	
Nitrate as N	DUP	2028651-06	0.45500	0.45700		mg/L	0.4		10		
	MS	2028651-06	0.45500	5.5040	5.0505	mg/L		100		80 - 120	
	MSD	2028651-06	0.45500	5.5010	5.0505	mg/L	0.1	99.9	10	80 - 120	
Sulfate	DUP	2028651-06	51.735	51.850		mg/L	0.2		10		
	MS	2028651-06	51.735	163.95	101.01	mg/L		111		80 - 120	
	MSD	2028651-06	51.735	164.02	101.01	mg/L	0.0	111	10	80 - 120	
QC Batch ID: B088830	Used client sample: Y - Description: Ivanhoe #11, 10/01/2020 10:50										
MBAS	DUP	2028653-01	ND	ND		mg/L			20		
	MS	2028653-01	ND	0.43820	0.40000	mg/L		110		80 - 120	
	MSD	2028653-01	ND	0.41480	0.40000	mg/L	5.5	104	20	80 - 120	
QC Batch ID: B088940	Used client sample: N										
Total Suspended Solids (Glass Fiber)	DUP	2028646-01	239.24	240.51		mg/L	0.5		10		
QC Batch ID: B088957	Used client sample: N										
Nitrite as N	DUP	2028625-01	ND	ND		ug/L			10		
	MS	2028625-01	ND	534.28	526.32	ug/L		102		90 - 110	
	MSD	2028625-01	ND	531.07	526.32	ug/L	0.6	101	10	90 - 110	
QC Batch ID: B088971	Used client sample: Y - Description: Ivanhoe #11, 10/01/2020 10:50										
Total Dissolved Solids @ 180 C	DUP	2028653-01	1480.0	1510.0		mg/L	2.0		10		
QC Batch ID: B090236	Used client sample: Y - Description: Ivanhoe #11, 10/01/2020 10:50										
Total Kjeldahl Nitrogen	DUP	**2028653-01**	**0.56610**	**0.45290**		**mg/L**	**22.2**		**20**		**A02**
	MS	**2028653-01**	**0.56610**	**2.5689**	**2.0000**	**mg/L**		**100**		**90 - 110**	
	MSD	**2028653-01**	**0.56610**	**2.6564**	**2.0000**	**mg/L**	**3.3**	**105**	**20**	**90 - 110**	
QC Batch ID: B090237	Used client sample: Y - Description: Ivanhoe #11, 10/01/2020 10:50										
Total Phosphorus	DUP	2028653-01	0.11870	0.12320		mg/L	3.7		20		
	MS	2028653-01	0.11870	1.1652	1.0000	mg/L		105		80 - 120	
	MSD	2028653-01	0.11870	1.1343	1.0000	mg/L	2.7	102	20	80 - 120	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Metals Analysis

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B089142						
Total Recoverable Mercury	B089142-BLK1	ND	ug/L	0.20	0.022	
QC Batch ID: B089329						
Total Recoverable Antimony	B089329-BLK1	ND	ug/L	2.0	0.11	
Total Recoverable Arsenic	B089329-BLK1	ND	ug/L	2.0	0.70	
Total Recoverable Barium	**B089329-BLK1**	**0.27200**	**ug/L**	**1.0**	**0.21**	**J**
Total Recoverable Beryllium	B089329-BLK1	ND	ug/L	1.0	0.14	
Total Recoverable Cadmium	**B089329-BLK1**	**0.16500**	**ug/L**	**1.0**	**0.11**	**J**
Total Recoverable Chromium	**B089329-BLK1**	**0.63700**	**ug/L**	**3.0**	**0.50**	**J**
Total Recoverable Cobalt	B089329-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Copper	**B089329-BLK1**	**0.69300**	**ug/L**	**2.0**	**0.22**	**J**
Total Recoverable Lead	B089329-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Molybdenum	B089329-BLK1	ND	ug/L	1.0	0.11	
Total Recoverable Nickel	B089329-BLK1	ND	ug/L	2.0	0.19	
Total Recoverable Selenium	B089329-BLK1	ND	ug/L	2.0	0.19	
Total Recoverable Silver	B089329-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Thallium	B089329-BLK1	ND	ug/L	1.0	0.10	
Total Recoverable Vanadium	B089329-BLK1	ND	ug/L	3.0	0.78	
Total Recoverable Zinc	B089329-BLK1	ND	ug/L	10	1.7	
QC Batch ID: B089436						
Total Recoverable Iron	B089436-BLK1	ND	ug/L	50	30	
Total Recoverable Manganese	B089436-BLK1	ND	ug/L	10	4.0	
QC Batch ID: B089534						
Total Recoverable Iron	B089534-BLK1	ND	ug/L	50	30	
Total Recoverable Manganese	B089534-BLK1	ND	ug/L	10	4.0	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Metals Analysis

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B089142										
Total Recoverable Mercury	B089142-BS1	LCS	1.0650	1.0000	ug/L	106		85 - 115		
QC Batch ID: B089329										
Total Recoverable Antimony	B089329-BS1	LCS	42.797	40.000	ug/L	107		85 - 115		
Total Recoverable Arsenic	B089329-BS1	LCS	108.14	100.00	ug/L	108		85 - 115		
Total Recoverable Barium	B089329-BS1	LCS	43.449	40.000	ug/L	109		85 - 115		
Total Recoverable Beryllium	B089329-BS1	LCS	42.689	40.000	ug/L	107		85 - 115		
Total Recoverable Cadmium	B089329-BS1	LCS	43.791	40.000	ug/L	109		85 - 115		
Total Recoverable Chromium	B089329-BS1	LCS	42.212	40.000	ug/L	106		85 - 115		
Total Recoverable Cobalt	B089329-BS1	LCS	42.915	40.000	ug/L	107		85 - 115		
Total Recoverable Copper	B089329-BS1	LCS	109.20	100.00	ug/L	109		85 - 115		
Total Recoverable Lead	B089329-BS1	LCS	110.53	100.00	ug/L	111		85 - 115		
Total Recoverable Molybdenum	B089329-BS1	LCS	40.126	40.000	ug/L	100		85 - 115		
Total Recoverable Nickel	B089329-BS1	LCS	110.04	100.00	ug/L	110		85 - 115		
Total Recoverable Selenium	B089329-BS1	LCS	111.71	100.00	ug/L	112		85 - 115		
Total Recoverable Silver	B089329-BS1	LCS	42.559	40.000	ug/L	106		85 - 115		
Total Recoverable Thallium	B089329-BS1	LCS	43.420	40.000	ug/L	109		85 - 115		
Total Recoverable Vanadium	B089329-BS1	LCS	40.600	40.000	ug/L	102		85 - 115		
Total Recoverable Zinc	B089329-BS1	LCS	113.41	100.00	ug/L	113		85 - 115		
QC Batch ID: B089436										
Total Recoverable Iron	B089436-BS1	LCS	947.75	1000.0	ug/L	94.8		85 - 115		
Total Recoverable Manganese	B089436-BS1	LCS	464.99	500.00	ug/L	93.0		85 - 115		
QC Batch ID: B089534										
Total Recoverable Iron	B089534-BS1	LCS	993.62	1000.0	ug/L	99.4		85 - 115		
Total Recoverable Manganese	B089534-BS1	LCS	498.30	500.00	ug/L	99.7		85 - 115		

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Metals Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B089142	Used client sample: N										
Total Recoverable Mercury	DUP	2028582-01	0.16500	0.14000		ug/L	16.4		20		J
	MS	2028582-01	0.16500	1.1325	1.0000	ug/L		96.8		70 - 130	
	MSD	2028582-01	0.16500	1.2025	1.0000	ug/L	6.0	104	20	70 - 130	
QC Batch ID: B089329	Used client sample: N										
Total Recoverable Antimony	DUP	2028588-03	0.28700	0.23500		ug/L	19.9		20		J
	MS	2028588-03	0.28700	44.450	40.000	ug/L		110		70 - 130	
	MSD	2028588-03	0.28700	42.308	40.000	ug/L	4.9	105	20	70 - 130	
Total Recoverable Arsenic	DUP	2028588-03	ND	ND		ug/L			20		
	MS	2028588-03	ND	112.08	100.00	ug/L		112		70 - 130	
	MSD	2028588-03	ND	109.13	100.00	ug/L	2.7	109	20	70 - 130	
Total Recoverable Barium	DUP	2028588-03	63.778	62.500		ug/L	2.0		20		
	MS	2028588-03	63.778	102.40	40.000	ug/L		96.6		70 - 130	
	MSD	2028588-03	63.778	103.95	40.000	ug/L	1.5	100	20	70 - 130	
Total Recoverable Beryllium	DUP	2028588-03	ND	ND		ug/L			20		
	MS	2028588-03	ND	42.310	40.000	ug/L		106		70 - 130	
	MSD	2028588-03	ND	41.985	40.000	ug/L	0.8	105	20	70 - 130	
Total Recoverable Cadmium	DUP	2028588-03	ND	ND		ug/L			20		
	MS	2028588-03	ND	43.040	40.000	ug/L		108		70 - 130	
	MSD	2028588-03	ND	41.575	40.000	ug/L	3.5	104	20	70 - 130	
Total Recoverable Chromium	DUP	2028588-03	ND	ND		ug/L			20		
	MS	2028588-03	ND	41.758	40.000	ug/L		104		70 - 130	
	MSD	2028588-03	ND	39.913	40.000	ug/L	4.5	99.8	20	70 - 130	
Total Recoverable Cobalt	DUP	2028588-03	1.2130	1.2080		ug/L	0.4		20		
	MS	2028588-03	1.2130	42.051	40.000	ug/L		102		70 - 130	
	MSD	2028588-03	1.2130	40.452	40.000	ug/L	3.9	98.1	20	70 - 130	
Total Recoverable Copper	DUP	2028588-03	94.688	92.841		ug/L	2.0		20		
	MS	2028588-03	94.688	196.24	100.00	ug/L		102		70 - 130	
	MSD	2028588-03	94.688	196.11	100.00	ug/L	0.1	101	20	70 - 130	
Total Recoverable Lead	DUP	2028588-03	0.28000	0.25400		ug/L	9.7		20		J
	MS	2028588-03	0.28000	108.75	100.00	ug/L		108		70 - 130	
	MSD	2028588-03	0.28000	104.62	100.00	ug/L	3.9	104	20	70 - 130	
Total Recoverable Molybdenum	DUP	2028588-03	4.2080	3.6800		ug/L	13.4		20		
	MS	2028588-03	4.2080	46.669	40.000	ug/L		106		70 - 130	
	MSD	2028588-03	4.2080	46.139	40.000	ug/L	1.1	105	20	70 - 130	
Total Recoverable Nickel	DUP	2028588-03	8.5090	8.7240		ug/L	2.5		20		
	MS	2028588-03	8.5090	109.72	100.00	ug/L		101		70 - 130	
	MSD	2028588-03	8.5090	105.87	100.00	ug/L	3.6	97.4	20	70 - 130	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Metals Analysis

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B089329	Used client sample: N										
Total Recoverable Selenium	DUP	**2028588-03**	**1.4800**	**0.96200**		**ug/L**	**42.4**		**20**		**J,A02**
	MS	**2028588-03**	**1.4800**	**113.00**	**100.00**	**ug/L**		**112**		**70 - 130**	
	MSD	**2028588-03**	**1.4800**	**113.79**	**100.00**	**ug/L**	**0.7**	**112**	**20**	**70 - 130**	
Total Recoverable Silver	DUP	2028588-03	ND	ND		ug/L			20		
	MS	2028588-03	ND	41.876	40.000	ug/L		105		70 - 130	
	MSD	2028588-03	ND	42.254	40.000	ug/L	0.9	106	20	70 - 130	
Total Recoverable Thallium	DUP	2028588-03	ND	ND		ug/L			20		
	MS	2028588-03	ND	42.889	40.000	ug/L		107		70 - 130	
	MSD	2028588-03	ND	41.719	40.000	ug/L	2.8	104	20	70 - 130	
Total Recoverable Vanadium	DUP	2028588-03	ND	ND		ug/L			20		
	MS	2028588-03	ND	42.933	40.000	ug/L		107		70 - 130	
	MSD	2028588-03	ND	40.545	40.000	ug/L	5.7	101	20	70 - 130	
Total Recoverable Zinc	DUP	2028588-03	8.9130	7.9220		ug/L	11.8		20		J
	MS	2028588-03	8.9130	119.84	100.00	ug/L		111		70 - 130	
	MSD	2028588-03	8.9130	113.18	100.00	ug/L	5.7	104	20	70 - 130	
QC Batch ID: B089436	Used client sample: N										
Total Recoverable Iron	DUP	2029109-01	240.60	262.87		ug/L	8.8		20		
	MS	2029109-01	240.60	1243.8	1000.0	ug/L		100		75 - 125	
	MSD	2029109-01	240.60	1216.6	1000.0	ug/L	2.2	97.6	20	75 - 125	
Total Recoverable Manganese	DUP	2029109-01	5.1589	5.7498		ug/L	10.8		20		J
	MS	2029109-01	5.1589	499.02	500.00	ug/L		98.8		75 - 125	
	MSD	2029109-01	5.1589	500.03	500.00	ug/L	0.2	99.0	20	75 - 125	
QC Batch ID: B089534	Used client sample: Y - Description: Ivanhoe #8, 10/01/2020 10:00										
Total Recoverable Iron	DUP	2028653-03	ND	ND		ug/L			20		
	MS	2028653-03	ND	962.24	1000.0	ug/L		96.2		75 - 125	
	MSD	2028653-03	ND	1024.7	1000.0	ug/L	6.3	102	20	75 - 125	
Total Recoverable Manganese	DUP	2028653-03	136.47	140.08		ug/L	2.6		20		
	MS	2028653-03	136.47	621.61	500.00	ug/L		97.0		75 - 125	
	MSD	2028653-03	136.47	659.57	500.00	ug/L	5.9	105	20	75 - 125	

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/21/2020 11:10
Project: Cottonwood Sand Mine Project
Project Number: S020.1016
Project Manager: Kyle Welchans

Notes And Definitions

J	Estimated Value (CLP Flag)
MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A02	The difference between duplicate readings is less than the quantitation limit.
A07	Detection and quantitation limits were raised due to sample dilution caused by high analyte concentration or matrix interference.
A19	Surrogate is high due to matrix interference. Interferences verified through second extraction/analysis.
L01	The Laboratory Control Sample Water (LCSW) recovery is not within laboratory established control limits.
Q02	Matrix spike precision is not within the control limits.
Q03	Matrix spike recovery(s) was(were) not within the control limits.
S09	The surrogate recovery for this compound was not within the control limits.
V11	The Continuing Calibration Verification (CCV) recovery was not within established control limits.

Date of Report: 10/13/2020

Kyle Welchans

Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Client Project:	[none]
BCL Project:	Cottonwood Sand Mine Project
BCL Work Order:	2028654
Invoice ID:	B394569

Enclosed are the results of analyses for samples received by the laboratory on 10/1/2020. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Contact Person: Natalie Serda
Client Service Rep

Stuart Buttram
Technical Director

Table of Contents

BC LABORATORIES, INC.
4100 Atlas Ct. – Bakersfield, CA 93308 – 661.327.4911 – Fax: 661.327.1918 – www.bclabs.com

Chain of Custody Form

Page 1 of 1

Report To: Client: Geo-Logic Associates	Project #: S020.1016
Attn: Kyle Wellmans	Project Name: Cottonwood Sand Mine
Street Address: 14115 W. Bernardo Ct	
City, State, Zip: San Diego CA 92127	Sampler(s): N. Reason
Phone: (858) 451-1136 Fax:	
Email:	
Work Order #: 20-28653 (20-28654)	

Comments: * 24 Hour Hold on Total Coliform and E. Coli *

Result Request **Surcharge: ☒ STD (10 Days) ☐ 5 Day** ☐ 4 Day** ☐ 3 Day** ☐ 2 Day** ☐ 1 Day**

Analysis Requested:

Sample #	Description	Date Sampled	Time Sampled	VOCs (EPA 524.2)	Nitrate-N, Nitrite-N	Total Nitrogen, Chloride, Sulfate, TDS, TSS	Total Phosphorus as P, TOC	Oil & Grease, MBAS	Title 22 Metals (Excluding Iron and Manganese)	Organochlorine Pesticides (508)	Chlorinated Herbicides (515.1)	SVOCs (525.2 M)	Total Coliform & E. Coli (SM9223B)	Soil	Sludge	Drinking Water	Ground Water	Waste Water	Other	Notes
-1	Ivanhoe #11 (-1)	10/1/20	1050	X	X	X	X	X	X	X	X	X	X				X			
-2	Lake #11 (-2)	10/1/20	1040	X	X	X	X	X	X	X	X	X	X				X			Oil and Grease needs to be preserved in lab
-3	Ivanhoe #8 (-3)	10/1/20	1000	X	X	X	X	X	X	X	X	X	X				X			

CHK BY DISTRIBUTION SUB OUT ☐

SHORT HOLDING TIME: Cl, NO2 (circled), NO3 (circled), OP, SS, DO, Cl2, BOD, MBAS (circled), COT

Billing ☒ Same as above
Client:
Address:
City: State: Zip:
Attn:
P.O. #:

*Send Copy to State of CA? (EDT) ☐ Yes ☒ No
System # (Needed for EDT)

EDF Required Geotracker ☒ Yes ☐ No Global ID

Relinquished By	Date	Time	Received By	Date	Time
1. [illegible]	10-1-2020	1403	1. Gabe Beaulieu [signature]	10-1-20	1403
2. Gabe Beaulieu [signature]	10-1-20	3:15	2. [illegible]	10-1-20	1515
3. [illegible]	10-1-20	1747	3. [illegible]	10/1	1747

*For Drinking Water, mark "EDT - yes or no." If marked no, BCL will not upload at a future date.

Chain of Custody and Cooler Receipt Form for 2028654 Page 2 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 2

Submission #: 20-28653 (20-28654)

SHIPPING INFORMATION: Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐ BC Lab Field Service ☑ Other ☐ (Specify)

SHIPPING CONTAINER: Ice Chest ☑ None ☐ Box ☐ Other ☐ (Specify)

FREE LIQUID: YES ☐ NO ☐ W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals: Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 0.98 Container: PE Thermometer ID: 208 Date/Time 10/1 1747

Temperature: (A) 1.7 °C / (C) 1.5 °C Analyst Init VP1

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES	PE	PE	PE							
4oz / 8oz / 16oz PE UNPRES										
2oz Cr+6										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz	F	F								
PT CYANIDE										
PT NITROGEN FORMS	~~VP1~~	G								
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON		H								
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK					AB					
40ml VOA VIAL		ABC		AB						
QT EPA 1664		I								
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL	(AB)	(AB)	(AB)							
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
~~QT EPA 525~~ 020		J								
QT EPA 525 TRAVEL BLANK										
~~40ml EPA 547~~ 024		K								
40ml EPA 531.1										
~~8oz EPA 548~~ 028		LM								
QT EPA 549										
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments: -4A QCAB, -5AB QCTB

Sample Numbering Completed By: VP1 Date/Time: 10/1 2013

A = Actual / C = Corrected

Rev 21 05/23/2016

Chain of Custody and Cooler Receipt Form for 2028654 Page 3 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 2 Of 2

Submission #: 20-28653 (20-28654)

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☑ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☑ Other ☐ (Specify)_____	Other ☐ (Specify)_____	W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 0.98 Container: PE Thermometer ID: 208 Date/Time: 9 10/1 1747

Temperature: (A) 1.4 °C / (C) 1.2 °C Analyst Init: VPI

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz			F							
PT CYANIDE										
PT NITROGEN FORMS	G		G							
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON	H		H							
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL	ABL		ABL							
QT EPA 1664	I		I							
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
~~QT EPA 525~~ 020	JKL									
QT EPA 525 TRAVEL BLANK										
~~40ml EPA 547~~ 024	ML		J							
40ml EPA 531.1										
~~8oz EPA 548~~ 028 VPI	NOP									
~~QT EPA 549~~ 028	MN		KL							
QT EPA 8015M										
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: VPI Date/Time: 10/2 1756

A = Actual / C = Corrected

Rev 21

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Geologic Associates (Main)
11415 West Bernardo Court, Suite 200
San Diego, CA 92127

Reported: 10/13/2020 11:28
Project: Cottonwood Sand Mine Project
Project Number: [none]
Project Manager: Kyle Welchans

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
2028654-01	**COC Number:**	---	**Receive Date:**	10/01/2020 17:47
	Project Number:	---	**Sampling Date:**	10/01/2020 10:50
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	Ivanhoe #11	**Lab Matrix:**	Water
	Sampled By:	N. Reason	**Sample Type:**	Groundwater
2028654-02	**COC Number:**	---	**Receive Date:**	10/01/2020 17:47
	Project Number:	---	**Sampling Date:**	10/01/2020 10:40
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	Lake #11	**Lab Matrix:**	Water
	Sampled By:	N. Reason	**Sample Type:**	Groundwater
2028654-03	**COC Number:**	---	**Receive Date:**	10/01/2020 17:47
	Project Number:	---	**Sampling Date:**	10/01/2020 10:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	Ivanhoe #8	**Lab Matrix:**	Water
	Sampled By:	N. Reason	**Sample Type:**	Groundwater

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Project Manager: Kyle Welchans

2028654-01

Water Analysis (Bacteriological)

COC Number:	---	**District ID:**	
Project Number:	---	**System Number:**	
Sampling Location:	---	**Station Number:**	
Sampling Point:	Ivanhoe #11	**Sample Site:**	
Sampled By:	N. Reason	**Residual Chlorine, ppm:**	
Receive Date:	10/01/2020 17:47	**Temperature, C:**	
Sampling Date:	10/01/2020 10:50		
Sample Depth:	---		
Sample Matrix:	Water		

Colilert (Quantitray)

Constituent	Result	Units	Method	Analyst	Initial Dilution	Date Started	Date Completed	Lab Quals
Total Coliform, Confirmed Test	46	Positive Wells	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	
Total Coliform, Density	88	MPN/100ml	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	
E. Coli, Confirmed Test	0	Positive Wells	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	
E. Coli, Density	<1	MPN/100ml	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	

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Project Number: [none]
Project Manager: Kyle Welchans

2028654-02

Water Analysis (Bacteriological)

COC Number:	---	**District ID:**	
Project Number:	---	**System Number:**	
Sampling Location:	---	**Station Number:**	
Sampling Point:	Lake #11	**Sample Site:**	
Sampled By:	N. Reason	**Residual Chlorine, ppm:**	
Receive Date:	10/01/2020 17:47	**Temperature, C:**	
Sampling Date:	10/01/2020 10:40		
Sample Depth:	---		
Sample Matrix:	Water		

Colilert (Quantitray)

Constituent	Result	Units	Method	Analyst	Initial Dilution	Date Started	Date Completed	Lab Quals
Total Coliform, Confirmed Test	97	Positive Wells	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	
Total Coliform, Density	>2400	MPN/100ml	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	
E. Coli, Confirmed Test	0	Positive Wells	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	
E. Coli, Density	<1	MPN/100ml	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	

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Project Manager: Kyle Welchans

2028654-03

Water Analysis (Bacteriological)

COC Number:	---	**District ID:**	
Project Number:	---	**System Number:**	
Sampling Location:	---	**Station Number:**	
Sampling Point:	Ivanhoe #8	**Sample Site:**	
Sampled By:	N. Reason	**Residual Chlorine, ppm:**	
Receive Date:	10/01/2020 17:47	**Temperature, C:**	
Sampling Date:	10/01/2020 10:00		
Sample Depth:	---		
Sample Matrix:	Water		

Colilert (Quantitray)

Constituent	Result	Units	Method	Analyst	Initial Dilution	Date Started	Date Completed	Lab Quals
Total Coliform, Confirmed Test	0	Positive Wells	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	
Total Coliform, Density	<1	MPN/100ml	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	
E. Coli, Confirmed Test	0	Positive Wells	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	
E. Coli, Density	<1	MPN/100ml	SM-9223B	JT1	1	10/02/2020 09:30	10/03/2020	

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Notes And Definitions

MPN Most Probable Number