Job No. 100-SBA-T36771

Final
Site Investigation Report
Village Park
15150 Illinois Avenue
Paramount, California 90723

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EXECUTIVE SUMMARY

The City of Paramount (City) requested that Tetra Tech, Inc. (Tetra Tech) conduct a Site Investigation (SI) at Village Park, located at 15150 Illinois Avenue, Paramount, California (the Site). The City has entered into a Voluntary Cleanup Agreement (VCA) with California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) to investigate the potential release of metals onto park grounds through air emissions from Carlton Forge Works (CFW) and/or other potential neighborhood sources. CFW has been conducting similar investigations of potential metals dust contamination in the neighborhood from their metals foundry work conducted at 7743 Adams Street (immediately east of the Site).

Two rounds of sampling for soil and dust were conducted by CFW in 2014 in the neighborhood surrounding CFW's primary operating facility at 7743 Adams Street. The results of those investigations are summarized in *Summary Results for Soil and Dust Samples Collected in the Vicinity of Carlton Forge Works* (CFW Soil and Dust Report) (ToxStrategies 2015). The findings of the CFW Soil and Dust Report showed that there were elevated concentrations of metals in dust and surface soil in the neighborhood surrounding CFW, including on a property on Illinois Avenue immediately west (upwind) of the Site.

Hexavalent chromium (CrVI), cobalt, and lead were present at concentrations in samples from those nearby properties that were significantly greater than the United States Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for residential soil, suggesting there may be an increased risk for health effects for park users at the Site because the sample locations were very close to the Site. Cobalt was detected (42.1 milligrams per kilogram [mg/kg]) at a concentration above the RSL of 23 mg/kg in the sample D3-140423 collected in April 2014. Sample D3R was recollected from the same location in December 2014 and cobalt was again detected (64 mg/kg) at a concentration greater than the RSL. CrVI and lead were also detected in the sample D3R (0.49 mg/kg and 1,100 mg/kg, respectively) at concentrations greater than the RSLs for residential soil (0.3 mg/kg and 465 mg/kg, respectively).

As part of the SI presented in this report, Tetra Tech collected 17 soil and 6 dust samples at the Site on March 2, 2017, with DTSC oversight, to determine if the metals are present at the Site at similar concentrations. The soil and dust samples were analyzed using EPA methods SW6020, SW6010B, SW7471A, and SW7199 by American Environmental Testing Laboratory, in Burbank California. Nine split soil and dust samples were delivered to DTSC for analysis by another laboratory.

Antimony, beryllium, selenium, silver, and thallium were not detected in any samples collected from the Site. Cadmium, total chromium, CrVI, lead, mercury, manganese, tin, and titanium were detected in soil and dust at concentrations that fell below both their respective RSLs and their respective site specific background values calculated for CFW. Only barium, cobalt, copper, molybdenum, nickel, vanadium, and zinc were detected in one or more soil or dust samples at concentrations greater than their background values. Arsenic was detected at estimated concentrations of between 1.52 and 4.89 mg/kg in all soil and dust samples, exceeding the 2016 RSL (0.68 mg/kg), but the concentrations were less than site specific and regional background values (5.5 mg/kg and 12 mg/kg, respectively). Only cobalt (23.8 mg/kg) was detected at a concentration greater than both the RSL (23 mg/kg) and the background value (12 mg/kg) in a single dust sample (VPD-2). The concentration of cobalt detected in the duplicate sample collected from VPD-2 fell slightly below the RSL (23 mg/kg) at 21.2 mg/kg.

Samples collected for this project were analyzed for CrVI using EPA method SW7199. The results were all either non-detect or low concentrations near the detection level. However, the reducing properties of the Site matrices (soil and dust) resulted in low matrix spike/matrix spike duplicate (MS/MSD) recoveries, and as a result, the non-detect results for CrVI were rejected and the detections were flagged as estimated

during the data validation. Therefore, the samples were reanalyzed to confirm the original results. The results from the re-analyses were consistent with the original analyses (i.e., all results were either non-detect or low concentrations near the detection level). Moreover, the MS/MSD recoveries were again very low. The MS/MSD results indicate that the Site matrices (soil and dust) are reducing the CrVI to trivalent chromium (CrIII), which is the much less toxic form of chromium (i.e., the RSL for CrVI in residential soil is 0.3 mg/kg, while the corresponding RSL for CrIII is 120,000 mg/kg).

The results of this SI show that, although there are concentrations of seven metals in dust and soil that are slightly greater than background values calculated for the vicinity, these concentrations, except for arsenic and cobalt, do not exceed the RSLs for residential soil. Arsenic uniformly exceeded the RSL for residential soil, but all detected concentrations fall below both the background value of 5.5 mg/kg calculated for CFW and fall below the southern California regional background level of 12 mg/kg applied to school sites throughout the region by DTSC. A single detection of cobalt at 23.8 mg/kg was nearly twice the background value of 12 mg/kg but only slightly greater than the RSL of 23 mg/kg for residential soil. This single detection of cobalt that only slightly exceed the RSL does not indicate a significant increased risk to human health. Results from previous investigations at surrounding properties indicated the potential presence of elevated CrVI concentrations; however, the data from this SI indicate that the reducing properties of soil and dust at the Site are quickly transforming CrVI to CrIII, thereby mitigating potential impacts from CrVI.

Based upon the findings of this SI, Tetra Tech does not recommend further investigation of metals in dust or soil at Village Park. We request that DTSC issue the City a No Further Action decision for this Site.

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1.0 INTRODUCTION

The City of Paramount (City) requested that Tetra Tech, Inc. (Tetra Tech) conduct a Site Investigation (SI) at Village Park located at 15150 Illinois Avenue, Paramount, California (the Site). Tetra Tech understands that a number of metals manufacturers are located within the City of Paramount, and the City wishes to assess whether there may be contaminants in soil and dust from airborne dust settling at the Site.

This SI was completed by Tetra Tech in accordance with a SI Work Plan prepared in consultation with the California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC) on behalf of the City for the site investigation of soil and dust at Village Park. The SI Work Plan was based on information presented by DTSC and the City to Tetra Tech at a SI scoping meeting conducted at the City on January 11, 2017. The DTSC approved implementation of the SI Work Plan on February 24, 2017 (Tetra Tech 2017).

2.0 PURPOSE AND BACKGROUND

2.1 PURPOSE

The purpose of the Village Park SI is to evaluate the concentrations of metals present in surface soil and dust at the Site.

2.2 BACKGROUND

The Site is an approximately 1.55 acres park owned by the City that contains a concrete skateboard terrain park, a playground, public restrooms, sidewalks, and landscape and turf grass areas. The Site is located on the east side of Illinois Avenue at the intersection with Somerset Boulevard in the City of Paramount, California (Figures 1 and 2).

In response to concerns, the City has entered into a Voluntary Cleanup Agreement (VCA) with DTSC. The purpose of VCA-16/17-063 is to investigate the potential release of metals onto park grounds through air emissions from Carlton Forge Works (CFW) and/or other potential sources. CFW has also been approached by DTSC to perform investigations of potential metals dust contamination in the neighborhood from their metals foundry work performed at 7743 Adams Street. CFW has operated on the adjacent property to the east since 1928.

This SI Report includes limited background and historical use information regarding the Site and previous investigations conducted for metals in the surrounding neighborhood by CFW. A more detailed summary of background and historical use information for the release of metals from CFW is presented in the *Final Work Plan to Collect and Evaluate Soil and Dust Samples in the Vicinity of Carlton Forge Works* (ToxStrategies 2014) (Final CFW Work Plan) and *Summary Results for Soil and Dust Samples Collected in the Vicinity of Carlton Forge Works* (CFW Soil and Dust Report) (ToxStrategies 2015). Summary tables of metals concentrations in dust and soil, as well as figures showing sample locations from the CFW Soil and Dust Report are presented in Appendix A.

ToxStrategies conducted two rounds of sampling for soil and dust in the neighborhood surrounding CFW's primary operating facility at 7743 Adams Street, east of the Site. The findings of the CFW Soil and Dust report showed that there are elevated concentrations of metals in dust and surface soil in the neighborhood surrounding CFW.

ToxStrategies compared the sampling results to the U.S. EPA regional screening levels (RSLs) for residential soil. The U.S. EPA developed RSLs for many organic and inorganic compounds using likely exposure scenarios (such as children playing in a residential yard or workers in an industrial plant) and assigned maximum screening levels for each scenario at which adverse health effects are not observed to occur in the exposed group. The RSLs for residential soil were created to be most protective of children, who often have stronger or earlier reaction to chemical exposures. For compounds that pose known cancer risk, the RSL is set to a level at which there would be no more than one in one million increased incidence of cancer from exposure (1×10^{-6} risk) (USEPA 2016). ToxStrategies compared the soil and dust sample results to the RSL for residential soil exposure (the more conservative RSL) to determine whether the concentrations of metals detected in the soil and dust samples collected pose increased health risk. In addition, sixteen of the samples collected for CFW were also analyzed in a bioaccessibility study to model the effect of digestion on the uptake of metals from dust or soil to calculate site-specific screening levels based upon the RSLs.

ToxStrategies also compared the soil and dust sample results to statistically derived background levels calculated using a set of ten background samples collected at locations near the Site vicinity where dust from CFW were unlikely to be found to evaluate the potential contribution of CFW emissions over concentrations of metals that occur naturally in neighborhood soil.

ToxStrategies concluded that the pattern of distribution of metals in dust and soil samples collected from the neighborhood (primarily downwind of CFW) showed that the metals present in soil samples collected more than about 300 to 400 feet from CFW were not due to emissions from CFW, but another source upwind. These sample results were also compared to stack emissions from CFW, to screen out metals that are not emitted by CFW. Primarily cobalt and nickel were detected in numerous samples at concentrations that were greater than the background levels and in many cases greater than the RSLs for residential soil. Cadmium, CrVI, lead, and molybdenum were also detected in one or more sample at concentrations greater than the RSL throughout the neighborhood. Figures showing the sample locations and tables showing the sample results from the two CFW investigations are included in the CFW Soil and Dust Report in Appendix A (ToxStrategies 2015).

Of particular concern for Village Park, are dust samples collected from a property immediately west of the Site on Illinois Avenue (samples D3, D3R). These samples showed that CrVI, cobalt, and lead were present in dust at concentrations that were greater than the residential soil RSLs. In April 2014, Cobalt was detected (42.1 milligrams per kilogram [mg/kg]) at a concentration above the RSL of 23 mg/kg in the sample D3-140423. Sample D3R was recollected from the same location in December 2014 and cobalt was again detected (64 mg/kg) at a concentration greater than the RSL. In addition, CrVI and lead were detected (0.49 mg/kg and 1,100 mg/kg, respectively) in sample D3R at concentrations greater than the residential soil RSLs (0.3 mg/kg and 465 mg/kg, respectively).

2.2.1 Geology

The Site is located at the boundary between the Transverse Ranges and Peninsular Ranges geomorphic provinces. The Transverse Ranges geomorphic province is bounded by the Big Pine fault on the north, the San Andreas fault zone on the east, the Pacific Ocean on the west, and the Santa Monica, Hollywood, Raymond, Sierra Madre, and Cucamonga faults on the south. The province is characterized by west-trending mountain ranges that include the Santa Ynez, San Gabriel, San Bernardino, and Santa Monica Mountains, and associated valleys. The southern boundary of the Transverse Ranges province is coincident with the northern boundary of Peninsular Ranges province. In contrast to the Transverse Ranges province, the Peninsular Ranges geomorphic province is characterized by elongate northwest-trending mountain ridges separated by straight-sided sediment-filled valleys. This province is bounded by the San Jacinto fault

zone on the east, the Pacific Ocean coastline on the west, and the Transverse Ranges geomorphic province on the north.

The Site is located on the north-central portion of the Downey Plain. The Downey Plain is part of the Coastal Plains of Los Angeles and is bounded on the west and southwest by the low-lying Baldwin, Rosecrans and Dominguez Hills, both surface expressions of the northwest trending Newport-Inglewood Fault Complex. The Downey Plain is bounded on the north and northeast by the Elysian, Repetto; and Merced Hills; on the east by the Puente and Coyote Hills; on the southeast by the Orange County Coastal Plain (CDWR 2004).

Holocene alluvial deposits at the surface in the Site vicinity consist of homogeneous mixtures of fine sands, silty fine sand, silts, and clays (CDWR 2004). The Holocene alluvium extends to between 100 and 800 feet below ground surface (bgs) in the Downey Plain to overlie the Lakewood formation which consists of Pleistocene sand, clay, and conglomerate.

2.2.2 Hydrogeology

The Site is located within the Central Basin Pressure Area of the Central Groundwater Basin. The Central Groundwater Basin extends over most of the Coastal Plain of Los Angeles County east and northeast of the Newport-Inglewood uplift. Historically, the Central Basin is divided into four areas: the Los Angeles Forebay Area, the Montebello Forebay Area, the Whittier Area, and the Central Basin Pressure Area (CDWR 2004). The Central Basin Pressure Area is the largest of the four divisions, and contains many aquifers of permeable sands and gravels separated by semi-permeable to impermeable sandy clay to clay, that extend to about 2,200 feet bgs (CDWR 2004).

Local shallow groundwater is reportedly approximately 27 feet bgs, according to a Leaking Underground Storage Tank Assessment report for a property located one block west of the Site (Alta EM 2013). This shallow groundwater zone is above the Gaspar Aquifer, which occurs locally at a depth of approximately 125 feet bgs.

3.0 SITE INVESTIGATION ACTIVITIES

Based on the January 11, 2017 SI scoping meeting between DTSC, the City, and Tetra Tech, the following media were evaluated:

1. Surface soil in turf grass and playground areas of the Site; and

2. Dust on pavement areas of the Site.

This SI Report describes the procedures used to collect surface soil and dust samples at the Site. The sample analytical scope presented in this SI Report was developed in consultation with the DTSC Project Manager on January 11, 2017.

Soil and dust sampling were conducted during the same mobilization on March 2, 2017. The DTSC Project Manager assigned to the Site and a DTSC Geological Services Unit geologist were present to witness sampling and to provide oversight and additional direction on the SI fieldwork, as needed.

3.1 SURFACE SOIL SAMPLE COLLECTION

Surface soil samples were collected from eight locations on the Site (VPS-1 through VPS-8), as shown on Table 1 and Figure 2. Soil from the top 0.25-foot of soil was collected to evaluate variability in the soil interval that would most likely be impacted by dust deposition (surface to 1-inch and 1- to 3-inches bgs). Tetra Tech removed the turf grass to eliminate most vegetative matter from the surface sample. The surface to 1-inch (surface) samples were collected using a stainless steel trowel directly into pre-cleaned glass sample containers fitted with Teflon-lined screw-caps. The 1-inch to 3-inch bgs soil samples were collected with a hand-driven split-spoon sampler into stainless steel sleeves which were then sealed with Teflon sheets and end caps. The end caps of each 1-inch to 3-inch bgs sample were labeled to indicate the top and bottom of each sample, so that the laboratory could remove the aliquot for analysis from the top of the sample sleeve. All soil sampling equipment was decontaminated before use and between samples via a three-step process using an Alconox™ detergent and tap water wash, a tap water rinse, and a final deionized water rinse.

The surface and 1-inch to 3-inch bgs soil samples were listed for analysis on the Chain of Custody (COC). The samples were labeled and placed in an ice chest containing bagged ice with COC records during fieldwork. The samples were stored overnight at 4 degrees Celsius (°C) in a secured refrigerator at the Tetra Tech office in Santa Barbara and were released under COC to a courier for transportation to the laboratory the following day.

A second volume of soil was collected at one location (VPS-2) to perform a duplicate analysis to evaluate precision and accuracy of the sample collection and analysis process. DTSC requested split samples of soil from sample locations VPS-1, VPS-2, VPS-4, VPS-5, VPS-7, and VPS-8. Six of the split soil samples were collected for DTSC by collecting additional soil from the surface interval using a stainless steel trowel to increase sample volume. The surface soil samples were homogenized in the field and the soil was split after homogenization into two identical 4-ounce glass jars. One container from each split sample was retained by Tetra Tech for analysis and the second container was transferred directly to DTSC custody for shipment to their designated laboratory (Advance Technology Laboratories, in Signal Hill California). One split soil sample was collected at location VPS-4 from 1-inch to 3-inch bgs from a boring driven immediately adjacent to boring VPS-4. The stainless steel sample sleeve collected for the split sample was sealed with Teflon sheets and plastic end caps used for other Site soil samples.

Sample locations were photographed in using a GPS-enabled camera to identify the sample location. Field personnel prepared boring logs in the field to record the date, time of sample collection, soil sample collection depth, and soil consistency using the Unified Soil Classification System (USCS) (ASTM 1990a and 1990b). Other important observations and discussions with DTSC staff during fieldwork were recorded in a field log (Appendix B).

3.2 DUST SAMPLE COLLECTION

Tetra Tech collected dust samples (VPD-1 through VPS-5) at five paved locations at the Site (Table 2 and Figure 2). These five sample locations were intended to evaluate the dust deposited onto paved surfaces at the Site. Prior to collecting each sample, an area up to 60 square-feet was initially designated using a clean tape measure and delineated using blue painters tape (Appendix B). The areas were expanded as necessary to collect a minimum sample weight of 50 grams.

Each dust sample was collected using EnviroCare Micro Filtration™ vacuum bags fitted inside a Eureka Mighty Mite™ canister vacuum to match dust sample collection equipment used in the neighborhood dust and soil investigation conducted on behalf of CFW in 2014. This canister vacuum is specified by the

manufacturer to have a minimum 99.7% filtration capacity. Sample areas included a variety of paved areas (Skateboard terrain area, basketball court, sidewalks, and concrete hardscapes). Dust samples were collected using the vacuum cleaner with a hose and a 12-inch wide brush bar. The EnviroCare Micro Filtration™ vacuum filter bags are specified by the manufacturer to be more than 99% efficient at screening particles to a diameter of 1 micron. At least 50 grams of particulates were collected to conduct the required analyses. An Acculab Pocket Pro™ 150-B electronic scale was used to determine the tare weight of each empty vacuum cleaner bag used for dust sample collection. The bag tare weight was recorded on each bag before sample collection. After vacuuming the sample area for an initial 5 minutes, the sample bags were re-weighed to assess whether an adequate dust mass has been collected. If at least 50 grams of dust was collected with the first collection run the sample was complete. If the sample bag did not weigh out with at least 50 grams of dust, the sample area was expanded and vacuumed for an additional 5 minutes. The sample areas were expanded as needed until weighing showed an adequate sample weight of 50 grams had been collected for analysis.

After dust sample collection was complete, each vacuum filter bag was placed into a clean one-gallon zipper-closure plastic bag for delivery to the laboratory. Each sample was labeled with a unique identifier indicating the sample ID, the collection date, and the collection time. The samples were placed in an ice chest containing bagged ice along with the COC record. The samples were stored overnight at 4°C in a secured refrigerator at the Tetra Tech office in Santa Barbara and were released under COC to a courier for transportation to the laboratory the following day.

To reduce the potential for cross-contamination between samples, a separate decontamination vacuum bag was used prior to collection of each dust sample. A fresh, unused vacuum bag was placed into the vacuum and the vacuum was run for 5 minutes to purge dust from the unit. During this time the vacuum hose was agitated to promote residual dust removal. The vacuum was then wiped down with a clean paper towel wetted with deionized water to remove any remaining dust from the bag housing.

A second volume of dust was collected at location VPD-2 for duplicate analysis to evaluate precision and accuracy of the sample collection and analysis process. In addition, DTSC requested three split samples of dust (VPD-3, VPD-4, and VPD-5). For each split dust sample, twice the weight of dust was collected at one time. The split was conducted at the laboratory during sample preparation as described in Section 3.3.

3.3 SAMPLE ANALYSIS

Soil and dust samples were sent to American Environmental Testing Laboratory, Inc. (AETL) in Burbank, California, on a standard turn-around time, with Level II reporting. All soil and dust samples were analyzed for CAM 17 metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc, and mercury) via EPA Methods 6020B/7471A and for manganese, tin, and titanium via EPA method 6010B. Soil and dust samples were also analyzed for CrVI via EPA Method 3060A/7199.

Dust samples were prepared for analysis by being passed through a #60 mesh screen to remove particles greater than 0.25 millimeter (mm) in diameter. The particle fraction that passed the screen was homogenized, and an aliquot was selected for subsequent preparation in accordance with the test method. Only particles smaller than 0.25 mm were analyzed by AETL. Once the particle size separation step was completed, the laboratory split three of the dust samples at the request of DTSC for submittal to another laboratory for analysis. Split aliquots of samples VPD-3, VPD-4, and VPD-5 were delivered by courier under COC to Advanced Technology Laboratories, Inc. in Signal Hill, California.

3.4 VARIANCES

Fieldwork was conducted on March 2, 2017 in accordance with the Work Plan approved by DTSC, except for the following variances:

- Dust sample collection bags were placed into clean one-gallon zipper-closure plastic bags for delivery to the laboratory because they would not fit into the glass sample jars specified in the Work Plan. The plastic bags were supplied by AETL.

- Dust sampling location VPD-5 was moved from a drainage channel located on the south margin of the Site to the sidewalk on Illinois Avenue at the southwest corner of the Site at the direction of the DTSC Project Manager (Figure 2).

- DTSC requested more split soil and dust samples than specified in the Work Plan (30 percent [%] of soil locations and 40% of dust locations). Split surface soil samples were delivered to DTSC from all soil sample locations except VPS-3 and VPS-6 (75% of locations). Split dust samples were delivered to DTSC from dust sample locations VPD-3, VPD-4, and VPD-5 (60% of locations).

3.5 DATA VALIDATION AND QUALITY CONTROL SUMMARY

Soil and dust samples collected at the Site were analyzed by the prescribed analytical method required by the DTSC-approved SI Work Plan (Tetra Tech 2017), which included EPA methods SW6020, SW6010B, SW7471A, and SW7199. The validation guidance used in evaluating the data is presented in the current versions of *USEPA National Functional Guidelines for Inorganic Data Review.*

The data for EPA methods SW6020, SW6010B, SW7471A, and SW7199 were audited at a Level II effort. Sample analyses described in a Level II report (Appendix D) showed that soil and dust sample results, except for EPA method SW7199 met quality control requirements for the project. Soil and dust sample quality control criteria were reported within acceptable ranges for methods SW6020, SW6010B, and SW7417A, indicating that all results for these methods are usable without additional qualification. The SW7199 matrix spike and matrix spike duplicate (MS/MSD) sample recoveries were very low, indicating there was reductive interference in the sample matrix. All non-detect results for CrVI were rejected for use, and all detections were qualified as estimated (J-flagged) due to the reductive interference.

After a conference call with DTSC on April 13, 2017 regarding Tetra Tech's CrVI data and the results of split samples analyzed by a secondary laboratory retained by DTSC, the soil and dust samples were re-analyzed for CrVI using EPA Methods SW7199 and SW7196. The data for EPA method SW7199 were audited at a Level IV effort. The Level IV effort requires review of all applicable Quality Control (QC) sample results as it relates to the field data under review, all the raw data associated with the data analysis, and any other data contained in the Level IV data package.

Reductive matrix interference, similar to the initial sample run, was observed in the subsequent re-analysis efforts by both EPA methods (SW7199 and SW7196). Validation of the level IV data resulted in rejection of non-detect results (R-qualified) and the qualification of detected CrVI values as estimates (J-qualified), therefore the presence or absence of CrVI could only be determined in nine of the 17 soil samples and four of the six dust samples collected during the SI.

The data for CrVI from the primary sample analysis by EPA method SW7199 completed on March 7 and 8, 2017 and from the re-analysis performed outside the holding time on April 5, 2017 are presented on

Tables 1 and 2. The data set of samples analyzed by SW7196 for comparison to DTSC split sample data are included in the laboratory reports in Appendix C. The results of method SW7196 analyses were subject to the same matrix interference as the results of the analyses by SW7199, and were prepared and analyzed outside the holding time specified by the method.

Further re-analysis of samples with dilution to correct for the matrix interference may have provided data for CrVI that would have met all QC criteria, but dilution would have unacceptably elevated the detection limit to a value several times greater than the RSL for residential soil. Dilution might also have hidden the presence of CrVI in the samples where it was reported as estimated concentrations due to the very low concentrations observed in the samples.

The Tetra Tech data validator reviewed a mass balance comparison prepared by the laboratory. The laboratory compared CrVI results to concentrations of total chromium in the Level IV data review. The mass balance evaluation showed that the loss of CrVI in the MS/MSD samples was a result of the conversion of CrVI to CrIII, indicating that the reductive properties of the Site soil and dust are converting CrVI to CrIII. Therefore, significant concentrations of CrVI are not expected in the Site soil or dust.

4.0 FINDINGS

The surface soil and dust samples collected for this SI were analyzed for Title 22 metals: antimony, arsenic, barium, beryllium, cadmium, chromium (total and hexavalent), cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc. The samples were also analyzed for three additional metals: manganese, tin, and titanium.

Tetra Tech compared the soil and dust sample results to the RSL for residential soil to determine whether the concentrations of metals detected in the soil and dust samples have the potential to cause adverse health effects. Tetra Tech also compared the soil and dust sample results to statistically derived background concentrations from a data set of ten background samples collected for a similar investigation of the potential for health effects from emissions from the CFW property at 7743 Adams Street in the surrounding neighborhood conducted by ToxStrategies, Inc. in 2014 (ToxStrategies 2015).

4.1 METALS IN SOIL

Soil sampling results are summarized in Table 1 and the detections of metals greater that the RSLs or background values are shown on Figure 2. The laboratory reports are included in Appendix C. The following metals were not detected in the surface soil samples and the 1-inch to 3-inch (1-inch) soil samples: antimony, beryllium, cadmium, selenium, silver, and thallium.

Arsenic was detected in all the soil samples collected for this SI at concentrations that were greater than the method detection limit (MDL), but less than the reporting limit (RL), therefore the results are reported as estimated values (J qualified). The estimated concentrations of arsenic detected in the soil samples were between 2.23 and 3.79 mg/kg. The maximum concentration (3.79 mg/kg) was detected in the sample VPS-2-1, (collected from 1-inch to 3-inch bgs). The highest detected concentration of arsenic in surface soil (3.63 mg/kg) was also detected at this sample location. All concentrations of arsenic were greater than the 2016 RSL of 0.68 mg/kg, but were less than the upper bound background (background) value of 5.5 mg/kg calculated by ToxStrategies in the vicinity of CFW (Appendix A) and were less than the Southern California Regional background concentration of 12 mg/kg for school sites accepted by DTSC.

Barium was detected in all the soil samples collected for this SI at concentrations that ranged from 58.1 to 128 mg/kg. The maximum concentration (128 mg/kg) was observed in the both the surface and 1-inch

samples at location VPS-5. No detected concentrations of barium were greater than the RSL of 15,000 mg/kg, and none of the detected concentrations exceeded the background value of 200 mg/kg.

Total chromium was detected in all the soil samples collected for this SI at concentrations that ranged from 12.3 to 27.7 mg/kg. The maximum concentration (27.7 mg/kg) was observed in sample VPS-6-1 collected from 1-inch bgs, with the highest surface soil concentration of total chromium (23.8 mg/kg) detected in sample VPS-5-0. Total chromium was not detected in any Site soil samples at concentrations greater than the RSL of 120,000 mg/kg, and none of the detected concentrations of total chromium exceeded the background value of 64 mg/kg.

CrVI was detected in nine soil samples at estimated concentrations that ranged from 0.0670 to 0.130 mg/kg. The maximum estimated concentration (0.130 mg/kg) was detected in sample VPS-3-0. CrVI was not detected in any Site soil samples at concentrations greater than the RSL of 0.3 mg/kg. ToxStrategies did not calculate a background value for CrVI, because it was not detected in enough of the samples collected for the CFW background study (Appendix A) (ToxStrategies 2015). The MS/MSD results for CrVI indicate that the Site soils are reductive and are quickly converting CrVI to CrIII. As a result of the very low MS/MSD recoveries, the non-detect results for CrVI were rejected during the data validation process (in accordance with the National Function Guidelines). However, while the non-detect results were rejected, the MS/MSD data indicate the Site soil is reducing CrVI to CrIII, and significant concentrations of CrVI should not be expected in Site soil.

Cobalt was detected in all the soil samples collected for this SI at concentrations that ranged from 4.06 (estimated) to 8.45 mg/kg. The maximum concentration of cobalt (8.45 mg/kg) was detected in the 1-inch sample VPS-6-1, and the highest surface soil concentration of cobalt (8.02 mg/kg) was detected in sample VPS-5-0. Cobalt was not detected in any Site soil samples at concentrations greater than the RSL of 23 mg/kg, and none of the detected concentrations of cobalt exceeded the upper bound background value of 12 mg/kg.

Copper was detected in all the soil samples collected for this SI at concentrations that ranged from 12.8 to 43.2 mg/kg. The maximum detected concentration of cobalt (43.2 mg/kg) was in the 1-inch sample VPS-6-1 at 1-inch bgs. The highest surface soil concentration of copper (37.2 mg/kg) was detected in the same boring in surface sample VPS-6-0. Copper was not detected in any Site soil samples at concentrations greater than the RSL of 3,100 mg/kg, and none of the detected concentrations of copper exceeded the background value of 140 mg/kg.

Lead was detected in all the soil samples collected for this SI at concentrations that ranged from 16.4 to 115 mg/kg. The maximum concentration of lead (115 mg/kg) was detected in the surface sample VPS-2-0, and the highest 1-inch soil concentration of lead (101 mg/kg) was detected in the same boring in sample VPS-2-1. Lead was also detected in the duplicate sample collected with VPS2-0 at a concentration of 96.0 mg/kg. Lead was not detected in any Site soil samples at concentrations greater than the 2016 RSL of 400 mg/kg, and none of the detected concentrations of lead exceeded the background value of 465 mg/kg.

Manganese was detected in all the soil samples collected for this SI at concentrations that ranged from 155 to 273 mg/kg. The maximum concentration of manganese (273 mg/kg) was detected in the surface sample VPS-5-0, and the highest 1-inch soil concentration of manganese (262 mg/kg) was detected in the same boring in sample VPS-5-1. Manganese was not detected in any Site soil samples at concentrations greater than the RSL of 1,800 mg/kg, and none of the detected concentrations of manganese exceeded the background value of 340 mg/kg.

Mercury was detected in all the soil samples collected for this SI at concentrations that ranged from 0.035 to 0.155 mg/kg. The highest detected concentration of mercury (0.155 mg/kg) was in the 1-inch sample VPS-3-1. The highest surface soil concentration of mercury (0.094 mg/kg) was detected in sample VPS-6-0. Mercury was not detected in any Site soil samples at concentrations greater than the 2016 RSL of 11 mg/kg, and none of the detected concentrations of mercury exceeded the background value of 0.69 mg/kg.

Molybdenum was detected at an estimated concentration of 2.51 mg/kg in the 1-inch sample VPS-6-1. Molybdenum was not detected in the soil sample at a concentration greater than the RSL of 390 mg/kg. The detected concentration was less than the background value of 6.3 mg/kg. Molybdenum was not detected in any other soil samples.

Nickel was detected in all the soil samples collected for this SI at concentrations that ranged from 17.8 to 41.0 mg/kg. The maximum concentration of nickel (41.0 mg/kg) was detected in the 1-inch sample VPS-6-1. The highest surface soil concentration of nickel (34.6 mg/kg) was detected in the same boring in sample VPS-6-0. Nickel was not detected in any Site soil samples at concentrations greater than the 2016 RSL of 670 mg/kg, and none of the detected concentrations of nickel exceeded the background value of 65 mg/kg.

Tin was detected in all the soil samples collected for this SI at estimated concentrations that ranged from 2.50 to 4.21 mg/kg. The maximum concentration of tin (4.21 mg/kg) was detected in the surface sample VPS-8-0. The highest estimated concentration of tin in 1-inch soil (4.05 mg/kg) was detected in 1-inch sample VPS-1-1. Tin was not detected in any Site soil samples at concentrations greater than the RSL of 47,000 mg/kg. ToxStrategies did not calculate an upper bound background value for tin, because it was not detected in enough background study samples.

Titanium was detected in all the soil samples collected for this SI at concentrations that ranged from 366 to 757 mg/kg. The maximum detected concentration of titanium (757 mg/kg) was in the 1-inch sample VPS-5-1. The highest surface soil concentration of titanium (683 mg/kg) was detected in the same boring in sample VPS-5-0. The U.S. EPA has not established a 2016 RSL for titanium. None of the detected concentrations of titanium exceeded the background value of 1,002 mg/kg.

Vanadium was detected in all the soil samples collected for this SI at concentrations that ranged from 20.3 to 39.1 mg/kg. The maximum detected concentration of vanadium (39.1 mg/kg) was detected in the 1-inch sample VPS-5-1. The highest surface soil concentration of vanadium (34.8 mg/kg) was detected in the same boring in sample VPS-5-0. Vanadium was not detected in any Site soil samples at concentrations greater than the RSL of 390 mg/kg, and two of the detected concentrations of vanadium (VPS-5-0 and VPS-5-1) exceeded the background value of 33 mg/kg.

Zinc was detected in all the soil samples collected for this SI at concentrations that ranged from 53 to 154 mg/kg. The highest concentration of zinc (154 mg/kg) was detected in the surface sample VPS-6-0, and the highest 1-inch soil concentration of zinc (152 mg/kg) was detected in the same boring in sample VPS-6-1. Zinc was not detected in any Site soil samples at concentrations greater than the 2016 RSL of 23,000 mg/kg, and none of the detected concentrations of zinc exceeded the background value of 500 mg/kg.

No antimony, beryllium, cadmium, selenium, silver, or thallium were detected in surface or 1-inch soil samples collected for the Village Park SI. Except for arsenic, no metals were detected at concentrations greater than the RSLs. Arsenic concentrations (estimated between 2.23 and 3.79 mg/kg) fell below the calculated background value of 5.5 mg/kg. There is no 2016 RSL established for titanium therefore no comparison could be made with the detected concentrations. Vanadium was detected in two samples at concentrations greater than the background value of 33 mg/kg calculated by ToxStrategies in the vicinity

of CFW (34.8 and 39.1 mg/kg). No other metals were detected at concentrations greater than their respective background values. Although tin was detected at estimated concentrations in all surface and shallow 1-inch soil samples for this SI, it was not compared to a background value, because tin was not detected in enough of the samples collected for the CFW background study to calculate a background value (Appendix A) (ToxStrategies 2015).

4.2 METALS IN DUST

Dust sampling results for metals are summarized in Table 2 and detections of metals greater that the RSLs or background values are shown on Figure 2. The laboratory reports are included in Appendix C. The following metals were not detected in dust samples: antimony, beryllium, selenium, silver, and thallium.

Arsenic was detected in all of the dust samples collected for this SI at estimated concentrations between the MDR and RL, therefore the reported results are estimated values. The estimated concentrations of arsenic detected in the dust samples were between 1.52 and 4.89 mg/kg. The maximum estimated concentration (4.89 mg/kg) was detected in dust sample VPD-4. All concentrations of arsenic were greater than the 2016 RSL of 0.68 mg/kg, but were less than the background value of 5.5 mg/kg and were less than the Southern California Regional background value of 12 mg/kg for school sites accepted by DTSC.

Barium was detected in all of the dust samples collected for this SI at concentrations that ranged from 88.5 to 271 mg/kg. The maximum detected concentration of barium in dust (271 mg/kg) was in VPD-4. No concentrations of barium were greater than the RSL of 15,000 mg/kg. The concentrations of barium in samples VPD-4 and VPD-5 (271 and 252 mg/kg, respectively) exceeded the background concentration of 200 mg/kg.

Cadmium was detected in four of the dust samples and the duplicate sample at estimated concentrations that ranged from 1.07 to 1.83 mg/kg. The maximum estimated concentration of cadmium in dust (1.83 mg/kg) was detected in VPD-4. No concentrations of cadmium were greater than the 2016 RSL of 71 mg/kg. Cadmium was not detected in any of the dust samples at a concentration greater than the background value of 4.3 mg/kg.

Total chromium was detected in all of the dust samples collected for this SI at concentrations that ranged from 20.5 to 49.6 mg/kg. The maximum detected concentration (49.6 mg/kg) was in sample VPD-5. Total chromium was not detected in any Site dust samples at concentrations greater than the RSL of 120,000 mg/kg, and none of the detected concentrations of total chromium were greater than the background concentration of 64 mg/kg.

CrVI was detected in three of the dust samples and the duplicate sample at estimated concentrations that ranged from 0.052 to 0.068 mg/kg. The maximum estimated concentration (0.068 mg/kg) was detected in sample VPD-3. CrVI was not detected in any Site dust samples at concentrations greater than the RSL of 0.3 mg/kg. ToxStrategies did not calculate a background value for CrVI, because it was not detected in enough of the samples collected for the CFW background study (Appendix A) (ToxStrategies 2015). The MS/MSD results for CrVI indicate that the Site dust is reductive and is quickly converting CrVI to CrIII. As a result of the very low MS/MSD recoveries, the non-detect results for CrVI were rejected during the data validation process (in accordance with the National Function Guidelines). However, while the non-detect results were rejected, the MS/MSD data indicate the dust is reducing CrVI to CrIII, and significant concentrations of CrVI should not be expected in Site dust.

Cobalt was detected in all of the dust samples at concentrations that ranged from 8.54 to 23.8 mg/kg. The maximum detected concentration of cobalt (23.8 mg/kg) was in dust sample VPD-2. This sample result was

slightly greater than the RSL of 23 mg/kg. The concentration of cobalt detected in the duplicate sample collected from VPD-2 fell slightly below the RSL at 21.2 mg/kg. Five detections of cobalt (ranging from 13.4 to 23.8 mg/kg) exceeded the background value of 12 mg/kg.

Copper was detected in of all of the dust samples at concentrations that ranged from 67.6 to 198 mg/kg. The maximum concentration of copper (198 mg/kg) was detected in dust sample VPD-1. Copper was not detected in any Site dust samples at concentrations greater than the RSL of 3,100 mg/kg. Two of the detected concentrations of copper exceeded the background value of 140 mg/kg (198 and 193 mg/kg in samples VPD-1 and VPD-5, respectively).

Lead was detected in all of the dust samples collected for this SI at concentrations that ranged from 9.55 to 67.3 mg/kg. The maximum detected concentration of lead (67.3 mg/kg) was detected in the dust sample VPD-1. Lead was not detected in any Site dust samples at concentrations greater than the 2016 RSL of 400 mg/kg. All of the detected concentrations of lead were significantly less than the background value of 465 mg/kg.

Manganese was detected in all of the dust samples at concentrations that ranged from 72.8 to 333 mg/kg. The maximum detected concentration of manganese (333 mg/kg) was in dust sample VPD-4. Manganese was not detected in any Site dust samples at concentrations greater than the RSL of 1,800 mg/kg, and none of the detected concentrations of manganese exceeded the background concentration of 340 mg/kg.

Mercury was detected in all of the dust samples at concentrations that ranged from 0.029 to 0.095 mg/kg. The highest concentration of mercury in dust (0.095 mg/kg) was detected in dust sample VPD-4. Mercury concentrations detected in dust samples did not exceeded the 2016 RSL of 11 mg/kg. All of the detected concentrations of mercury were significantly less than the background value of 0.69 mg/kg.

Molybdenum was detected in all of the dust samples at a concentrations that ranged from 4.87 (estimated) to 16.1 mg/kg. The highest concentration of molybdenum was detected in dust sample VPD-5. Molybdenum was not detected in the dust samples at concentrations greater than the RSL of 390 mg/kg. Molybdenum concentrations exceeded the background sample of 6.3 mg/kg in all dust samples, except sample VPD-3 (4.87 mg/kg estimated).

Nickel was detected in all of the dust samples at concentrations that ranged from 47.6 to 139 mg/kg. The same maximum concentration of nickel (139 mg/kg) was detected in samples VPD-2 and VPD-5. Nickel was not detected in any Site dust samples at concentrations greater than the 2016 RSL of 670 mg/kg. Nickel concentrations exceeded the background value of 65 mg/kg in all dust samples, except sample VPD-3 (47.6 mg/kg).

Tin was detected in the dust samples at concentrations that ranged from 3.16 (estimated) to 10.7 mg/kg. The highest detected concentration of tin (10.7 mg/kg) was in dust sample VPD-1. Tin was not detected in any Site dust samples at concentrations greater than the RSL of 47,000 mg/kg. ToxStrategies did not calculate an upper bound background concentration for tin, because it was not detected in enough of the background study samples.

Titanium was detected in all of the dust samples at concentrations that ranged from 266 to 760 mg/kg. The maximum concentration of titanium (760 mg/kg) was detected in dust sample VPD-4. Titanium has not been assigned a 2016 RSL by the EPA. None of the detected concentrations of titanium exceeded the background value of 1,002 mg/kg.

Vanadium was detected in all of the dust samples at concentrations that ranged from 10.9 to 28.4 mg/kg. The maximum concentration of vanadium (28.4 mg/kg) was detected in dust sample VPD-4. Vanadium was not detected in any dust samples at concentrations greater than the RSL of 390 mg/kg, and none of the detected concentrations of vanadium exceeded the background value of 33 mg/kg.

Zinc was detected in all of the dust samples at concentrations that ranged from 10.3 to 879 mg/kg. The highest detected concentration of zinc (879 mg/kg) was in dust sample VPD-4. Zinc was not detected in any Site dust samples at concentrations greater than the 2016 RSL of 23,000 mg/kg. However, zinc concentrations were greater than the background value of 500 mg/kg in all dust samples, except VPD-2 (10.3 mg/kg) and sample VPD-2 duplicate (10.5 mg/kg).

No antimony, beryllium, selenium, silver, or thallium were detected in dust samples collected for the Village Park SI. Except for arsenic (in all samples) and cobalt (one detection), no metals were detected at concentrations greater than the RSLs. Estimated arsenic concentrations fell below the calculated background value of 5.5 mg/kg (between 1.52 and 4.89 mg/kg) but were greater than the RSL of 0.68 mg/kg. There is no 2016 RSL assigned for titanium. Barium, cobalt, copper, molybdenum, nickel, and zinc were detected in one or more dust samples at concentrations greater than their respective background values calculated by ToxStrategies in the vicinity of CFW but only one detection of cobalt (23.8 mg/kg) was greater than the RSL of 23 mg/kg. ToxStrategies did not calculate background values for selenium, silver thallium, tin and CrVI, because these metals were not detected in enough of the samples collected for the background study (Appendix A) (ToxStrategies 2015).

5.0 SUMMARY AND CONCLUSIONS

For the Village Park SI, 17 soil and six dust samples were tested for 21 metals of concern (Figure 2 and Tables 1 and 2). Antimony, beryllium, selenium, silver, and thallium were not detected any samples collected at the Site. Cadmium, total chromium, CrVI, lead, mercury, manganese, tin, and titanium were detected in soil or dust at concentrations that fell below both their respective RSLs and their respective site specific background values calculated for CFW. Barium, cobalt, copper, molybdenum, nickel, vanadium, and zinc were detected in one or more soil and dust samples at concentrations greater than their background values and of these cobalt was detected at a concentration greater than the RSL in only one dust sample (VPD-2). Arsenic was detected at concentrations less than background values, but was detected at concentrations greater than the RSL. A summary for each of these seven metals follows.

Arsenic was detected in all Site soil and dust samples at concentrations that were less than the CFW site specific background value of 5.5 mg/kg and less than the 12 mg/kg regional background value for Southern California used for evaluating arsenic exposure risk at school sites. However, these concentrations are greater than the RSL of 0.68 mg/kg. Concentrations of arsenic are only slightly greater in dust samples than observed in soil samples (10 percent higher on average).

The concentrations of barium in samples VPD-4 and VPD-5 (271 and 252 mg/kg, respectively) exceeded the background concentration for barium of 200 mg/kg. However all of the concentrations detected in dust and soil were less than one percent of the RSL (15,000 mg/kg). This suggests there is very low risk for health effects to occur from the presence of barium above background levels.

The maximum detected concentration of cobalt in dust sample VPD-2 (23.8 mg/kg) was slightly greater than the RSL of 23 mg/kg. The concentration of cobalt detected in the duplicate sample collected from VPD-2 fell slightly below the RSL (23 mg/kg) at 21.2 mg/kg. Five other detections of cobalt in dust samples (ranging from 13.4 to 23.8 mg/kg) were greater than the background value of 12 mg/kg. This

suggests cobalt is present at levels greater than would be expected for naturally occurring materials, but the maximum concentration is near the RSL and likely does not pose a significant threat to human health.

Molybdenum was detected in Site samples with a maximum dust concentration of 16.1 mg/kg. That maximum detection is nearly 95 percent less than the RSL of 390 mg/kg. This suggests there is little risk for health effects from the presence of molybdenum in dust and soil. The detected concentrations of molybdenum in all but one of the dust samples were greater than the background value of 6.3 mg/kg and molybdenum was detected at an estimated concentration below the background value in one dust sample (VPD-3) and one soil sample (VPS-6-1).

Nickel was detected in all of the samples collected for this SI with the same maximum concentration of nickel (139 mg/kg) detected in dust samples VPD-2 and VPD-5. Nickel concentrations exceeded the background value of 65 mg/kg in five of the dust samples, but in none of the soil samples. Nickel was not detected in any Site samples at concentrations greater than the 2016 RSL of 670 mg/kg. The Site maximum detection of nickel is nearly 80 percent less than the RSL, suggesting there is little risk for health effects from nickel exposure.

Vanadium was detected in the surface and 1-inch soil samples from boring VPS-5 at concentrations of 34.8 and 39.1 mg/kg, respectively. These concentrations are slightly greater than the background value of 33 mg/kg. Vanadium concentrations did not exceed the background value in any other Site samples. The maximum concentration of vanadium detected in the soil sample VPS-5-1 was nearly 90 percent less than the RSL (390 mg/kg), suggesting there is little risk for health effects from this maximum detected concentration of vanadium above the background value.

Zinc was detected in all of the samples collected for this SI at concentrations that ranged from 10.3 to 879 mg/kg. The maximum concentration of zinc (879 mg/kg) was detected in dust sample VPD-4. Zinc was not detected in any Site samples at concentrations greater than the 2016 RSL of 23,000 mg/kg. Zinc was detected at concentrations that were greater than the background value of 500 mg/kg in all but two dust samples (ranging between 581 and 879 mg/kg), but not in any soil samples. The maximum concentration of zinc (879 mg/kg) is less than four percent of the RSL, suggesting there is little risk from exposure to zinc at the maximum concentration detected at the Site.

The MS/MSD recoveries for CrVI were below 10 percent and therefore the non-detect results for CrVI were rejected during the data validation process, and sample results where CrVI was observed above the laboratory detection limit were qualified as estimated concentrations (J-qualified). The laboratory re-analyzed all of the dust and soil samples to verify the original results. The re-analyzed samples were subject to the same low MS/MSD recoveries as the original results and the sample results were similar. The findings of a Tetra Tech chemist indicated that the matrix interference could be overcome to produce acceptable non-detect sample results through dilution of the prepared sample extract, but that dilution would unacceptably elevate the detection limit significantly above the RSL for residential soil. A mass balance evaluation showed that the low MS/MSD recoveries are due to CrVI being rapidly converted to CrIII in the Site matrices. While the reductive nature of the Site matrices caused low MS/MSD recoveries that resulted in rejected non-detect data, it also indicates that significant concentrations of CrVI should not be expected at the Site as the soil and dust will quickly reduce CrVI to CrIII.

The results of metals analysis shows that, although there are concentrations of seven metals in dust and soil that are slightly above background values, these concentrations, with two exceptions, do not exceed the RSLs for residential soil. It is therefore unlikely that exposure to metals in Site soil and dust, at the concentrations observed, would result in increased risk to human health.

While arsenic uniformly exceeded the 2016 RSL for residential soil, the detected concentrations fall below both the background value of 5.5 mg/kg calculated for the Site vicinity and fall below the Southern California background level of 12 mg/kg applied to school sites throughout the region by DTSC. The single detection of cobalt in dust at 23.8 mg/kg (sample VPD-2) at a concentration slightly greater than the RSL of 23 mg/kg for residential soil does not indicate a significant increased risk to human health for park users, because the value is very close to the RSL.

6.0 RECOMMENDATIONS

Based upon the findings of this SI, Tetra Tech does not recommend further investigation of metals in dust or soil at Village Park. We request that DTSC issue the City a No Further Action decision for this Site.

7.0 DISCLAIMER

This SI Report was based partially on information supplied to Tetra Tech from outside sources and other information that is in the public domain. The conclusions and recommendations herein are based solely on the information Tetra Tech obtained in compiling the SI Report. Documentation for the statements made in the report is on file at Tetra Tech's offices in Santa Barbara, California. Tetra Tech makes no warranty as to the accuracy of statements made by others that may be contained in the SI Report, nor are any other warranties or guarantees, expressed or implied, included or intended by the report, except that it has been prepared in accordance with the current generally accepted practices and standards consistent with the level of care and skill exercised under similar circumstances by other professional consultants or firms performing the same or similar services. Because the facts forming the basis for the SI Report are subject to professional interpretation, differing conclusions could be reached. Tetra Tech does not assume responsibility for the discovery and elimination of hazards that could possibly cause accidents, injuries, or damage. Compliance with submitted recommendations or suggestions does not assure elimination of hazards or the fulfillment of client's obligation under local, state, or federal laws or any modifications or changes to such laws.

The City should recognize that special risks occur whenever engineering or related disciplines are applied to identify subsurface conditions. Even a comprehensive sampling and testing program, carefully implemented with the appropriate equipment and experienced personnel under the direction of a trained and registered professional who functions in accordance with a professional standard of care, may fail to detect certain conditions because they are hidden, and therefore cannot be considered in the development of an investigation program. The passage of time must also be considered, and the City should recognize that, due to natural occurrences or direct or indirect human intervention at the Site or at areas distant from it, actual conditions might change quickly. It should be recognized that nothing can be done to eliminate risks altogether, but certain techniques can be applied by Tetra Tech to help reduce the risks to such level as deemed tolerable by the City. In any event, the scope of services provided by Tetra Tech must be that which the City agrees to or selects in light of personal risk preferences and other considerations. None of the work performed hereunder shall constitute or be represented as a legal opinion of any kind or nature, but shall be a representation of findings of fact from records examined.

Respectfully submitted,

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FIGURES

Legend

★ Site Location

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0 0.5 1 2 Miles

Data sources: ESRI, Tetra Tech.

Village Park
Paramount, California

Site Location
Village Park

15150 Illinois Avenue
Paramount, CA 90723

TETRA TECH

5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
36771	1/25/2017	REYNOLDS	9870	1

Sample Location	VPD-1
Depth Interval (ft bgs)	Dust
Arsenic	4.13J
Barium	182
Cobalt	13.4
Copper	198
Lead	67.3
Molybdenum	10.1
Nickel	73.7
Vanadium	21.7
Zinc	644
Chromium (hexavalent)	0.067J / R

Sample Location	VPD-2
Depth Interval (ft bgs)	Dust
Arsenic	2.53J (2.63J)
Barium	176 (182)
Cobalt	23.8 (21.2)
Copper	138 (111)
Lead	24.8 (25.2)
Molybdenum	15.7 (14.6)
Nickel	139 (117)
Vanadium	19 (11.5)
Zinc	10.3 (10.5)
Chromium (hexavalent)	0.066J / R (0.052J / R)

Sample Location	VPS-2	
Depth Interval (ft bgs)	Surface	1-inch
Arsenic	3.63J (3.42J)	3.79J
Barium	112 (111)	122
Cobalt	6.73 (6.85)	6.84
Copper	30.1 (31.2)	31.6
Lead	115 (96.0)	101
Molybdenum	ND<2.50 (ND<2.50)	ND<2.50
Nickel	27.2 (28.0)	28.5
Vanadium	30.1 (32.5)	32.5
Zinc	115 (116)	120
Chromium (hexavalent)	R / R (R / R)	R / 0.0795J

Sample Location	VPS-1	
Depth Interval (ft bgs)	Surface	1-inch
Arsenic	3.19J	3.15J
Barium	105	99.4
Cobalt	6.35	6.54
Copper	25.7	26.2
Lead	46.0	53.1
Molybdenum	ND<2.50	ND<2.50
Nickel	25.2	27
Vanadium	26.4	30.1
Zinc	129	124
Chromium (hexavalent)	R / 0.0687J	R / 0.00815J

Sample Location	VPD-3
Depth Interval (ft bgs)	Dust
Arsenic	1.52J
Barium	88.5
Cobalt	8.54
Copper	67.6
Lead	9.55
Molybdenum	4.87J
Nickel	47.6
Vanadium	10.9
Zinc	581
Chromium (hexavalent)	0.068J / R

Sample Location	VPD-4
Depth Interval (ft bgs)	Dust
Arsenic	4.89J
Barium	271
Cobalt	22.3
Copper	138
Lead	41.9
Molybdenum	14.8
Nickel	126
Vanadium	28.4
Zinc	879
Chromium (hexavalent)	R / R

Sample Location	VPS-3	
Depth Interval (ft bgs)	Surface	1-inch
Arsenic	2.59J	3.03J
Barium	58.1	67.5
Cobalt	4.06J	4.54J
Copper	12.8	14.3
Lead	16.4	19.7
Molybdenum	ND<2.50	ND<2.50
Nickel	17.8	18.9
Vanadium	20.3	22.3
Zinc	53	56
Chromium (hexavalent)	R / 0.130J	R / 0.118J

Sample Location	VPS-4	
Depth Interval (ft bgs)	Surface	1-inch
Arsenic	2.39J	2.83J
Barium	78.9	97.5
Cobalt	4.60J	5.23
Copper	19.1	22
Lead	31.9	39.7
Molybdenum	ND<2.50	ND<2.50
Nickel	20.1	21.9
Vanadium	22.1	26
Zinc	90.9	101
Chromium (hexavalent)	R / 0.0670J	R / R

Sample Location	VPD-5
Depth Interval (ft bgs)	Dust
Arsenic	4.49J
Barium	252
Cobalt	22.6
Copper	193
Lead	40.4
Molybdenum	16.1
Nickel	139
Vanadium	26.8
Zinc	757
Chromium (hexavalent)	R / R

Sample Location	VPS-8	
Depth Interval (ft bgs)	Surface	1-inch
Arsenic	3.14J	3.32J
Barium	100	95
Cobalt	6.95	6.84
Copper	25	24.3
Lead	41	41.6
Molybdenum	ND<2.50	ND<2.50
Nickel	30.9	29.4
Vanadium	31.6	31.5
Zinc	109	96.1
Chromium (hexavalent)	R / R	R / R

Sample Location	VPS-5	
Depth Interval (ft bgs)	Surface	1-inch
Arsenic	3.34J	3.44J
Barium	128	128
Cobalt	8.02	7.98
Copper	29.1	29.2
Lead	52.2	53
Molybdenum	ND<2.50	ND<2.50
Nickel	32.8	36.5
Vanadium	34.8	39.1
Zinc	123	113
Chromium (hexavalent)	R / R	R / R

Sample Location	VPS-6	
Depth Interval (ft bgs)	Surface	1-inch
Arsenic	2.66J	3.30J
Barium	116	122
Cobalt	7.02	8.45
Copper	37.2	43.2
Lead	41.5	52
Molybdenum	ND<2.50	2.51J
Nickel	34.6	41.0
Vanadium	25.9	31.4
Zinc	154	152
Chromium (hexavalent)	R / 0.0570J	R / 0.118J

Sample Location	VPS-7	
Depth Interval (ft bgs)	Surface	1-inch
Arsenic	2.23J	2.25J
Barium	108	98.4
Cobalt	5.68	5.74
Copper	26.3	25.2
Lead	31.7	30.2
Molybdenum	ND<2.50	ND<2.50
Nickel	26.0	25.6
Vanadium	23.8	25.7
Zinc	119	102
Chromium (hexavalent)	R / 0.128J	R / R

Legend

Project Boundary

Sample Type

Surface Soil Sample

Dust Sample

R - The presence or absence of hexavalent chromium could not be determined due to reductive interference. The analytical result was rejected for use.
J - The value is an estimate.
/ - For hexavalent chromium values separated by / , the first value is a primary analysis and the second value is a re-analysis.

4.13 Values shown in red exceed the U.S. EPA RSL.
21.2 Values shown in green exceed the Upper Bound Background Level (ToxStrategies 2015).

0 25 50 100 Feet

Background courtesy of ESRI World Imagery Service.

Village Park
Paramount, California

Selected Metals in Soil and Dust
Village Park SI

15150 Illinois Avenue
Paramount, CA 90723

TETRA TECH
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111

TC NO.	DATE	DRAWN BY	MAP NO.	FIGURE
36771	5/31/2017	REYNOLDS	9914	2

TABLES

Table 1
Summary of Metals in Soil (mg/kg)
EPA Methods SW6020, SW6010B, SW7471A, and SW7199
Village Park SI
Paramount, California

Sample Location				**VPS-1**	**VPS-1**	**VPS-2**	**VPS-2**	**VPS-2**	**VPS-3**
Sample ID				**VPS-1-0**	**VPS-1-1**	**VPS-2-0**	**SOLID DUP 1**	**VPS-2-1**	**VPS-3-0**
Depth Interval (ft bgs)				**Surface**	**1-inch**	**Surface**	**Surface Duplicate**	**1-inch**	**Surface**
Date Collected				**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**
Metals by SW6020/7471A	**2016 RSL[1]**	**2015 RSL[2]**	**Upper Bound Background Level[3]**						
Antimony	31	31	1.04	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Arsenic	0.68[a]	0.06	5.50	**3.19J**	**3.15J**	**3.63J**	**3.42J**	**3.79J**	**2.59J**
Barium	15,000	15,000	200	**105**	**99.4**	**112**	**111**	**122**	**58.1**
Beryllium	160	15	0.29	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Cadmium	71	5	4.3	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Chromium (total)	120,000	120,000	64	**20.2**	**21.7**	**20.5**	**22.3**	**22.9**	**12.3**
Cobalt	23	23	12	**6.35**	**6.54**	**6.73**	**6.85**	**6.84**	**4.06J**
Copper	3,100	3,100	140	**25.7**	**26.2**	**30.1**	**31.2**	**31.6**	**12.8**
Lead	400	80	465	**46.0**	**53.1**	**115**	**96.0**	**101**	**16.4**
Mercury	11	9	0.69	**0.063**	**0.067**	**0.088**	**0.064**	**0.076**	**0.035**
Molybdenum	390	390	6.3	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Nickel	670	840	65	**25.2**	**27**	**27.2**	**28.0**	**28.5**	**17.8**
Selenium	390	390	b	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Silver	390	390	b	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Thallium	0.78	0.47	b	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Vanadium	390	390	33	**26.4**	**30.1**	**30.1**	**32.5**	**32.5**	**20.3**
Zinc	23,000	5,800	500	**129**	**124**	**115**	**116**	**120**	**53**
Metals by SW6010B									
Manganese	1,800	1,800	340	**223**	**215**	**223**	**221**	**227**	**155**
Tin	47,000	47,000	b	**4.06J**	**4.05J**	**3.64J**	**3.72J**	**3.77J**	**2.60J**
Titanium	NA	100,000	1002	**497**	**623**	**641**	**574**	**554**	**520**
Metals by SW7199									
Chromium (hexavalent)[4]	0.3[a]	0.3	b	R	R	R	R	R	R
Chromium (hexavalent) Re-analysis[5]	0.3[a]	0.3	b	**0.0687 J**	**0.00815 J**	R	R	**0.0795 J**	**0.130 J**

Table 1
Summary of Metals in Soil (mg/kg)
EPA Methods SW6020, SW6010B, SW7471A, and SW7199
Village Park SI
Paramount, California

Sample Location				**VPS-3**	**VPS-4**	**VPS-4**	**VPS-5**	**VPS-5**	**VPS-6**	**VPS-6**
Sample ID				**VPS-3-1**	**VPS-4-0**	**VPS-4-1**	**VPS-5-0**	**VPS-5-1**	**VPS-6-0**	**VPS-6-1**
Depth Interval (ft bgs)				**1-inch**	**Surface**	**1-inch**	**Surface**	**1-inch**	**Surface**	**1-inch**
Date Collected				**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**
Metals by SW6020/7471A	**2016 RSL[1]**	**2015 RSL[2]**	**Upper Bound Background Level[3]**							
Antimony	31	31	1.04	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Arsenic	0.68[a]	0.06	5.50	**3.03J**	**2.39J**	**2.83J**	**3.34J**	**3.44J**	**2.66J**	**3.30J**
Barium	15,000	15,000	200	**67.5**	**78.9**	**97.5**	**128**	**128**	**116**	**122**
Beryllium	160	15	0.29	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Cadmium	71	5	4.3	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Chromium (total)	120,000	120,000	64	**12.8**	**16**	**18.2**	**23.8**	**26.2**	**23.4**	**27.7**
Cobalt	23	23	12	**4.54J**	**4.60J**	**5.23**	**8.02**	**7.98**	**7.02**	**8.45**
Copper	3,100	3,100	140	**14.3**	**19.1**	**22**	**29.1**	**29.2**	**37.2**	**43.2**
Lead	400	80	465	**19.7**	**31.9**	**39.7**	**52.2**	**53**	**41.5**	**52**
Mercury	11	9	0.69	**0.155**	**0.08**	**0.056**	**0.062**	**0.068**	**0.094**	**0.091**
Molybdenum	390	390	6.3	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	**2.51J**
Nickel	670	840	65	**18.9**	**20.1**	**21.9**	**32.8**	**36.5**	**34.6**	**41.0**
Selenium	390	390	b	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Silver	390	390	b	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Thallium	0.78	0.47	b	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Vanadium	390	390	33	**22.3**	**22.1**	**26**	**34.8**	**39.1**	**25.9**	**31.4**
Zinc	23,000	5,800	500	**56**	**90.9**	**101**	**123**	**113**	**154**	**152**
Metals by SW6010B										
Manganese	1,800	1,800	340	**162**	**172**	**192**	**273**	**262**	**178**	**247**
Tin	47,000	47,000	b	**3.35J**	**2.50J**	**2.65J**	**3.96J**	**3.50J**	**3.48J**	**3.44J**
Titanium	NA	100,000	1002	**550**	**366**	**434**	**683**	**757**	**452**	**521**
Metals by SW7199										
Chromium (hexavalent)[4]	0.3[a]	0.3	b	R	R	R	R	R	R	R
Chromium (hexavalent) Re-analysis[5]	0.3[a]	0.3	b	**0.118 J**	**0.0670 J**	R	R	R	**0.0570 J**	**0.118 J**

Table 1
Summary of Metals in Soil (mg/kg)
EPA Methods SW6020, SW6010B, SW7471A, and SW7199
Village Park SI
Paramount, California

Sample Location				**VPS-7**	**VPS-7**	**VPS-8**	**VPS-8**
Sample ID				**VPS-7-0**	**VPS-7-1**	**VPS-8-0**	**VPS-8-1**
Depth Interval (ft bgs)				**Surface**	**1-inch**	**Surface**	**1-inch**
Date Collected				**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**
Metals by SW6020/7471A	**2016 RSL[1]**	**2015 RSL[2]**	**Upper Bound Background Level[3]**				
Antimony	31	31	1.04	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Arsenic	0.68[a]	0.06	5.50	**2.23J**	**2.25J**	**3.14J**	**3.32J**
Barium	15,000	15,000	200	**108**	**98.4**	**100**	**95**
Beryllium	160	15	0.29	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Cadmium	71	5	4.3	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Chromium (total)	120,000	120,000	64	**20.5**	**20.8**	**21.8**	**21.2**
Cobalt	23	23	12	**5.68**	**5.74**	**6.95**	**6.84**
Copper	3,100	3,100	140	**26.3**	**25.2**	**25**	**24.3**
Lead	400	80	465	**31.7**	**30.2**	**41**	**41.6**
Mercury	11	9	0.69	**0.068**	**0.062**	**0.058**	**0.093**
Molybdenum	390	390	6.3	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Nickel	670	840	65	**26.0**	**25.6**	**30.9**	**29.4**
Selenium	390	390	b	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Silver	390	390	b	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Thallium	0.78	0.47	b	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Vanadium	390	390	33	**23.8**	**25.7**	**31.6**	**31.5**
Zinc	23,000	5,800	500	**119**	**102**	**109**	**96.1**
Metals by SW6010B							
Manganese	1,800	1,800	340	**182**	**204**	**227**	**225**
Tin	47,000	47,000	b	**2.89J**	**3.07J**	**4.21J**	**3.75J**
Titanium	NA	100,000	1002	**377**	**395**	**599**	**602**
Metals by SW7199							
Chromium (hexavalent)[4]	0.3[a]	0.3	b	R	R	R	R
Chromium (hexavalent) Re-analysis[5]	0.3[a]	0.3	b	**0.128 J**	R	R	R

Table 1
Summary of Metals in Soil (mg/kg)
EPA Methods SW6020, SW6010B, SW7471A, and SW7199
Village Park SI
Paramount, California

Notes:

DTSC	-	California Environmental Protection Agency Department of Toxic Substances Control
EPA	-	U.S. Environmental Protection Agency.
J	-	The analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value.
mg/kg	-	milligrams per kilogram.
NA	-	Not applicable, no RSL was developed for this compound.
ND	-	not detected
OEHHA	-	California Environmental Protection Agency Office of Environmental Health Hazard Assessment
RSL	-	EPA regional screening level for residential soil (May 2016).
R	-	Rejected. The data is unusable (the compound or analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from functional guideline acceptance criteria. Either resampling or reanalysis is necessary to determine the presence or absence of the rejected analyte.
a	-	RSL for cancer risk endpoint of 10^{-06}.
b	-	The metal was not detected in enough samples to calculate a background value.
1	-	Current RSL published by U.S. EPA in May 2016.
2	-	RSLs used for comparison by ToxStrategies in March 2015 published in January 2015 from U.S. EPA, lead RSL from OEHHA 2010, arsenic, beryllium, cadmium, and titanium from DTSC (2014) HHRA Note 3 (ToxStrategies 2015).
3	-	Upper bound background levels were calculated by using U.S. EPA's ProUCL software based upon 10 background samples collected in 2014 (ToxStategies 2015).
4	-	Result for hexavalent chromium reported from analysis on March 7, 2017.
5	-	Result for hexavalent chromium reported from re-preparation and re-analysis on April 5, 2017.
	-	Values that exceeded the RSL are shaded light gold.
	-	Values that exceeded the upper bound background level are shaded light blue.

Table 2
Summary of Metals in Dust (mg/kg)
EPA Methods SW6020, SW6010B, SW7471A, and SW7199
Village Park SI
Paramount, California

Sample Location				**VPD-1**	**VPD-2**	**VPD-2**	**VPD-3**	**VPD-4**	**VPD-5**
Sample ID				**VPD-1**	**VPD-2**	**DUSTDUP1**	**VPD-3**	**VPD-4**	**VPD-5**
Depth Interval (ft bgs)				**Surface**	**Surface**	**Surface**	**Surface**	**Surface**	**Surface**
Date Collected				**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**	**2-Mar-17**
Metals by SW6020/SW7471A	**RSL[1]**	**2015 RSL[2]**	**Upper Bound Background Level[3]**						
Antimony	31	31	1.04	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Arsenic	0.68[a]	0.062	5.50	**4.13J**	**2.53J**	**2.63J**	**1.52J**	**4.89J**	**4.49J**
Barium	15,000	15,000	200	**182**	**176**	**182**	**88.5**	**271**	**252**
Beryllium	160	15.2	0.29	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Cadmium	71	4.58	4.3	**1.60J**	**1.07J**	**1.23J**	ND<1.00	**1.83J**	**1.41J**
Chromium (total)	120,000	120,000	64	**38.6**	**42.1**	**38.1**	**20.5**	**43**	**49.6**
Cobalt	23	23	12	**13.4**	**23.8**	**21.2**	**8.54**	**22.3**	**22.6**
Copper	3,100	3,100	140	**198**	**138**	**111**	**67.6**	**138**	**193**
Lead	400	80	465	**67.3**	**24.8**	**25.2**	**9.55**	**41.9**	**40.4**
Mercury	11	9.4	0.69	**0.05**	**0.07**	**0.077**	**0.047**	**0.095**	**0.029**
Molybdenum	390	390	6.3	**10.1**	**15.7**	**14.6**	**4.87J**	**14.8**	**16.1**
Nickel	670	840	65	**73.7**	**139**	**117**	**47.6**	**126**	**139**
Selenium	390	390	b	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Silver	390	390	b	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Thallium	0.78	0.47	b	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Vanadium	390	390	33	**21.7**	**19**	**11.5**	**10.9**	**28.4**	**26.8**
Zinc	23,000	5,800	500	**644**	**10.3**	**10.5**	**581**	**879**	**757**
Metals by SW6010B									
Manganese	1,800	1,800	340	**295**	**156**	**152**	**72.8**	**333**	**324**
Tin	47,000	47,000	b	**10.7**	**7.59**	**8.07**	**3.16J**	**8.1**	**7.84**
Titanium	NA	100,000	1002	**615**	**605**	**592**	**266**	**760**	**722**
Metals by SW7199									
Chromium (hexavalent)[4]	0.3[a]	0.3	b	**0.067J**	**0.066J**	**0.052J**	**0.068J**	R	R
Chromium (hexavalent) Re-analysis[5]	0.3[a]	0.3	b	R	R	R	R	R	R

Table 2
Summary of Metals in Dust (mg/kg)
EPA Methods SW6020, SW6010B, SW7471A, and SW7199
Village Park SI
Santa Maria, California

Notes:

DTSC	-	California Environmental Protection Agency Department of Toxic Substances Control
EPA	-	U.S. Environmental Protection Agency.
J	-	The analyte was positively identified and the result is usable; however, the analyte concentration is an estimated value.
mg/kg	-	milligrams per kilogram.
NA	-	Not applicable, no RSL was developed for this compound.
ND	-	not detected
OEHHA	-	California Environmental Protection Agency Office of Environmental Health Hazard Assessment
RSL	-	EPA regional screening level for residential soil (May 2016).
R	-	Rejected. The data is unusable (the compound or analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from functional guideline acceptance criteria. Either resampling or reanalysis is necessary to determine the presence or absence of the rejected analyte.
a	-	RSL for cancer risk endpoint of 10^{-06}.
b	-	The metal was not detected in enough samples to calculate a background value.
1	-	Current RSLs published by U.S. EPA in May 2016.
2	-	RSLs used for comparison by ToxStrategies in March 2015 published in January 2015 from U.S. EPA, lead RSL from OEHHA 2010, arsenic, beryllium, cadmium, and titanium from DTSC (2014) HHRA Note 3 (ToxStrategies 2015).
3	-	Upper bound background levels were calculated by using U.S. EPA's ProUCL software based upon 10 background samples collected in 2014 (ToxStategies 2015).
4	-	Result for hexavalent chromium reported from analysis on March 7, 2017.
5	-	Result for hexavalent chromium reported from re-preparation and re-analysis on April 5, 2017.
	-	Values that exceeded the RSL are shaded light gold.
	-	Values that exceeded the upper bound background level are shaded light blue.

APPENDIX A: SUMMARY RESULTS FOR SOIL AND DUST SAMPLES COLLECTED IN THE VICINTY OF CARLTON FORGE WORKS (PARTIAL REPORT)

Summary Results for Soil and Dust Samples Collected in the Vicinity of Carlton Forge Works

MARCH 31, 2015

ToxStrategies

Innovative solutions
Sound science

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ToxStrategies

Innovative solutions
Sound science

March 31, 2015

BY EMAIL AND BY U.S. MAIL

Haissam Y. Salloum, P.E.
Senior Engineer
Department of Toxic Substances Control
9211 Oakdale Avenue
Chatsworth, California 91311

Re: Summary Results for Soil and Dust Samples Collected in the Vicinity of Carlton Forge Works

Dear Haissam:

Attached is the ToxStrategies' report describing the sampling results for soil and dust samples collected in April and December 2014 in the vicinity, or on the property, of Carlton Forge Works in Paramount, California. As described in the work plan for this investigation, *in vitro* bioaccessibility testing of cobalt and nickel was conducted, and a principle component analysis (PCA) was conducted to distinguish metals potentially related to CFW emissions from natural and other anthropogenic sources in the area. Considering a screening level risk evaluation for a residential exposure scenario and the results of bioaccessibility testing and the PCA, potentially significant impacts to soil and dust related to emissions from CFW are limited to approximately one block of the facility to the east and west of the CFW Grind Building. Consistent with the air monitoring investigation we conducted in 2013 and 2014, the PCA identified the presence of other anthropogenic sources of metals in soil and dust in the area of the investigation. Finally, it is noteworthy that metals in soil and dust from samples closest to Lincoln Elementary School are not above residential health-based screen levels and have relatively low levels of metals consistent with background in the PCA.

Also, I wanted you to be aware that the new stack improvements went on-line earlier this week. This work has included raising the Grind Building baghouse stacks from 20 to 70 feet and adding HEPA filtration to the baghouses. These steps should substantially reduce the already low emissions from the facility.

Three hard copies of the report will be shipped to your attention at DTSC, and the electronic version is available at the dropbox links sent by email. Please let me know if you have any questions regarding this submittal.

Sincerely,

Deborah M. Proctor
Principal Health Scientist

Cc: Matthew Oldenkamp, Armando Bautista, and Steve Zack, CFW
Tom Wood, Stoel Rives LLP
Ann Verwiel, ToxStrategies
Clare Steedman, Iris Environmental

Summary Results for Soil and Dust Samples Collected in the Vicinity of Carlton Forge Works

MARCH 31, 2015

PREPARED FOR:
Carlton Forge Works
7743 Adams Street
Paramount, California

PREPARED BY:
ToxStrategies, Inc.
20532 El Toro Road, Suite 206
Mission Viejo, CA 92692

Deborah Proctor
Principal Health Scientist

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EXECUTIVE SUMMARY

At the request of Carlton Forge Works (CFW), ToxStrategies, Inc. (ToxStrategies) has prepared this report summarizing the results of soil and dust sampling in the vicinity of CFW, which is located at 7743 Adams Street in Paramount, California. Soil and dust samples were collected to characterize metals concentrations and to develop data that may be used to inform the evaluation of potential human health risks.

The soil and dust samples were collected in two stages.

- Stage 1: The first stage of soil and dust samples was collected in April 2014 in response to recommendations made by the Department of Toxics Substances Control (DTSC) in memoranda dated October 31, 2013 and January 21, 2014.
- Stage 2: The second stage of soil and dust samples was collected in December 2014, and sample methods and results are reported herein.

This report also presents an analysis of the bioaccessibility of cobalt and nickel in the soil and dust in samples collected near CFW. This analysis was conducted to assess the potential for metals to be solubilized and available for systemic absorption in the gut if incidentally ingested. CFW works with cobalt and nickel in very high grade stainless steel alloys, and thus it was expected that the bioaccessibility of these metals in soil and dust affected by CFW emissions would be very low, an expectation proven accurate by this testing.

Background

CFW produces seamless rolled rings and open die forgings for the aerospace, gas turbine, industrial, commercial and nuclear industries using carbon and alloy steels, aluminum, titanium, nickel, cobalt, chromium and other high-temperature metals. CFW emits some metals as a result of their grinding operations which are performed in a highly controlled environment with all exhaust air being filtered first by fabric filtration (i.e., baghouses) and, as of March 29, by High Efficiency Particulate Air (HEPA) filters as well. Metals also occur naturally in soil, which means that most metals will be detected in soil and dust regardless of nearby sources. It also should be noted that CFW is located in a mixed-use, industrial/residential area such that sources of metals other than CFW may also have contributed to concentrations of metals in soil and dust in the vicinity of CFW. Multiple plating and machining shops are in the surrounding neighborhood, as well as other forging operations using the same or similar alloys to those used by CFW.

Sample Collection and Analysis

Samples summarized herein were collected in two stages, April 2014 and December 2014.

Stage 1: Samples were collected and analyzed at eight locations for soil (B1 to B8) and twelve locations for dust (D1 and D3 to D13) in the vicinity of CFW to assess whether metal emissions have affected concentrations of metals in these media. A thirteenth dust

sample (location D2) was collected but was not analyzed because metal fragments unrelated to CFW operations were observed adjacent to the sample location. The Stage 1 samples were analyzed for metals[1], polycyclic aromatic hydrocarbons (PAHs), and hexavalent chromium.

Stage 2: To supplement the Stage 1 data, soil sampling was performed in December 2014 at 13 additional locations (B9 to B21), and dust sampling was performed at 12 additional locations (D14 to D24 and D101; Figure 1). In addition, ten local background soil samples were collected from five locations at two depths (BG1 to BG5), six dust sampling locations were resampled to assess potential effects of recent rain (D3R, D4R, D5R, D8R, D9R, and D12R), and shallow soil was resampled at the previous eight soil sample locations (B1 to B8) to analyze for hexavalent chromium because some of the Phase I results for hexavalent chromium were not considered reliable. Except for the shallow samples analyzed for hexavalent chromium[2], soil and dust samples were analyzed for CAM 17 metals[3], using EPA Methods 7470A (mercury only) and 6020B (ICP/MS; all other metals), and manganese, tin, and titanium using EPA Method 6010B.

Sixteen (16) of the soil and dust samples collected were sent to Ohio State University for testing of oral nickel and cobalt bioaccessibility in simulated gastric and intestinal fluids as proposed in the Work Plan (ToxStrategies, 2014c). These metals were selected because these metals most frequently exceeded both the residential regional screening levels (RSLs) and background concentrations during Stage 1 sampling. Samples were selected to represent the range of metals in background soil, soil from the vicinity of the site, and dust.

Lastly, Principal Components Analysis (PCA) was used to differentiate potential sources of key metals of interest in the urban area around CFW, PCA was conducted using measured surface soil and dust concentrations from samples collected in April and December 2014. The objective of this analysis is to identify key metals or combinations of metals that can be used to distinguish whether metals in soil and dust originate from CFW and/or from other natural or anthropogenic sources.

Conclusions

Concentrations of arsenic, cadmium, hexavalent chromium, cobalt, lead, and/or nickel exceeded their respective residential health-based screening or background level (if higher) in one or more soil or dust samples collected. Based on the data evaluated herein:

- Concentrations of all metals are at or below residential health-based screening levels and/or background in the samples collected across the street from Lincoln

[1] Antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, tin, titanium, vanadium, and zinc.

[2] Sample B8R was inadvertently requested to be analyzed for all metals rather than only hexavalent chromium.

[3] CAM 17 metals include: antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, mercury, nickel, selenium, silver, thallium, vanadium and zinc.

Elementary School (D20 and D101[4] in dust and B21 in soil, which is approximately 1200 feet from CFW).

- Metal concentrations measured above background or residential health-based screening levels, whichever was higher, occur primarily in the top few inches of soil or in dust.
- Arsenic, cadmium, hexavalent chromium, and lead detections above residential health-based screening levels and/or background do not appear to be related to emissions from CFW.
- The aerial extent of potential impact from CFW emissions by cobalt and nickel above residential health-based screening levels adjusted to account for bioaccessibility appears to be limited to the east (within 200 feet).
- Soil and dust to the west of CFW (about 300 to 400 feet) also appears to have higher levels of cobalt and nickel, but there appear to be additional sources of these metals to the environment west and south of CFW. For example, concentrations of nickel are higher in dust at D1 compared to D13, D14, and D15. This finding is also consistent with the ambient air monitoring data for nickel, indicating a source upwind (to the west) of CFW (ToxStrategies 2014a).
- Bioaccessibility of cobalt and nickel is an important consideration in assessing the potential for adverse health effects from these metals in soil and dust. Both are considerably less bioaccessibile (<5%) than the forms of cobalt and nickel used in the toxicity testing data underlying the health-based screening levels. Bioaccessibility-adjusted residential health-based screening levels have been calculated using these data.
- The results of the PCA analysis indicate that metal signatures consistent with CFW emissions can be distinguished from natural and anthropogenic background, and that the extent of elevated levels of metals consistent with a CFW signature is limited to approximately one block east and one block west of the facility. Further, other sources of metals can be distinguished in some samples, particularly to the west of CFW. Samples in close proximity to Lincoln Elementary School have low concentrations of metals consistent with local background.

1.0 Introduction

At the request of Carlton Forge Works (CFW), ToxStrategies, Inc. (ToxStrategies) has prepared this report summarizing the results of soil and dust sampling in the vicinity of CFW located at 7743 Adams Street in Paramount, California. Soil and dust samples were collected to characterize metals concentrations in soil and dust in the vicinity of CFW and to develop data that may be used to inform the evaluation of potential human health risks. The soil and dust samples were collected in two stages.

[4] Sample D101 contained visible paint chips from paint used on the curb and street. Paint used for these purposes contains metals including hexavalent chromium and lead and the results are affected by non-CFW sources of metals including street paint.

TABLES

Table 1. Background Soil Sample Results

Sample ID	Top Sample Depth (inches bgs)	Moisture Content (%)	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium (VI)	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Tin	Titanium	Vanadium	Zinc
BG1-1*	0	20* H	12/17/14	1.00 J-	4.3	171	0.23 J	3.1	50	< 0.4 R**	9.4	117	299	299	0.41	5.2	47	< 0.53	1.1	< 0.27	7.9 J	661	28	459
BG1-2	1	19 H	12/17/14	0.87 J-	4.9	200	0.27 J	4.3	64	< 0.4 R**	12	140	400	330	0.53	6.3	65	< 0.5	1.5	< 0.25	9.7 J	660	30	500
BG2-1	0	15 H	12/17/14	< 0.5 UJ	3.8	110	0.25 J	0.66	26	< 0.4 R**	7.7	49	120	300	0.17	1.7	23	< 0.5	< 0.25	< 0.25	< 2.5	820	30	180
BG2-2	1	15 H	12/17/14	0.5 J-	5.4	120	0.28 J	0.53	30	< 0.4 R**	9	47	90	340	0.21	1.9	24	< 0.5	< 0.25	< 0.25	< 2.5	930	33	130
BG3-1	0	19 H	12/17/14	< 0.51 UJ	3.6	110	0.25 J	0.48 J	23	< 0.4 R**	7.5	51	62	300	0.24	1.8	19	< 0.51	< 0.25	< 0.25	< 2.5	900	30	120
BG3-2	1	17 H	12/17/14	< 0.5 UJ	4.7	120	0.28 J	0.47 J	24	< 0.4 R**	8.3	48	77	320	0.33	1.8	22	< 0.5	< 0.25	< 0.25	< 2.5	810	30	120
BG4-1	0	17 H	12/17/14	< 0.5 UJ	4.0	110	0.24 J	0.27 J	21	< 0.4 R**	7.5	47	48	300	0.19	1.3	18	< 0.5	< 0.25	< 0.25	< 2.5	820	29	130
BG4-2	1	15 H	12/17/14	< 0.51 UJ	4.3	120	0.25 J	0.4 J	25	< 0.4 R**	8	53	53	320	0.68	1.9	22	< 0.51	< 0.25	< 0.25	< 2.5	880	30	140
BG5-1*	0	20* H	12/17/14	< 0.5 UJ	3.8	101	0.23 J	0.43 J	23	< 0.4 R**	7.3	54	72	304	0.3	1.9	19	< 0.5	< 0.25	< 0.25	< 2.5	800	28	152
BG5-2	1	19 H	12/17/14	< 0.51 UJ	4.0	100	0.23 J	0.36 J	21	< 0.4 R**	7.4	54	70	300	0.31	1.6	18	< 0.51	< 0.25	< 0.25	< 2.5	760	27	130
Minimum Detected Concentration				0.50	3.60	100	0.23	0.27	21	--	7.2	47	48	299	0.17	1.3	18	--	1.1	--	7.9	660	27	120
Maximum Detected Concentration				1.00	5.40	200	0.28	4.3	64	--	12	140	400	340	0.68	6.3	65	--	1.5	--	9.7	930	33	500
Upperbound Background Concentration[2]				1.04	5.5	200	0.29	4.3	64	(3)	12	140	465	340	0.69	6.3	65	(3)	(3)	(3)	(3)	1002	33	500
Residential RSLs[1]				31	0.062	15000	15.2	4.58	120000	0.3	23	3100	80	1800	9.4	390	840	390	390	0.47	47000	100000	390	23000
Industrial RSLs[1]				470	0.25	220000	183	6.37	1800000	6.3	350	47000	320	26000	40	5800	12000	5800	5800	7	700000	100000	5800	350000

Notes

1. EPA, 2015, Regional Screening Levels (January), http://www.epa.gov/region9/superfund/prg/. For arsenic, beryllium, cadmium, and titanium, these values were revised to be consistent with DTSC, 2014, HHRA Note 3. For lead, the residential and industrial screening levels were published by the Office of Environmental Health Hazard Assessment (OEHHA, 2010).
2. Area-specific background soil concentrations were calculated using EPA's ProUCL software based on the 10 area background samples and the applicable data distribution. The value presented is the 95% upper simultaneous limit (USL).
4. Insufficient number of samples with detected concentrations to statistically calculate a background concentration.

Shaded values exceed residential RSL.

Abbreviations

-- = not analyzed or not applicable
* = Metal concentrations for these samples were adjusted to account for high sample moisture. Moisture content listed reflects the moisture content used as the basis of the adjustment. Adjusted for moisture content of 20% from measured moisture content (Table 4). Moisture content is the adjusted sample moisture content. See Table 4.
< = value less than method detection limit shown
H = Sample was analyzed for moisture content beyond the specified holding time.
J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value
J- = Reported values is considered estimated and biased low based on results of matrix/matrix spike duplicate samples.
R** = Sample result rejected based on review of matrix spike/duplicate sample results that were slightly below acceptance criateria (27% to 29% compared to 30% acceptance criteria). Hexavalent chromium was not detected in any of the other soil samples collected in December 2014 so hexavalent chromium is also not likely to be in these samples.
RSL = Regional screening level
UJ = Metal was not detected in sample; reported detection limit is considered estimated based on results of matrix/matrix spike duplicate samples.

Table 2. Soil Sample Results in the Vicinity of CFW

Sample ID	Top Sample Depth (inches bgs)	Moisture Content (%)	Sample Date	Antimony	Arsenic	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium (VI)	Cobalt	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Nickel	Selenium	Silver	Thallium	Tin	Titanium	Vanadium	Zinc
B1-0-1"	0	--	04/24/14	1.9	6.1	6.1	166	0.25 J-	0.82	81.1	--	25.3	25.3	52.3	53.9	422 J-	--	14.1	168	168	0.33	0.27	0.16	3.5	1000	39.9	230 J+
B1R-1	0	12 H	12/22/14								<0.4 UJ																
B1-1-3"	1	--	04/24/14	1.4 J-	6.4	6.4	126	0.22 J-	0.53	69.8	<0.2	16.6	16.6	40	34.9	427 J-	--	15.7	130	130	0.24	0.14	0.15	2.2	1050	41.5	132 J+
B1-3-6"	3	--	04/24/14	1.1	5.5	5.5	112	0.32 J-	0.32	33.6	--	12.6	12.6	24	23.9	446 J-	--	3.9	42.5	42.5	0.11	0.11	0.15	1.2	1170	43.6	83.5 J+
B2-0-1"	0	--	04/24/14	1.3	4.6	4.6	88.3	0.16 J-	0.29	85.7	--	25.1	25.1	31.4	82.5	341 J-	--	18.3	201	201	0.079	0.11	0.11	3	1140	49.6	104 J+
B2R-1	0	11 H	12/22/14	--	--	--	--	--	--	--	<0.4 UJ	--	--	--	--	--	--	--	--	--	--	-	--	--	--	--	--
B2-1-3"	1	--	04/24/14	1.3	5.3	5.3	102	0.21 J-	0.34	129	<0.2	19.7	19.7	36.6	63.6	418 J-	--	21.6	216	216	0.063	0.042	0.12	3.5	1480	66.8	103 J+
B2-3-6"	3	--	04/24/14	0.96 B, J+	6.6	6.6	97.3	0.21 J-	0.26	136	--	51.1	51.1	32.2	56.8	364 J-	--	28.7	348	348	0.14	0.05	0.12	2.1	1040	39.8	104 J+
B2-1.0	6	--	04/24/14	1.1	7.4	7.4	89.5	0.25 J-	0.12	42.9	--	12.3	12.3	25.3	27.8	342 J-	--	9.1	93.1	93.1	R	0.035	0.13	R	1200	40.4	56.6 J+
B3-0-1"	0	--	04/24/14	1.1	6	6	148	0.3 J-	1.1	103	--	39.8	39.8	34.1	183	421 J-	--	18.4	259	259	0.29	0.13	0.2	4.1	1070	45.9	151 J+
B3R	0	14 H	12/22/14								<0.4																
B3-1-3"	1	--	04/24/14	0.97	6.8	6.8	135	0.27 J-	0.87	76.5	<0.2	27.1	27.1	32.2	153	463 J-	--	11.4	178	178	0.18	0.13	0.18	7.8	1010	41.3	128 J+
B3-3-6"	3	--	04/24/14	1.1	5.4	5.4	100	0.25 J-	0.66	58.8	--	15.6	15.6	33.3	191	429 J-	--	8.7	105	105	0.12	0.071	0.16	2.9	1050	39.9	100 J+
B4-0-1"	0	--	04/24/14	2	5.7	5.7	153	0.26 J-	0.4	190	--	74.5	74.5	46.4	41.3	503 J-	--	33.2	546	546	0.18	0.1	0.14	7	1300	47.5	166 J+
B4R	0	17 H	12/22/14	--	--	--	--	--	--	--	<0.4 UJ	--	--	--	--	--	--	--	--	--	--	-	--	--	--	--	--
B4-1-3"	1	--	04/24/14	1.5	5.1	5.1	139	0.24 J-	0.37	99.9	--	40	40	35.3	46.5	455 J-	--	17	262	262	0.13	0.083	0.13	2.7	1160	40.6	130 J+
B4-3-6"	3	--	04/24/14	1.5	6.5	6.5	147	0.28 J-	0.35	36	0.51	15.9	15.9	32.7	44.6	544 J-	--	3.5	54.7	54.7	0.11	0.078	0.14	2.2	1310	45.5	117 J+
B5-0-1"	0	--	04/24/14	2.8	3.3	3.3	85.5	0.2 J-	1.8	211	--	39.2	39.2	57	300	364 J-	--	17.9	313	313	0.12	0.13	0.15	7	921	35.6	726 J+
B5R-1	0	19 H	12/22/14								<0.4 UJ																
B5-1-3"	1	--	04/24/14	2.1	3.7	3.7	90.4	0.19 J-	2.3	119	0.51	29.5	29.5	197	503	413 J-	--	12.5	204	204	0.081	0.17	0.19	10.7	973	36.2	924 J+
B5-3-6"	3	--	04/24/14	1.8	4.4	4.4	288	0.17 J-	3.1	37.2	--	10	10	47.2	1080	416 J-	--	2.7	35.9	35.9	0.13	0.26	0.3	10.4	827	31.1	1260 J+
B5-1.0	1	--	04/24/14	1.1	3.3	3.3	87.7	0.19 J-	2.3	18.4	--	7.4	7.4	32	682	292	--	0.83	20.7	20.7	R	0.14	0.13	10.7 J+	876	29	948
B6-0-1"	0	--	04/24/14	1.9	5.8	5.8	86.4	0.18 J-	0.21	225	--	70.6	70.6	28.8	202	367 J-	--	51.2	708	708	0.089	0.056	0.15	3.6	980	35.5	104 J+
B6R-1	0	15 H	12/22/14	--	--	--	--	--	--	--	<0.4 UJ	--	--	--	--	--	--	--	--	--	--	-	--	--	--	--	--
B6-1-3"	1	--	04/24/14	2.5	6.9	6.9	91.3	0.2 J-	0.28	71.1	1.2	25	25	45.7	186	441 J-	--	10.1	174	174	0.084	0.047	0.15	7	960	34.8	120 J+
B6-3-6"	3	--	04/24/14	2.7	6.8	6.8	90.1	0.18 J-	0.23	27	--	11.1	11.1	31.7	135	412 J-	--	2.4	37.2	37.2	0.1	0.041	0.13	4.2	982	35.2	113 J+
B7-0-1"	0	--	04/24/14	0.73	4.4	4.4	111	0.2 J-	0.58	23.3	--	8.2	8.2	31.5	33.7	297 J-	--	2.2	35.1	35.1	0.17	0.096	0.14	2	594	28.5	137 J+
B7R	0	15 H	12/22/14								<0.4																
B7-1-3"	1	--	04/24/14	0.88	6.5	6.5	127	0.2 J-	0.49	37.9	<0.2	8.7	8.7	31.1	62.5	335 J-	--	1.3	34.7	34.7	0.1	0.1	0.14	1.9	771	32.4	152 J+
B7-3-6"	3	--	04/24/14	0.95	12.6	12.6	92.6	0.18 J-	0.38	22.7	--	8.4	8.4	28.5	50.3	325 J-	--	0.8	25.8	25.8	0.077	0.13	0.12	1.1	837	31.8	114 J+
B8-0-1"	0	--	04/24/14	0.77	3.9	3.9	149	0.23 J-	1.3	28	--	9.7	9.7	27.3	19.4	350 J-	--	2	44.8	44.8	0.15	0.088	0.18	1.1	1110	42.7	171 J+
B8-1-3"	1	--	04/24/14	0.7	4.2	4.2	133	0.21 J-	1.1	24.2	--	10.9	10.9	26.8	19.8	363 J-	--	1.8	35.6	35.6	0.17	0.1	0.15	0.94	906	38.8	142 J+
B8-3-6"	3	--	04/24/14	0.78 B, J+	4.4	4.4	126	0.24 J-	0.93	23.1	<0.2	8.3	8.3	24.4	23	324 J-	--	1.8	28.4	28.4	0.2	0.1	0.19	1.2	964	36.8	127 J+
B8R-1	0	0.52 H	12/19/14	0.65 J-	6.1	6.1	150	0.34	0.45 J	32	<0.4	11	11	37	60	460	0.044	3.7	58	58	<0.5	0.31 J	<0.25	<2.5	1100	41	180
B9-1	0	20	12/18/14	0.58 J-	4	4	120 J-	0.31 J-	0.48 J	22 J-	<0.4 R**	7.1 J-	7.1 J-	27 J-	44 J-	430	0.066	2.2	19 J-	19 J-	<0.5	<0.25	<0.25	3.2 J	850	33 J-	110
B9-2	1	20	12/18/14	0.69 J-	4.2	4.2	110 J-	0.31 J-	0.45 J	20 J-	<0.4 R**	7.4 J-	7.4 J-	27 J-	44 J-	310	0.041	1.3	20 J-	20 J-	<0.5	<0.25	<0.25	3.1 J	880	27 J-	110
B10-1	0	16	12/18/14	0.81 J-	3.2	3.2	140 J-	0.27 J	0.46 J	22 J-	<0.4 UJ	8.1 J-	8.1 J-	32 J-	61 J-	370	0.058	1.3	24 J-	24 J-	<0.49	<0.25	<0.25	7.2 J	980	28 J-	180
B10-2	1	15	12/18/14	<0.5 UJ	3.4	3.4	120 J-	0.25 J-	0.45 J	20 J-	<0.4 UJ	8.1 J-	8.1 J-	32 J-	61 J-	360	0.054	1.1	23 J-	23 J-	<0.5	<0.25	<0.25	8.6 J	940	29 J-	180
B11-1*	0	20*	12/18/14	<0.8 UJ	1.6	1.6	56 J-	<0.24 J-	0.5 J	29 J-	<0.7 UJ	8 J-	8 J-	28 J-	51 J-	162	<0.02	5.2	64 J-	64 J-	<0.8	<0.41	<0.41	<4.1	392	12 J-	142
B11-2	1	--	12/18/14	0.91 J-	4.5	4.5	130	0.33	0.68	58	-- [1]	13	13	41	140	360	0.12	7	93	93	<0.5	<0.25	<0.25	<2.5	930	33	180
B12-1	0	17 H	12/17/14	<0.5 UJ	3.9	3.9	110	0.2 J	0.5	170	<0.4 R**	72	72	58	72	310	0.15	40	490 ^	490 ^	<0.5	<0.25	<0.25	<2.5	690	24	130
B12-2	1	14 H	12/17/14	0.53 J-	4.5	4.5	120	0.23 J	0.56	130	<0.4 R**	53	53	60	94	350	0.14	30	360 ^	360 ^	<0.5	<0.25	<0.25	<2.5	780	27	140
B13-1*	0	20 H	12/17/14	0.64 J-	5.0	5.0	142	0.25 J	0.82	314	<0.4 R**	132	132	75	111	395	0.25	79	881 ^	881 ^	<0.52	<0.25	<0.25	2.6 J	932	31	192
B13-2	1	6.3 H	12/17/14	0.59 J-	4.8	4.8	120	0.27 J	0.78	220	<0.4 R**	97	97	43	150	370	0.13	61	640 ^	640 ^	<0.5	<0.25	<0.25	<2.5	850	31	180
B14-1*	0	20*	12/18/14	0.85 J	4.1	4.1	133	0.25 J	0.70	55	<0.4 R**	23	23	43	113	318	0.1	11	133	133	<0.52	<0.26	<0.26	<2.6	728	28	164
B14-2	1	16	12/18/14	0.74 J-	4.9	4.9	150	0.32	0.94	62	<0.4 R**	28	28	63	170	360	0.2	12	140	140	<0.51	<0.25	<0.25	<2.5	820	31	200
B15-1	0	18	12/18/14	0.54 J-	3.8	3.8	120	0.27 J	0.45 J	68	<0.4 R**	29	29	42	160	400	0.16	14	170	170	<0.5	<0.25	<0.25	<2.5	990	31	120
B15-2	1	17	12/18/14	0.65 J-	4.7	4.7	140	0.32	0.5	45	<0.4 R**	20	20	49	190	450	0.38	7.8	89	89	<0.51	<0.26	<0.26	<2.6	1100	35	120
B16-1*	0	20*	12/19/14	0.72 J-	4.5	4.5	170 J-	0.27 J	1.3	40	<0.5 UJ	13	13	46	315	390	0.081	5.0	64	64	<0.61	0.34 J	<0.3	<3	730	30	350 J+
B16-2*	1	20*	12/18/14	0.74 J-	4.7	4.7	167 J-	0.27 J	1.4	42	<0.5 UJ	13	13	47	299	380	0.090	5.1	66	66	<0.6	0.35 J	<0.3	<3	700	32	370 J+
B17-1*	0	20*	12/18/14	<0.7 UJ	2.0	2.0	86 J-	<0.22 J-	<0.36	25 J-	<0.6 UJ	9.7 J-	9.7 J-	31 J-	12 J-	189	0.20	4.1	49 J-	49 J-	<0.7	<0.36	<0.36	6.3 J	470	15 J-	130
B17-2	1	18	12/18/14	1.4 J-	4.5	4.5	91 J-	0.25 J-	0.35 J	19 J-	<0.4 UJ	8 J-	8 J-	23 J-	92 J-	290	0.18	1.9	27 J-	27 J-	<0.49	<0.25	<0.25	4 J	740	28 J-	91
B18-1*	0	20*	12/18/14	<0.6 UJ	2.0	2.0	127 J-	<0.19 J-	<0.32	24 J-	<0.5 UJ	10 J-	10 J-	23 J-	7.5 J-	220	<0.015	4.1	48 J-	48 J-	<0.6	<0.32	<0.32	3.4 J	750	25 J-	90
B18-2*	1	20*	12/18/14	<0.029	0.1	0.1	8	0.013 J	<0.014	1.3	<0.5 UJ	0.6	0.6	1.4	0.41	260	0.033	0.19	2.4	2.4	<0.029	<0.014	<0.014	3.2 J	1070	1.6	4
B19-1*	0	20*	12/18/14	0.54 J-	3.9	3.9	132 J-	0.22 J-	1.3	58 J-	<0.4 UJ	17 J-	17 J-	35 J-	152 J-	310	0.082	8	110 J-	110 J-	<0.5	0.38 J	<0.25	5.2 J	740	26 J-	182
B19-2	1	19	12/18/14	0.5 J-	4.1	4.1	130 J-	0.22 J-	1.3	54 J-	<0.4 UJ	16 J-	16 J-	35 J-	160 J-	320	0.12	7.5	100 J-	100 J-	<0.5	0.36 J	<0.25	5 J	750	25 J-	180
B-20-1	0	16	12/18/14	0.52 J	3.7	3.7	88	0.21 J	0.31 J	31	<0.4 UJ	10	10	21	49	340	0.044	2.4	41	41	<0.49	<0.25	<0.25	4.5 J	680	25	120
B-20-2	1	15	12/18/14	<0.5 UJ	3.9	3.9	99 J-	0.21 J-	0.29 J	20 J-	<0.4 UJ	8.5 J-	8.5 J-	22 J-	53 J-	330	0.1	2	31 J-	31 J-	<0.5	<0.25	<0.25	3.6 J	830	25 J-	110
B21-1	0	16	12/18/14	<0.49 UJ	3.1	3.1	92 J-	0.25 J-	0.67	18 J-	<0.4 UJ	6.1 J-	6.1 J-	17 J-	38 J-	300	0.032	1.3	18 J-	18 J-	<0.49	<0.25	<0.25	2.7 J	570	25 J-	77
B21-2	1	10	12/18/14	<0.5 UJ	3.1	3.1	84 J-	0.18 J-	0.52	16 J-	<0.4 UJ	6 J-	6 J-	16 J-	37 J-	290	0.05	0.6 J	15 J-	15 J-	<0.5	<0.25	<0.25	3.3 J	720	23 J-	71
Number of Samples				54	54	54	54	54	54	54	41	54	54	54	54	54	27	54	54	51	51	54	54	53	54	54	54
Minimum Detected				0.50	0.15	0.15	8.00	0.01	0.12	1.26	0.51	0.58	0.58	1.37	0.41	161.63	0.03	0.19	2.40	2.40	0.06	0.04	0.11	0.94	391.84	1.60	4.00
Maximum Detected				2.8	12.6	12.6	288	0.34	3.1	313.924	1.2	132	132	197	1080	544	0.38	78.9873	881	881	0.33	0.38481	0.3	10.7	1480	66.8	1260
Maximum of Background and Adjusted Residential RSL[2]				31	5.5	12 (5)	15000	16	4.3	120000	0.3	23	420 (7)	3100	465	1800	0.69	390	840	11000 (7)	390	390	0.47	47000	100000	390	23000
Residential RSLs[3]				31	0.062	--	15000	15.2	4.58	120000	0.3	23	420 (7)	3100	80	1800	9.4	390	840	40 (7)	390	390	0.47	47000	100000	390	23000
Industrial RSLs[3]				470	0.25	--	220000	183	6.37	1800000	6.3	350	5600 (7)	47000	320	26000	40	5800	12000	84000 (7)	5800	5800	7	700000	100000	5800	350000
Upperbound background concentration based on area-specific samples[4]				1.04	5.5	--	200	0.29	4.3	64	(6)	12	--	140	465	340	0.69	6.3	65	--	(6)	(6)	(6)	(6)	1002	33	500

Notes

1. Not analyzed because of insufficient sample volume.
2. Maximum value of either area-specific background or the RSL. See Table 6 for information on adjustment of the RSLs to account for bioaccessibility
3. EPA, 2015, Regional Screening Levels (January), http://www.epa.gov/region9/superfund/prg/. For arsenic, beryllium, cadmium, and titanium, these values were revised to be consistent with DTSC, 2014, HHRA Note 3. For lead, the residential and industrial screening levels were published by the Office of Environmental Health Hazard Assessment (OEHHA, 2010).
4. Area-specific background soil concentrations were calculated using EPA's ProUCL software based on the 10 area background samples and the applicable data distribution. The value presented is the 95% upper simultaneous limit (USL).
5. Southern California regional background concentraiton for arsenic.
6. Insufficient number of samples with detected concentrations to statistically calculate a background concentration.
7. Adjusted RSL to account for site-specific bioaccessibility (5.26% for cobalt and 4.73% for nickel).

Shaded values exceed residential RSL and maximum background concentration.

Shaded columns indicate an alternate evaluation of the data. For arsenic, the data was compared to Southern California background level. For nickel and cobalt, bioaccessibility was incorporated into an adjusted RSL.

Abbreviations

-- = not analyzed or not applicable
< = value less than method detection limit shown
^ = Sample result exceeded calibration limits. Quatitative results considered estimated.
* = Metal concentrations for these samples were adjusted to account for high sample moisture. Moisture content listed reflects the moisture content used as the basis of the adjustment. Adjusted for moisture content of 20% from measured moisture content (Table 4). Moisture content is the adjusted sample moisture content. See Table 4.
B = Antimony was detected in the blank sample. The reported results are consistent with nearby samples so no qualification was made.
H = Sample was analyzed for moisture content beyond the specified holding time.
J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value
J+ = Reported value is considered estimated and biased high based on results of matrix/matrix spike duplicate samples.
J- = Reported value is considered estimated and biased low based on results of matrix/matrix spike duplicate samples.
R = Sample result rejected based on quality assurance/quality control review.
R** = Sample result rejected based on review of matrix spike/duplicate sample results that were slightly below acceptance criateria (27% to 29% compared to 30% acceptance criteria). Hexavalent chromium was not detected in any of the other soil samples collected in December 2014 so hexavalent chromium is also not likely to be in these samples.
RSL = Regional screening level
UJ = Metal was not detected in sample; reported detection limit is considered estimated based on results of matrix/matrix spike duplicate samples.

Table 3. Dust Sample Results in the Vicinity of CFW

Sample ID	Moisture Content (%)	Sample Date	Antimony	Arsenic	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium (VI)	Cobalt	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Nickel	Selenium	Silver	Thallium	Tin	Titanium	Vanadium	Zinc
D1-140423	--	04/23/14	6.6	4.8	4.8	163 J+	0.15 J-	1.2	763	--	194	194	265	63.7	339	--	107 J+	1380	1380	0.2	2.1	0.072	13.3	2880	136 J+	1030
D3-140423	--	04/23/14	6.5	11.5	11.5	801 J+	0.22 J-	4.9	397	--	42.1	42.1	1080	202	1020	--	28.1 J+	423	423	1.1	4.1	0.13	13.8	862	42.4 J+	3960
D3R	1.6 H	12/22/14	4.5 J-	8.3	8.3	410	0.35	3.5	350	0.49 J	64 J-	64 J-	1700	1100	490	0.22	55	750	750	0.79 J	9.4	< 0.25	190	840	35	2500
D4-140423	--	04/23/14	1.5	4.8	4.8	127 J+	0.28 J-	0.34	36.4	--	10.4	10.4	64.4	112	461	--	1.7 J+	25	25	0.066	0.091	0.15	1.2	1140	39 J+	659
D4R	0.4 H	12/22/14	1.8 J-	5.3	5.3	130	0.25 J	0.74	32	< 0.4	9.7 J-	9.7 J-	92	110	380	0.043	4.1	33	33	< 0.5	0.59	< 0.25	6.6 J	800	32	650
D5-140423	--	04/23/14	8.8	7.1	7.1	305 J+	0.22 J-	2.1	750	--	292	292	399	144	520	--	144 J+	2050	2050	0.34	1	0.15	25.5	1090	52.7 J+	1190
D5R	1.9 H	12/22/14	2.9 J-	6.9	6.9	380	0.28 J	1.9	560	< 0.4	260 J-	260 J-	530	120	530	0.25	140	1600	1600	< 0.5	3.3	< 0.25	35	910	42	1200
D6-140423	--	04/23/14	2.1	7	7	79.9 J+	0.11 J-	0.53	216	--	82	82	121	57.4	375	--	38.9 J+	615	615	0.14	0.14	0.085	3.7	505	31.8 J+	444
D7-140423	--	04/23/14	19.4	3.3	3.3	996 J+	0.16 J-	11.9	795	--	316	316	293	86.2	220	--	185 J+	2490	2490	0.43	1.1	0.098	11.6	662	34.8 J+	1070
D8-140423	--	04/23/14	6.3	5.7	5.7	223 J+	0.22 J-	1.6	1560	--	752	752	222	84.8	466	--	362 J+	4830	4830	0.21	1.3	0.15	13	1110	59.5 J+	1040
D8R	3.8 H	12/22/14	3.2 J-	7.7	7.7	320	0.37	2.2	720	< 0.4	390 J-	390 J-	250	93	510	0.15	210	2800	2800	< 0.5	0.77	< 0.25	15	1200	67	1700
D9-140423	--	04/23/14	7.9	5.1	5.1	226 J+	0.19 J-	1.4	151	--	59.3	59.3	157	91	328	--	29.3 J+	415	415	0.5	0.41	0.14	8.7	780	35.8 J+	925
D9R	4.4 H	12/22/14	2.9 J-	6.3	6.3	300	0.29 J	2.7	140	< 0.4	63 J-	63 J-	140	150	450	0.12	39	390	390	< 0.5	0.43 J	< 0.25	12	980	40	960
D10-140423	--	04/23/14	3.4	5	5	191 J+	0.34 J-	0.91	276	--	127	127	86.9	67.4	388	--	53.2 J+	801	801	0.14	0.28	0.17	5.6	1190	45.7 J+	533
D11-140423	--	04/23/14	2	3.5	3.5	117 J+	0.13 J-	0.83	298	--	135	135	65	79.1	305	--	54.9 J+	836	836	0.16	0.18	0.11	3.8	735	35.5 J+	324
D12-140423	--	04/23/14	2	3.3	3.3	103 J+	0.099 J-	0.51	77.3	--	29.5	29.5	44.2	85.2	213	--	12.6 J+	186	186	0.08	0.13	0.1	4.4	627	25.1 J+	354
D12R	1 H	12/22/14	1.3 J-	4.6	4.6	190	0.2 J	1.1	80	< 0.4	31 J-	31 J-	52	160	310	0.16	15	190	190	< 0.49	< 0.25	< 0.25	8.2 J	690	29	530
D13-140423	--	04/23/14	7.1	4	4	180 J+	0.14 J-	5	300	--	88.5	88.5	301	67.3	410	--	39.2 J+	755	755	0.54	0.9	0.11	17.5	633	32.2 J+	1360
D14	1.6 H	12/19/14	2 J-	4.7	4.7	300	0.25 J	2	220	< 0.4 UJ	76	76	350	93	370	0.15	50	510	510	< 0.49	2.1	< 0.25	17	910	38	1100
D15	0.81 H	12/19/14	2.7 J-	5.6	5.6	360	0.29 J	3.3	230	< 0.4	78	78	290	110	410	0.7	52	540	540	< 0.5	2.4	< 0.25	14	890	41	1300
D16	5.0 H	12/19/14	1.4 J-	5.2	5.2	310	0.28 J	1.5	1100	< 0.4 UJ	580	580	190	88	420	0.091	270	4000	4000	< 0.49	1.2	< 0.25	10	970	37	910
D17	0.37 H	12/19/14	1.3 J-	5.5	5.5	170	0.24 J	1.1	1200	< 0.4	640	640	130	65	350	1.2	320	3800	3800	< 0.49	1.2	< 0.25	3.9 J	880	40	690
D18	7.9 H	12/19/14	3.1 J-	4.7	4.7	280	0.21 J	2.3	260	< 0.39 UJ	95	95	220	210	430	0.34	51	610	610	< 0.5	0.39 J	< 0.25	25	620	35	990
D19	0.41 H	12/19/14	0.89 J-	4.4	4.4	110	0.17 J	0.65	91	< 0.4	38	38	72	52	470	0.065	20	220	220	< 0.5	0.4 J	< 0.25	2.5 J	590	32	470
D20	2.7 H	12/19/14	1 J-	4.2	4.2	180	0.24 J	0.66	45	< 0.4 UJ	19	19	67	79	410	0.054	8.3	98	98	< 0.5	< 0.25	< 0.25	6.7 J	1000	32	530
D21	2.2 H	12/22/14	< 5	7	7	190	< 1.5	< 2.5	6600	< 0.4	4200 J-	4200 J-	620	40	1000	0.06	1600	22000	22000	< 5	8.4	< 2.5	27 J	3100	150	950
D22	4.1 H	12/22/14	2.5 J-	7.2	7.2	220	0.24 J	1.6	690	< 0.4	450 J-	450	260	50	460	0.069	300	3200	3200	< 0.49	0.39 J	< 0.25	16	830	67	1300
D23	2.1 H	12/22/14	1.6 J-	4.3	4.3	170	0.25 J	1.1	55	< 0.4	22 J-	22 J-	56	100	330	0.048	9.5	120	120	< 0.5	< 0.25	< 0.25	6.5 J	720	32	1100
D24	1.7 H	12/22/14	1.6 J-	4.7	4.7	260	0.25 J	4.3	100	< 0.39	41 J-	41 J-	82	320	340	0.12	20	260	260	< 0.5	0.29 J	< 0.25	11	710	31	1300
D101	0.26 H	12/19/14	0.9 J-	3.9	3.9	140	0.19 J	0.69	59	1.1	23	23	52	120	360	0.047	10	120	120	< 0.5	0.39 J	< 0.25	< 2.5	840	29	520
Number of samples			29	30	30	30	29	29	30	18	30	30	30	30	30	18	30	30	30	13	27	12	29	30	30	30
Minimum Detected			0.89	3.3	3.3	79.9	0.099	0.34	32	0.49	9.7	9.7	44.2	40	213	0.043	1.7	25	25	0.066	0.091	0.072	1.2	505	25.1	324
Maximum Detected			19.4	11.5	11.5	996	0.37	11.9	6600	1.1	4200	4200	1700	1100	1020	1.2	1600	22000	22000	1.1	9.4	0.17	190	3100	150	3960
Maximum of Background and residential RSL[1]			31	5.5	12 (4)	15000	15.2	4.58	120000	0.3	23	420 (6)	3100	465	1800	9.4	390	840	11000 (6)	390	390	0.47	47000	100000	390	23000
Residential RSLs[2]			31	0.062	--	15000	15.2	4.58	120000	0.3	23	420 (6)	3100	80	1800	9.4	390	840	11000 (6)	390	390	0.47	47000	100000	390	23000
Industrial RSLs[2]			470	0.25	--	220000	183	6.37	1800000	6.3	350	5600 (6)	47000	320	26000	40	5800	12000	84000 (6)	5800	5800	7	700000	100000	5800	350000
Upperbound background concentration based on area-specific samples[3]			1.04	5.5	--	200	0.29	4.3	64	(5)	12	--	140	465	340	0.69	6.3	65	--	(5)	(5)	(5)	(5)	1002	33	500

Notes

1. Maximum value of either background or the RSL.
2. EPA, 2015, Regional Screening Levels (January), http://www.epa.gov/region9/superfund/prg/. For arsenic, beryllium, cadmium, and titanium, these values were revised to be consistent with DTSC, 2014, HHRA Note 3. For lead, the residential and industrial screening levels were published by the Office of Environmental Health Hazard Assessment (OEHHA, 2010).
3. Area-specific background soil concentrations were calculated using EPA's ProUCL software based on the 10 area background samples and the applicable data distribution. The value presented is the 95% upper simultaneous limit (USL).
4. Southern California regional background concentration for arsenic.
5. Insufficient number of samples with detected concentrations to statistically calculate a background concentration.
6. Adjusted RSL to account for site-specific bioaccessibility (5.26% for cobalt and 4.73% for nickel).

Shaded values exceed residential RSL and maximum background concentration.

Shaded columns indicate an alternate evaluation of the data. For arsenic, the data was compared to Southern California background level. For nickel and cobalt, bioaccessibility was incorporated into an adjusted RSL.

Abbreviations

-- = not analyzed or not applicable
< = value less than method detection limit shown
H = Sample was analyzed for moisture content beyond the specified holding time.
J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value
J- = Reported value is considered estimated and biased low based on results of matrix/matrix spike duplicate samples.
J+ = Reported value is considered estimated and biased high based on results of matrix/matrix spike duplicate samples.
RSL = Regional screening level
UJ = Metal was not detected in sample; reported detection limit is considered estimated based on results of matrix/matrix spike duplicate samples.

Table 4. Soil Sample Adjustment for Moisture Content

Sample ID	Top Sample Depth (inches bgs)	Moisture Content (%)	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium (VI)	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Tin	Titanium	Vanadium	Zinc
BG1-1	0	25 H	12/17/14	0.94 J-	4.0	160	0.22 J	2.9	47	< 0.4 R**	8.8	110	280	280	0.38	4.9	44	< 0.5	1.0	< 0.25	7.4 J	620	26	430
BG1-1*	0	20 H	12/17/14	1.00 J-	4.3	171	0.23 J	3.1	50	< 0.4 R**	9.4	117	299	299	0.41	5.2	47	< 0.53	1.1	< 0.27	7.9 J	661	28	459
BG5-1	0	21 H	12/17/14	< 0.5 UJ	3.8	100	0.23 J	0.42 J	23	< 0.4 R**	7.2	53	71	300	0.3	1.9	19	< 0.5	< 0.25	< 0.25	< 2.5	790	28	150
BG5-1*	0	20 H	12/17/14	< 0.5 UJ	3.8	101	0.23 J	0.43 J	23	< 0.4 R**	7.3	54	72	304	0.3	1.9	19	< 0.5	< 0.25	< 0.25	< 2.5	800	28	152
B11-1	0	51	12/18/14	< 0.49 UJ	1	34 J-	< 0.15 J-	0.3 J	18 J-	< 0.4 UJ	5 J-	17 J-	31 J-	99	< 0.012	3.2	39 J-	< 0.49	< 0.25	< 0.25	< 2.5	240	7.4 J-	87
B11-1*	0	20	12/18/14	< 0.80 UJ	2	56 J-	< 0.24 J-	0.5	29 J-	< 0.7 UJ	8 J-	28 J-	51 J-	162	< 0.020	5.2	64 J-	< 0.80	< 0.41	< 0.41	< 4.1	392	12 J-	142
B13-1	0	21 H	12/17/14	0.63 J-	4.9	140	0.25	0.81	310	< 0.4 R**	130	74	110	390	0.25	78	870 ^	< 0.51	< 0.25	< 0.25	2.6 J	920	31	190
B13-1*	0	20 H	12/17/14	0.64 J-	5	142	0.25	0.82	314	< 0.4 R**	132	75	111	395	0.25	79	881 ^	< 0.52	< 0.25	< 0.25	2.6 J	932	31	192
B14-1	0	22	12/18/14	0.83 J-	4	130	0.24	0.68	54	< 0.4 R**	22	42	110	310	0.1	11	130	< 0.51	< 0.25	< 0.25	< 2.5	710	27	160
B14-1 *	0	20	12/18/14	0.85	4.1	133	0.25	0.70	55	< 0.4 R**	23	43	113	318	0.1	11	133	< 0.52	< 0.26	< 0.26	< 2.6	728	28	164
B16-1	0	34	12/18/14	0.59 J-	3.7	140 J-	0.22	1.1	33	< 0.4 UJ	11	38	260	320	0.067	4.1	53	< 0.5	0.28 J	< 0.25	< 2.5	600	25	290 J+
B16-1 *	0	20	12/18/14	0.72 J-	4.5	170 J-	0.27	1.3	40	< 0.5 UJ	13	46	315	390	0.081	5.0	64	< 0.61	0.34 J	< 0.30	< 3.0	730	30	350 J+
B16-2	1	33	12/18/14	0.62 J-	3.9	140 J-	0.23	1.2	35	< 0.4 UJ	11	39	250	320	0.075	4.3	55	< 0.5	0.29 J	< 0.25	< 2.5	590	27	310 J+
B16-2 *	1	20	12/18/14	0.74 J-	4.7	167 J-	0.27	1.4	42	< 0.5 UJ	13	47	299	380	0.090	5.1	66	< 0.6	0.35 J	< 0.30	< 3.0	700	32	370 J+
B17-1	0	45	12/18/14	< 0.5 UJ	1.4	59 J-	< 0.15 J-	< 0.25	17 J-	< 0.4 UJ	6.7 J-	21 J-	8 J-	130	0.14	2.8	34 J-	< 0.5	< 0.25	< 0.25	4.3 J	320	10 J-	86
B17-1 *	0	20	12/18/14	< 0.7 UJ	2.0	86 J-	< 0.22 J-	< 0.36	25 J-	< 0.6 UJ	9.7 J-	31 J-	12 J-	189	0.20	4.1	49 J-	< 0.7	< 0.36	< 0.36	6.3 J	470	15 J-	130
B18-1	0	37	12/18/14	< 0.5 UJ	1.6	100 J-	< 0.15 J-	< 0.25	19 J-	< 0.4 UJ	8 J-	18 J-	5.9 J-	170	< 0.012	3.2	38 J-	< 0.5	< 0.25	< 0.25	2.7 J	590	20 J-	70
B18-1 *	0	20	12/18/14	< 0.6 UJ	2.0	127 J-	< 0.19 J-	< 0.32	24 J-	< 0.5 UJ	10 J-	23 J-	7.5 J-	220	< 0.015	4.1	48 J-	< 0.6	< 0.32	< 0.32	3.4 J	750	25 J-	90
B18-2	1	30	12/18/14	< 0.025	0.1	7	0.011	< 0.012	1.1	< 0.4 UJ	0.5	1.2	0.36	230	0.029	0.17	2.1	< 0.025	< 0.012	< 0.012	2.8 J	940	1.4	3.5
B18-2 *	1	20	12/18/14	< 0.029	0.1	8	0.013	< 0.014	1.3	< 0.5 UJ	0.6	1.4	0.41	260	0.033	0.19	2.4	< 0.029	< 0.014	< 0.014	3.2	1070	1.6	4
B19-1	0	21	12/18/14	0.53 J-	3.9	130 J-	0.22 J-	1.3	57 J-	< 0.4 UJ	17 J-	35 J-	150 J-	310	0.081	8	110 J-	< 0.5	0.38 J	< 0.25	5.1 J	730	26 J-	180
B19-1 *	0	20	12/18/14	0.54 J-	3.9	132 J-	0.22 J-	1.3	58 J-	< 0.4 UJ	17 J-	35 J-	152 J-	310	0.082	8	110 J-	< 0.5	0.38 J	< 0.25	5.2 J	740	26 J-	182
Maximum of Background and residential RSL[1]				31	12	15000	16	4	120000	0.3	23	3100	318	1800	0.69	390	840	390	390	0.47	47000	100000	390	23000

Notes

1. Maximum value of either area-specific background or the RSL.

Shaded values show those locations exceeding the maximum of site-specific background soil concentrations or the residential regional screening level.

Abbreviations

< = value less than method detection limit shown

^ = Sample result exceeded calibration limits. Quatitative results considered estimated.

* Adjusted to moisture content of 20% from measured moisture content using {adjusted concentration} = {measured concentration}*(100/(100-{measured moisture content})*((100-20)/100))

J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value

J+ = Reported values is considered estimated and biased high based on results of matrix/matrix spike duplicate samples.

J- = Reported values is considered estimated and biased low based on results of matrix/matrix spike duplicate samples.

H = Sample was analyzed for moisture content beyond the specified holding time.

R** = Sample result rejected based on review of matrix spike/duplicate sample results that were slightly below acceptance criateria (27% to 29% compared to 30% acceptance criteria)

RSL = Regional screening level

UJ = Metal was not detected in sample; reported detection limit is considered estimated based on results of matrix/matrix spike duplicate samples.

Table 5. Non-cancer Regional Screening Levels Adjusted for Bioaccessibility

Scenario	Metal	Ingestion Pathway RSL[1] (mg/kg)	Inhalation Pathway RSL [1] (mg/kg)	RSL [1] (mg/kg)	Maximum Oral Bioaccessibility (%)	Adjusted RSL[2,3] (mg/kg)
Residential	Cobalt	23	8,500	23	5.26%	420
	Nickel	860	28,000	840 [3]	4.73%	11,000
Industrial	Cobalt	350	36,000	350	5.26%	5,600
	Nickel	13,000	120,000	12,000	4.73%	84,000

Notes

1. EPA, 2014, Regional Screening Levels (November), http://www.epa.gov/region9/superfund/prg/.
2. Adjusted RSL = 1/(1/((Ing RSL*Max Oral Bio)+(1/Inh RSL)))

Where: Ing RSL = Ingestion pathway RSL
Inh RSL = Inhalation Pathway RSL
Max Oral Bio = maximum oral bioaccessibility
(EPA does not consider the dermal pathway to be significant.)

3. The RSL presented is based on the value posted on EPA's website. However, strictly using the inhalation and oral screening levels presented by EPA yeilds an RSL of 834 mg/kg, which would round to 830 mg/kg instead of 840 mg/kg. This small difference is likely the result of rounding the inhalation- or ingestion-based screening levels.

the

Abbreviations

mg/kg = milligrams per kilogram
RSL = Regional screening level for residential site use

Table 6. Summary of Bioaccessibility Results

Sample label	Lab ID	Total Metals (mg/kg)		Gastric Extraction (mg/kg)		Intestinal Extraction (mg/kg)		Gastraic Extaction (%)		Intestinal Extraction (%)	
		Cobalt	Nickel	Cobalt	Nickel	Cobalt	Nickel	Cobalt	Nickel	Cobalt	Nickel
BG1-2	TS_5	15.6	63.8	<6	7.9	<6	7.4	<39	12.4	<39	11.7
BG2-2	TS_9	11.2	19.8	<6	<6	<6	<6	<54	<30	<54	<30
BG3-2	TS_2	14	22.7	<6	<6	<6	<6	<43	<26	<43	<26
BG4-1	TS_3	12.6	21.7	<6	<6	<6	<6	<48	<28	<48	<28
BG5-1	TS_4	11.8	20.3	<6	<6	<6	<6	<51	<30	<51	<30
Minimum								--	--	--	--
Maximum								--	12.4	--	11.7
B12-1	TS_6	110	780	<6	10.6	<6	11	<5	1.36	<5	1.41
B13-1	TS_7	185	1,258	<6	20.6	<6	19.7	<3	1.64	<3	1.57
B13-2	TS_8	124	795	<6	18.2	<6	17.9	<5	2.29	<5	2.25
B14-1	TS_10	32.1	184	<6	7.2	<6	6.5	<19	3.93	<19	3.52
B15-1	TS_1	28.5	124	<6	<6	<6	<6	<21	<5	<21	<5
B19-1	TS_11	28.4	173	<6	9.1	<6	8.2	<21	5.26	<21	4.73
Minimum								--	1.36	--	1.41
Maximum								--	5.26	--	4.73
D16	TS_12	755	5,042	13.2	52.4	12.3	54	1.75	1.04	1.63	1.07
D21	TS_15	4503	24,258	44.2	247	49.1	294	0.98	1.02	1.09	1.21
D24	TS_14	44.6	299	<6	6.9	<6	7.1	<13	2.31	<13	2.39
D3R	TS_16	67.1	891	<6	33.5	<6	39.3	<9	3.76	<9	4.41
D8R	TS_13	461	3,044	14.2	84.1	12.6	76.8	3.09	2.76	2.74	2.52
Minimum [1]								0.98	1.02	1.09	1.07
Maximum [1]								3.09	3.76	2.74	4.41

Note

1. Minimum and maximum only include detected values.

Abbreviations

< = value less than method detection limit

mg/kg= milligrams per kilogram

Shaded values applied to regional screening levels to adjust for site-specific bioaccessibility.

TABLE 7. Comparison of Dust Sampling Results from Stage 1 and Stage 2 Sampling

Sample ID	Moisture Content (%)	Sample Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Chromium (VI)	Cobalt	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Tin	Titanium	Vanadium	Zinc	Range of Ratios		Ratios > 1	Ratios < 1
D3-140423	--	04/23/14	6.5	11.5	801 J+	0.22 J-	4.9	397	--	42.1	1080	202	1020	--	28.1 J+	423	1.1	4.1	0.13	13.8	862	42.4 J+	3960				
D3R	1.6	12/22/14	4.5 J-	8.3	410	0.35	3.5	350	0.49 J	64 J-	1700	1100	490	0.22	55	750	0.79 J	9.4	< 0.25	190	840	35	2500				
Ratio of D3R to D3			**0.69**	**0.72**	**0.51**	**1.59**	**0.71**	**0.88**	**--**	**1.52**	**1.57**	**5.45**	**0.48**	**--**	**1.96**	**1.77**	**0.72**	**2.29**	**--**	**13.77**	**0.97**	**0.83**	**0.63**	**0.48**	**13.77**	**8**	**10**
D4-140423	--	04/23/14	1.5	4.8	127 J+	0.28 J-	0.34	36.4	--	10.4	64.4	112	461	--	1.7 J+	25	0.066	0.091	0.15	1.2	1140	39 J+	659				
D4R	0.4	12/22/14	1.8 J-	5.3	130	0.25 J	0.74	32	< 0.4	9.7 J-	92	110	380	0.043	4.1	33	< 0.5	0.59	< 0.25	6.6 J	800	32	650				
Ratio of D4R to D4			**1.20**	**1.10**	**1.02**	**0.89**	**2.18**	**0.88**	**--**	**0.93**	**1.43**	**0.98**	**0.82**	**--**	**2.41**	**1.32**	**--**	**6.48**	**--**	**5.50**	**0.70**	**0.82**	**0.99**	**0.70**	**6.48**	**9**	**8**
D5-140423	--	04/23/14	8.8	7.1	305 J+	0.22 J-	2.1	750	--	292	399	144	520	--	144 J+	2050	0.34	1	0.15	25.5	1090	52.7 J+	1190				
D5R	1.9	12/22/14	2.9 J-	6.9	380	0.28 J	1.9	560	< 0.4	260 J-	530	120	530	0.25	140	1600	< 0.5	3.3	< 0.25	35	910	42	1200				
Ratio of D5R to D5			**0.33**	**0.97**	**1.25**	**1.27**	**0.90**	**0.75**	**--**	**0.89**	**1.33**	**0.83**	**1.02**	**--**	**0.97**	**0.78**	**--**	**3.30**	**--**	**1.37**	**0.83**	**0.80**	**1.01**	**0.33**	**3.30**	**7**	**10**
D8-140423	--	04/23/14	6.3	5.7	223 J+	0.22 J-	1.6	1560	--	752	222	84.8	466	--	362 J+	4830	0.21	1.3	0.15	13	1110	59.5 J+	1040				
D8R	3.8	12/22/14	3.2 J-	7.7	320	0.37	2.2	720	< 0.4	390 J-	250	93	510	0.15	210	2800	< 0.5	0.77	< 0.25	15	1200	67	1700				
Ratio of D8R to D8			**0.51**	**1.35**	**1.43**	**1.68**	**1.38**	**0.46**	**--**	**0.52**	**1.13**	**1.10**	**1.09**	**--**	**0.58**	**0.58**	**--**	**0.59**	**--**	**1.15**	**1.08**	**1.13**	**1.63**	**0.46**	**1.68**	**11**	**6**
D9-140423	--	04/23/14	7.9	5.1	226 J+	0.19 J-	1.4	151	--	59.3	157	91	328	--	29.3 J+	415	0.5	0.41	0.14	8.7	780	35.8 J+	925				
D9R	4.4	12/22/14	2.9 J-	6.3	300	0.29 J	2.7	140	< 0.4	63 J-	140	150	450	0.12	39	390	< 0.5	0.43 J	< 0.25	12	980	40	960				
Ratio of D9R to D9			**0.37**	**1.24**	**1.33**	**1.53**	**1.93**	**0.93**	**--**	**1.06**	**0.89**	**1.65**	**1.37**	**--**	**1.33**	**0.94**	**--**	**1.05**	**--**	**1.38**	**1.26**	**1.12**	**1.04**	**0.37**	**1.93**	**13**	**4**
D12-140423	--	04/23/14	2	3.3	103 J+	0.099 J-	0.51	77.3	--	29.5	44.2	85.2	213	--	12.6 J+	186	0.08	0.13	0.1	4.4	627	25.1 J+	354				
D12R	1	12/22/14	1.3 J-	4.6	190	0.2 J	1.1	80	< 0.4	31 J-	52	160	310	0.16	15	190	< 0.49	< 0.25	< 0.25	8.2 J	690	29	530				
Ratio of D12R to D12			**0.65**	**1.39**	**1.84**	**2.02**	**2.16**	**1.03**	**--**	**1.05**	**1.18**	**1.88**	**1.46**	**--**	**1.19**	**1.02**	**--**	**--**	**--**	**1.86**	**1.10**	**1.16**	**1.50**	**0.65**	**2.16**	**15**	**1**

Abbreviations

-- = not analyzed

< = value less than method detection limit shown

J = Result is less than the reporting limit but greater than or equal to the method detection limit and the concentration is an approximate value

J- = Reported values is considered estimated and biased low based on results of matrix/matrix spike duplicate samples.

J+ = Reported values is considered estimated and biased high based on results of matrix/matrix spike duplicate samples.

Table 8 is presented in the text in Section 5.0

FIGURES

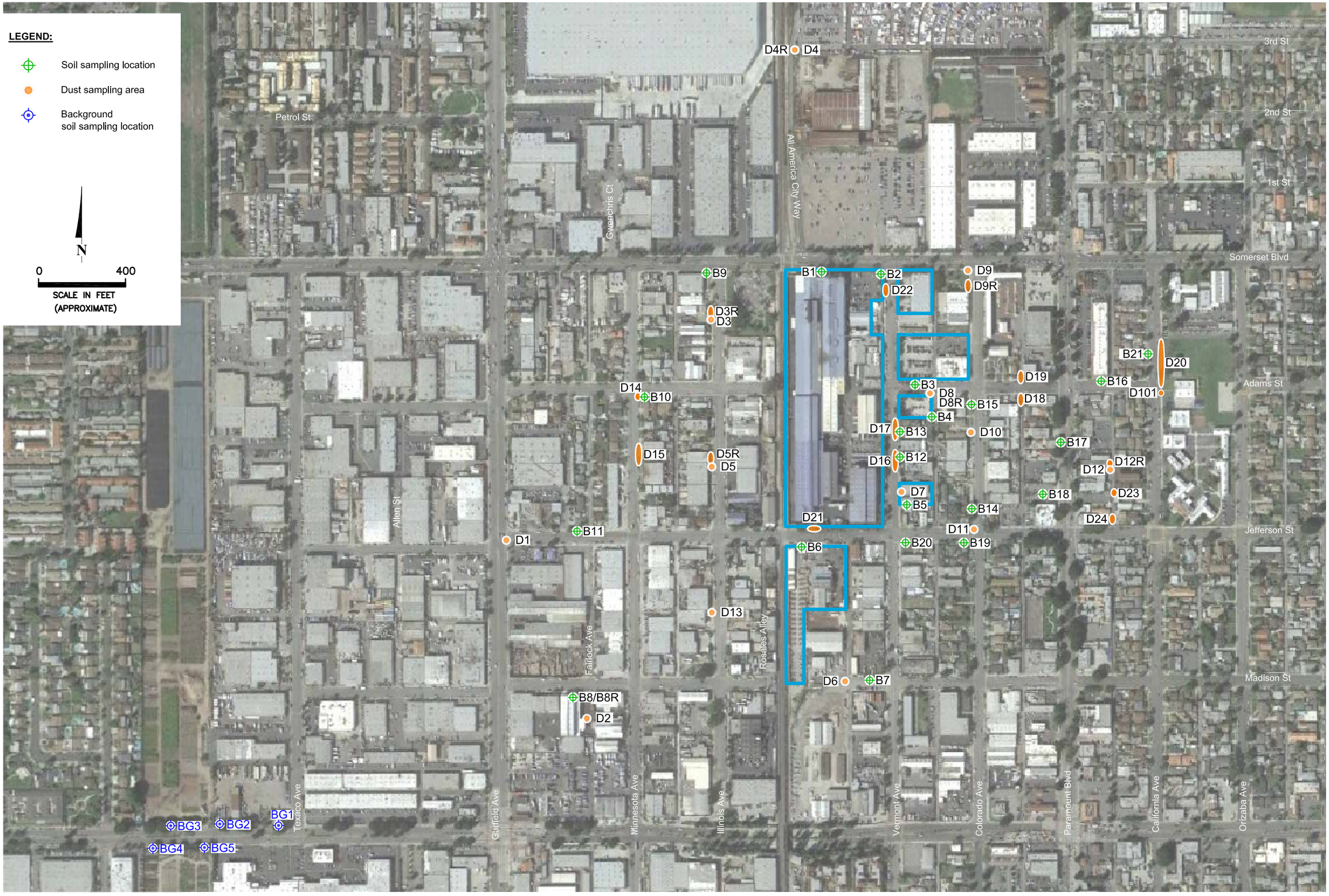

Figure 1 Soil and Dust Sample Locations

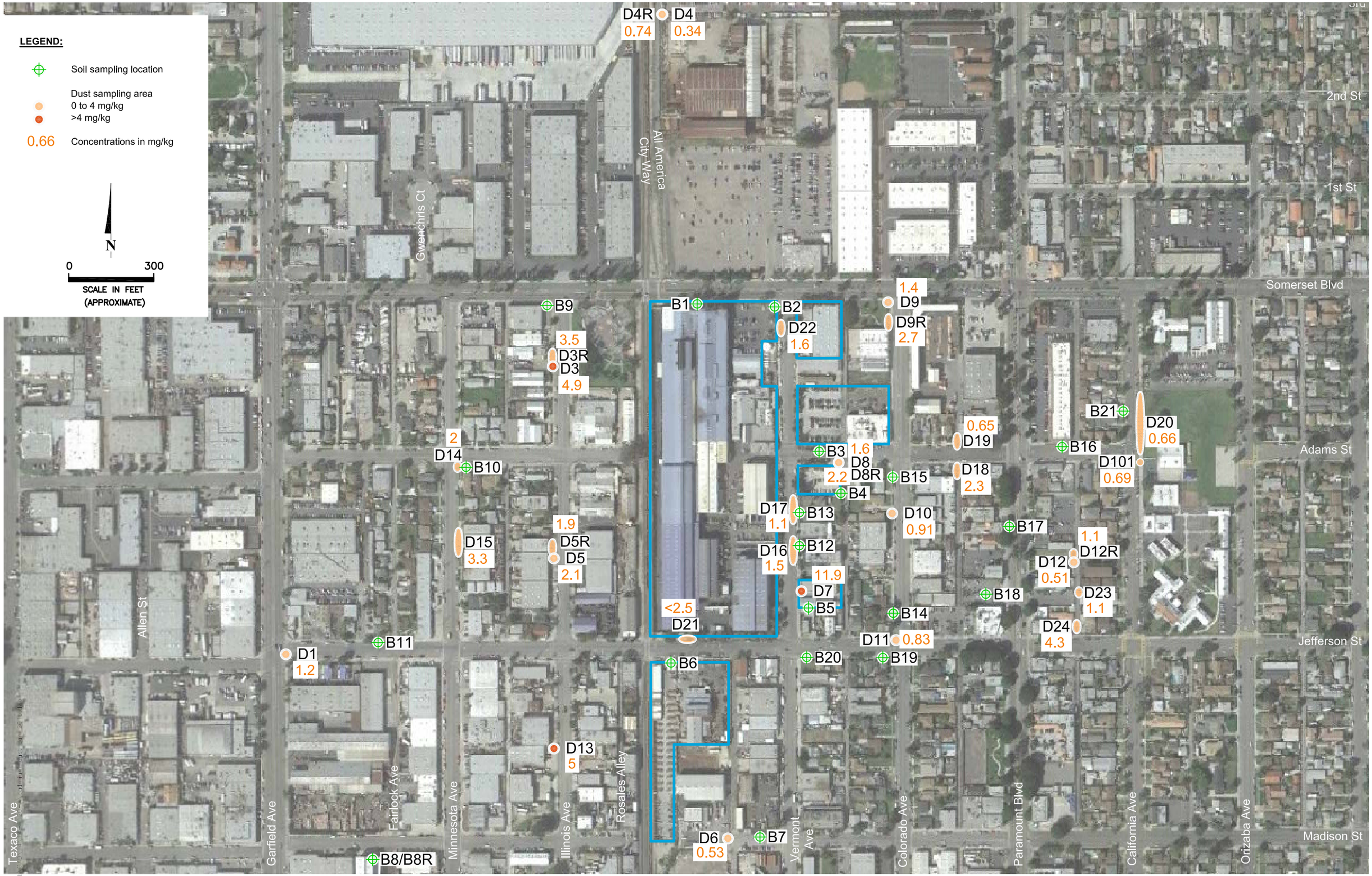

Figure 6 Cadmium Concentrations in Dust Sample Areas Compared to Health-Based Screening Levels (CFW Properties Outlined and Dust Concentrations Posted)

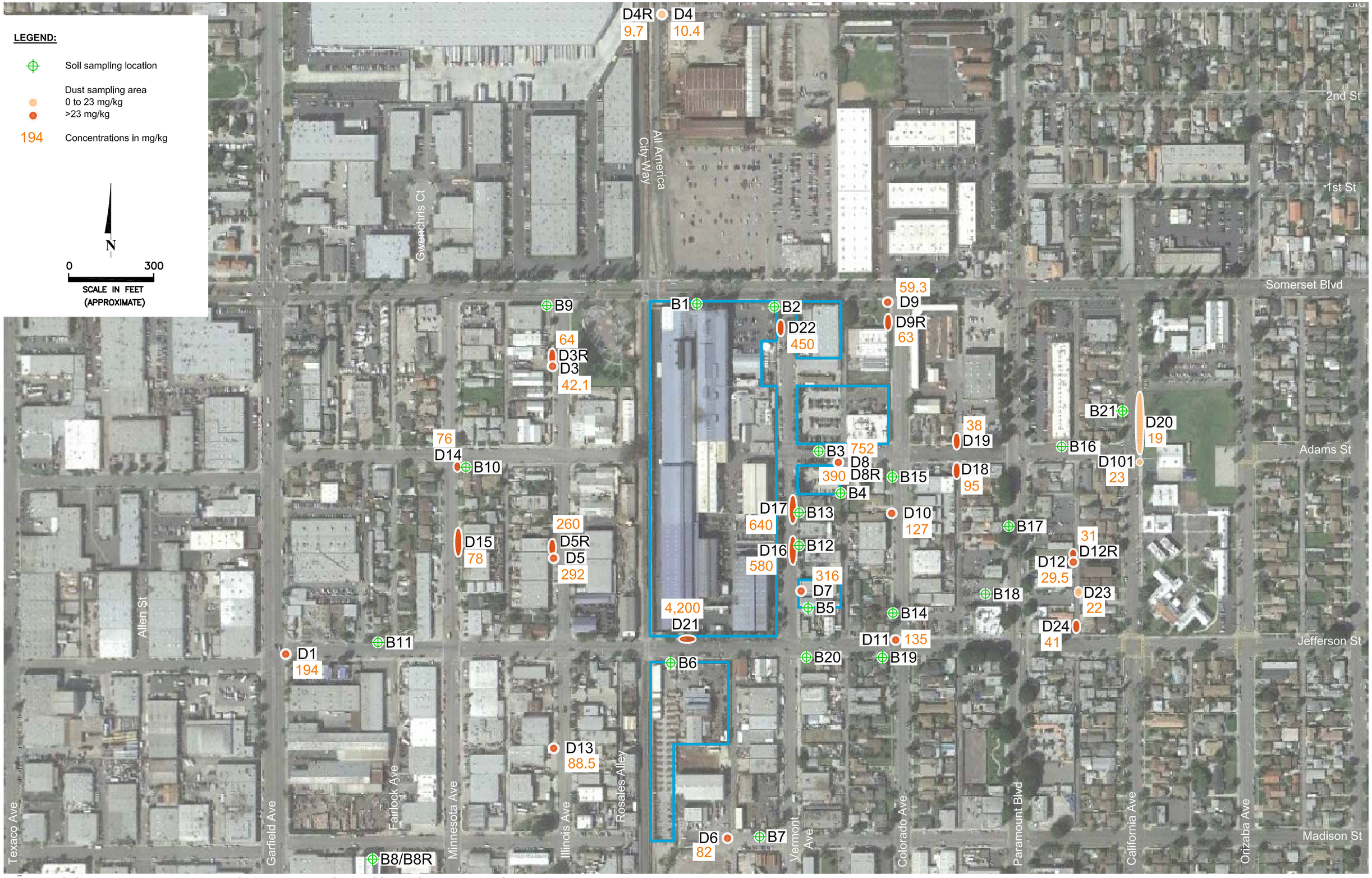

Figure 8 Cobalt Concentrations in Dust Sample Areas Compared to Health-Based Screening Levels (CFW Properties Outlined and Dust Concentrations Posted)

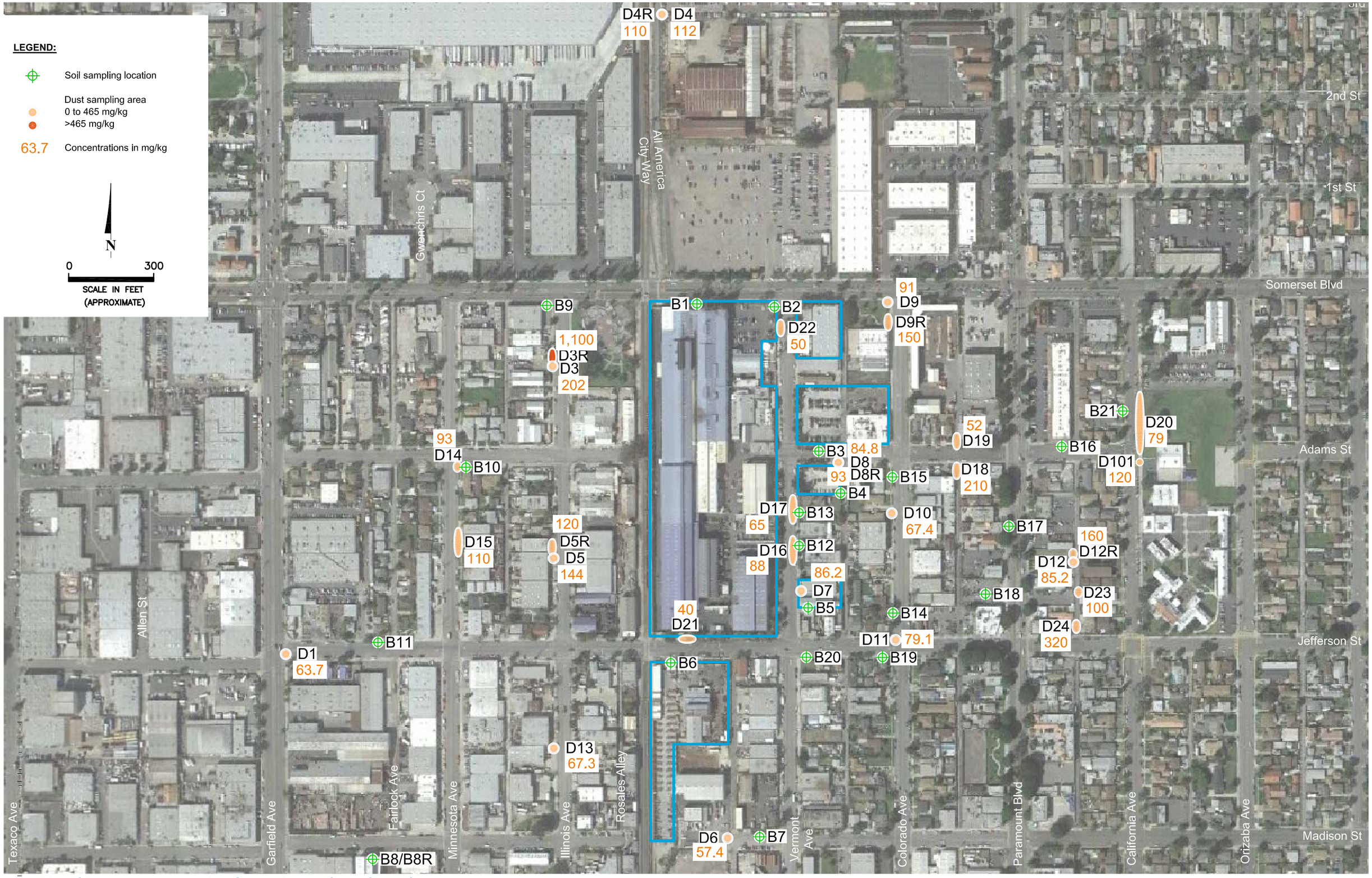

Figure 10 Lead Concentrations in Dust Sample Areas Compared to Background (CFW Properties Outlined and Dust Concentrations Posted)

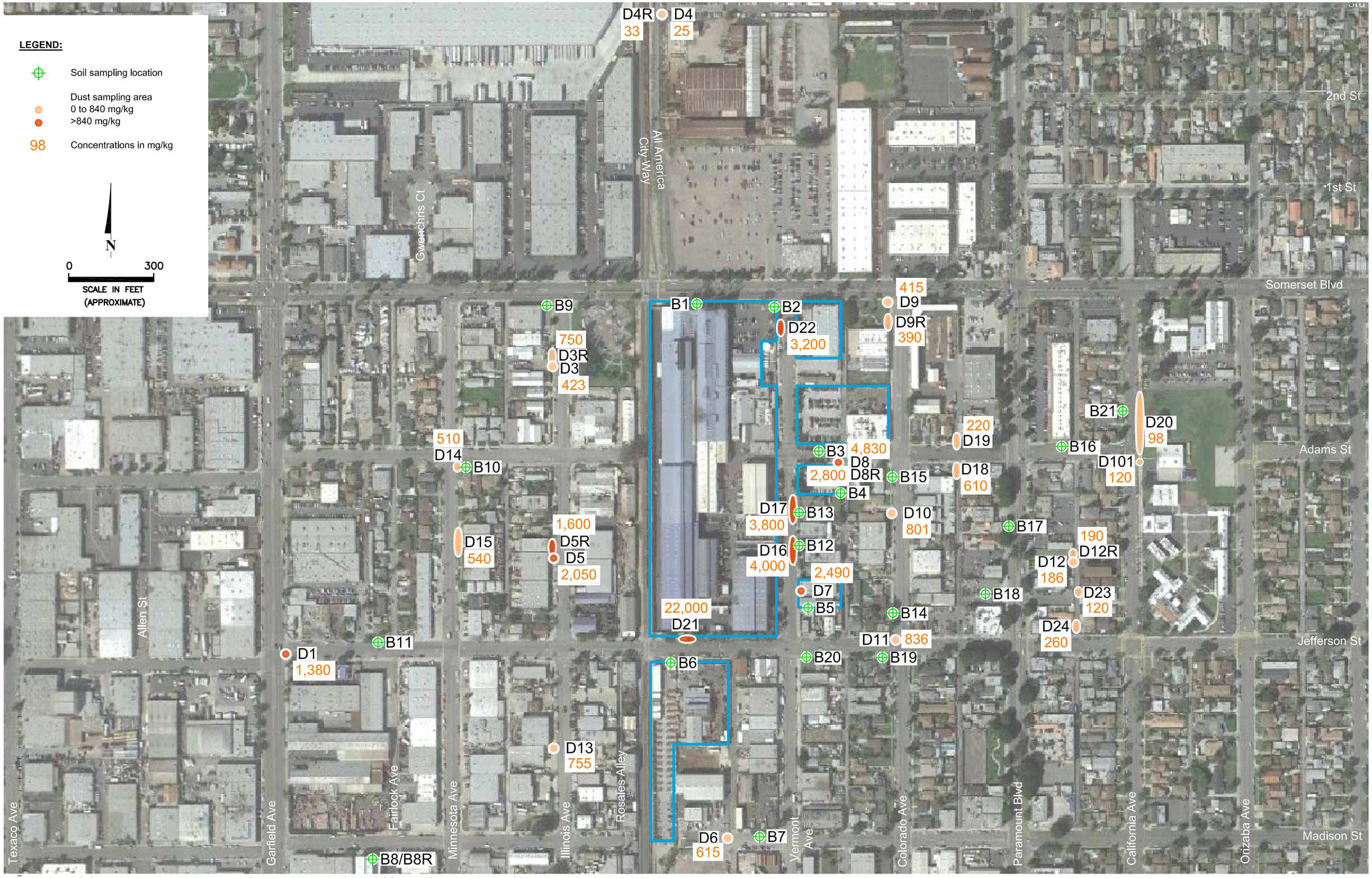

Figure 12 Nickel Concentrations in Dust Sample Areas Compared to Health-Based Screening Levels (CFW Properties Outlined and Dust Concentrations Posted)

APPENDIX B: FIELD NOTES, BORING LOGS, AND CHAINS OF CUSTODY

TETRA TECH, Inc.

REPORT OF FIELD OBSERVATIONS

Job No.: 100-SBA-T36771-02	Date: 3/2/17	M	T	W	(T)	F	S	S
Client: City of Paramount	Project: Village Park SI							
Location: 15150 Illinois Ave	Weather: Clear, Sunny, Cool							
Observer: Steve Dolan	Observation Period: Start: 0725 Stop: 1500							

Observations: 0785 Arrive on Site Meet Randy Westhaus (TE)
0735 Conduct tailgate Safety briefing.
0740 Mark Surface Soil Sample Locations + Photograph them.
0800 Else Lopez DTSC on Site to post public Notice
Give her tailgate Safety briefing
0820 Move truck into Park to vicinity of Sample locations
VPD-1, VPD-2, and VPD-3
0845 begin collecting VPD-1 from 3'x10' section
of Sidewalk.
0855 Extend Sample area to 3'x15' due to low
initial recovery.
0900 Andy (DTSC) on site. Randy Westhaus meets
and conducts tailgate meeting.
0915 End Sampling VPD-1 filter weight greater than 150g
Scale range.
0920 Decon Vacuum using clean filter and dry wipe
of brush bar and bag housing
0945 Collect VPD-2 from 6'x5' Area.
0955 4 grams picked up - extend area and continue
1010 Extend To total of 30' x 6'
1020 Sample final weight of 105.2gr. (bag included
1030 decon Vacuum, discuss split Samples
with DTSC Representatives we will collect
dust splits at locations 3, 4, and 5
and will have the laboratory conduct the
split after homogenization of dust

Mileage:

Copy sent to Client: Y (N) | Continued on Next Page | Page 1 of 2

TETRA TECH, Inc.

REPORT OF FIELD OBSERVATIONS

Job No.: 100-SBA-T36771-02	Date: 3/2/17	M	T	W	(T)	F	S	S
Client: City of Paramount	Project: Village Park SI							
Location: Village Park SI	Weather: Clear, Sunny, cool							
Observer: Steve Dodson	Observation Period: Start: 0725 Stop: 1500							

Observations: ~~begi~~ 1100 begin collecting ~~sp~~ duplicate sample at VPD-2 listed w/ 1200 sample time on COC
1125 Decon Vacuum
1140 Move truck to ~~stop~~ nearby sample location VPD-3 PTSC has requested a split sample at this location so we will collect a bay weight of > 150 grams
1155 Begin collecting split sample VPD-3 from 20 x 10 taper off Area, Extend area east to terrain park wall
~1220 Randy westhaus leaves site
1225 Sample volume at >~~10~~150 grams should be enough for split sample
1235 decon vacuum
1255 Move truck to sample location VPD-4
1305 begin collecting sample VPD-4 for splitting with DTSC, will collect over 150gr
~1330 DTSC PM and Geo leave site
1350 Sample VPD-4 at >150 gr. Volume End sampling and decon vacuum.
1415 Begin collecting sample VPD-5
1430 End sampling, decon equipment
1445 Leave site to drop off decon water with Richard Sammers at City of Paramount Public Works department
1500 Water left with Richard for disposal with other city generated Non-haz wastes. End log

Mileage:

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TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. VPS-1
Location: Village Park Paramount, CA
Northing: Easting:

Date Started: 3/2/17	Completed: 3/2/17	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: T. Morse	Checked By: S. Dodson 26 8052	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: T. Morse		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: slide Hammer		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Splitspoon w/ SS sleeve		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 0.4'	TOC Elevation: ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	surface: Turf								
0.4'	Silt with sand - dark Brown 10YR 3/3, 90% silt, 10% very fine grained sand, moist, low plasticity, soft, trace rootlets & mica 3/4" subround gravel @ 0.4' bgs	ML					100		VPS-1-0 (0-1") 0900 VPS-1-1 (1-3") 0905
5	• Drove sampler to 6" bgs, sample collected from top half • DTSC collected split sample from (0-1" bgs) VPS-1-0-SP								
10									
15									
20									

ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. VPS-2
Location: Village Park Paramount, CA
Northing: Easting:

Date Started: 3/2/17	Completed: 3/2/17	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: T. Morse	Checked By: S. Dolson PG 8052	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: T. Morse		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Slide Hammer		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Splitspoon & SS sleeve		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 0.4'	TOC Elevation: ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Surface: Turf								
0.4'	Silt with Sand - Dark Brown 10YR 3/3. 90% Silt, 10% very fine grained Sand. Moist, Low Plasticity. Soft. Lots of Roots from turf	ML					100		VPS-2-0 (0-1") 0925; ~~VPS~~ SoilDup1 (0-1") 0930; VPS-2-1 (1-3") 0935
5	• Drove sampler to 6" bgs, Sample collected from top half • DTSC collected split sample from (0-1" bgs) VPS-2-0-SP								
10									
15									
20									

ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

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Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. VPS-3
Location: Village Park, Paramount-CA
Northing: Easting:

Date Started: 3/2/17	Completed: 3/2/17	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: T. Moore	Checked By:	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: T. Moore		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: Slide Hammer		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Splitspoon and SS sleeve		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 1.7'	TOC Elevation: ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Surface: wood chips								
1.3' / 1.7'	Sand w/silt - dark grayish Brown 10YR 4/2. soft, moist, non plastic, trace metal pieces and brick pieces 1/2"-1" size. Very fine grained Sand	FILL	fill?				100		VPS-3-0 (0955) (16"-17")
	wood mulch from (0" to 16") BGS - Surface soil was collected from (16-17") and sub from (17-19")								VPS-3-1 (1000) (17"-19")
5	• Drove Sample to 1.7' from 1.3' Sample collected from top half								
	• DTSC: NO split Sample								
10	• imported fill/construction sand, possibly for drainge below the play ground								
15									
20									

ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

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Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. VPS-4
Location: Village Park Paramount, CA
Northing: Easting:

Date Started: 3/2/17	Completed: 3/2/17	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: T. Morse	Checked By: S. Dodson PG 8052	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: T. Morse		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: slide hammer		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: Splitspoon and SS sleeve		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 0.4'	TOC Elevation: ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Surface: Turf								
0.4	Silt w/sand (0-1") dark Brown 10YR 3/3, trace wood chips and roots Silty Sand (1-3") dark grayish Brown 10YR/4/2, medium dense, moist, trace rootlets, nonplastic	ML					100		VPS-4-0 (0-1") 1030 VPS-4-1 (1-3") 1035
5	• Drove Sampler to 6" bgs, Sample collected from top half • DTSC collected split sample from (1-3" bgs) VPS-4-1-SP								
10									
15									
20									

ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

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5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. VPS-5
Location: Village Park, Paramount CA
Northing: Easting:

Date Started: 3/2/17 Completed: 3/2/17	__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs
Logged By: T. Morse Checked By: S. Dodson PG 8052	__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs
Drilled By: T. Morse	Bentonite/Cement Grout: from ft bgs to ft bgs
Drilling Equipment: Slam Hammer	Bentonite Transitional Seal: from ft bgs to ft bgs
Sampling Equipment: split spoon with SS sleeve	Sand Filter Pack: from ft bgs to ft bgs
GS Elev.: ft above MSL TD: 0.4'	TOC Elevation: ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Surface: Turf								
0.4'	Silt with sand - dark brown 10YR 3/3. 10% silt. 10% vcg fine grained sand, dry, no odor, trace rootlets and mica, low plasticity	MK					100		VPS-5-0 (0-1") 1050 VPS-5-1 (1-3") 1100
5	• Drove sampler to 6" bgs, Sample collected from top half • DTSC collected split sample from (0-1" bgs) VPS-5-0-SP								
10									
15									
20									

ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. VPS-6
Location: Village Park Paramount, CA
Northing: Easting:

Date Started: 5/2/17 Completed: 5/2/17	__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs
Logged By: T. Morse Checked By: S. Dodson PG 8052	__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs
Drilled By: T. Morse	Bentonite/Cement Grout: from ft bgs to ft bgs
Drilling Equipment: slide hammer	Bentonite Transitional Seal: from ft bgs to ft bgs
Sampling Equipment: Splitspoon with SS sleeve	Sand Filter Pack: from ft bgs to ft bgs
GS Elev.: ft above MSL TD: 0.4'	TOC Elevation: ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Surface: Turf								
0.4	Silt with sand - dark brown 10YR 3/3, 90% silt, 10% very fine grained sand, dry, no odor, low plasticity, soft, trace rootlets	MC					100		VPS-6-0 (0-1") 1125 VPS-6-1 (1-3") 1130
5	• Drove sampler to 6" bgs, sample collected from top half • DTSC collected split sample from (0-1" bgs) VPS-6-0-SP								
10									
15									
20									

ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

TC Number: TETRA TECH, INC. Page 1 of 1

TETRA TECH, INC.
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Santa Barbara, CA 93111
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Project:
Log of Boring No. VPS-7
Location: Village Park, Paramount, CA
Northing: Easting:

Date Started: 3/2/17	Completed: 3/2/17	__" Sch.___ _____ Blank Casing:	from ft bgs to ft bgs
Logged By: T. Morse	Checked By: S. Dobson 8052	__" Sch.___ _____ Screen Casing:	from ft bgs to ft bgs
Drilled By: T. Morse		Bentonite/Cement Grout:	from ft bgs to ft bgs
Drilling Equipment: slide hammer		Bentonite Transitional Seal:	from ft bgs to ft bgs
Sampling Equipment: splitspoon with SS sleave		Sand Filter Pack:	from ft bgs to ft bgs
GS Elev.: ft above MSL	TD: 0.4'	TOC Elevation: ft above MSL	

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	Surface: Turf								
0.4'	Silt with Sand - dark brown 10YR 3/3, 90% silt, 10% very fine grain sand, moist, low plasticity. Soft, trace roots and mica,	ML					100		VPS-7-0 (0-1") 1145
									VPS-7-1 (1-3") 1155
5	• Drove Sampler to 6" bgs, Sample collected from top half								
	• DTSC collected split sample from (0-1" bgs) VPS-7-0-SP								
10									
15									
20									

ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

TETRA TECH, INC.
5383 Hollister Ave., Suite 130
Santa Barbara, CA 93111
Voice (805)681-3100. Fax (805)681-3108.

Project:
Log of Boring No. VPS-8
Location: Village Park, Paramount CA
Northing: Easting:

Date Started: 3/2/17 Completed: 3/2/17	__" Sch.___ _____ Blank Casing: from ft bgs to ft bgs
Logged By: T. Morse Checked By: S. Dodson PC 8052	__" Sch.___ _____ Screen Casing: from ft bgs to ft bgs
Drilled By: T. Morse	Bentonite/Cement Grout: from ft bgs to ft bgs
Drilling Equipment: slide hammer	Bentonite Transitional Seal: from ft bgs to ft bgs
Sampling Equipment: splitspoon with SS sleeve	Sand Filter Pack: from ft bgs to ft bgs
GS Elev.: ft above MSL TD: 0.4'	TOC Elevation: ft above MSL

Depth (ft. bgs)	MATERIAL DESCRIPTION	Material Symbol	Material Type	Well Construction	Sample	Blow Counts per 6"	Percent Recovery	PID (ppm) Smpl/Amb	REMARKS
	surface: Tuff								
0.4'	Sandy silt - dark grayish brown 10YR 4/2, 80% silt, 20% very fine grained sand. Moist, low plasticity, soft, trace rootlets and mica	ML					100		VPS-8-0 (0-1") 1215 VPS-8-1 (1-3") 1220
5	• Drove sampler to 6" bgs Sample collected from top half • DTSC collected split sample from (0-1" bgs) VPS-8-0-SP								
10									
15									
20									

ft bgs ▼ Groundwater depth during drilling. ft bgs ▽ Groundwater depth after well development on:

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CHAIN OF CUSTODY RECORD

100949

AETL JOB No. 86878

Page 1 of 1

COMPANY: Tetra Tech
PROJECT MANAGER: Randy Westhaus
COMPANY ADDRESS: 5383 Hollister Ave. Suite 130
PHONE: 805 681-3101
FAX:
PROJECT NAME: Village Park SI
PROJECT #: 100-SB-T3677102
SITE NAME AND ADDRESS: Village Park ~~SB~~, 15150 Illinois Ave Paramount CA
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	CAM17 by 6020	Titanium 6010	Manganese 6010	Tin 6010	Mercury 7471A	Hex Chrome 7199	TEST INSTRUCTIONS & COMMENTS
1	VPD-1	86878.01	3/2/17	0845	Dust	1 bag filter		X	X	X	X			Split Prep - complete dry filtration using #60 Screen, then split remaining fine dust. Retain half of split and send other ½ to DTSC (Contact Steve Dodson) Tare = 50.9g
2	VPD-2	86878.02		0945	Dust	1 bag filter								
3	DUSTDUP1	86878.03		1200	Dust	1 bag filter								
4	VPD-3	86878.04		1155	Dust	1 bag filter								Split Prep
5	VPD-4	86878.05		1305	Dust	1 Bag Filter								Split Prep
6	VPD-5	86878.06		1415	Dust	1 Bag Filter								Split Prep
7	~~VPD-5SD~~													
8														
9														
10														
11														
12														
13														
14														
15														

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	6	PROPERLY COOLED	Y / N / NA
CUSTODY SEALS	Y / N / NA	SAMPLES INTACT	Y / N / NA
RECEIVED IN GOOD COND.	Y / N	SAMPLES ACCEPTED	Y / N

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) Level III

	1.	2.	3.
RELINQUISHED BY SAMPLER:		RELINQUISHED BY:	RELINQUISHED BY: AETL
Signature:		Signature:	Signature:
Printed Name:	Steve Dodson	Printed Name:	Printed Name: Anton
Date:	3/3/17	Date:	03/03/17
Time:	12 DO	Time:	1600
RECEIVED BY:	AETL	RECEIVED BY:	RECEIVED BY LABORATORY: AETL
Signature:		Signature:	Signature:
Printed Name:	Anton	Printed Name:	Printed Name: Anton
Date:	03/03/17	Date:	03/03/17
Time:	1200	Time:	1600

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CHAIN OF CUSTODY RECORD

100950

COMPANY: Tetra Tech inc.
PROJECT MANAGER: Randy Westhaus
COMPANY ADDRESS: 5383 Hollister Ave. Suite
PHONE:
FAX:
PROJECT NAME: Village Park
PROJECT #: 100-SBA-T36771.02
SITE NAME AND ADDRESS: Paramount, CA
PO #:

AETL JOB No. 86879

Page 1 of 2

ANALYSIS REQUESTED

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA 8020/8471A (full)	EPA 6010B	EPA 7199	TEST INSTRUCTIONS & COMMENTS
1	VPS-1-0	86879.01	3/2/17	0900	S	1	none	X	X	X	
2	VPS-1-1	86879.02	↓	0905	↓	↓	↓	X	X	X	
3	VPS-2-0	86879.03	↓	0925	↓	↓	↓	X	X	X	
4	VPS-2-1	86879.04	↓	0930	↓	↓	↓	X	X	X	
5	SOILDup1	86879.05	↓	0935	↓	↓	↓	X	X	X	
6	VPS-3-0	86879.06	↓	0955	↓	↓	↓	X	X	X	
7	VPS-3-1	86879.07	↓	1000	↓	↓	↓	X	X	X	
8	VPS-4-0	86879.08	↓	1030	↓	↓	↓	X	X	X	
9	VPS-4-1	86879.09	↓	1035	↓	↓	↓	X	X	X	
10	VPS-5-0	86879.10	↓	1050	↓	↓	↓	X	X	X	
11	VPS-5-1	86879.11	↓	1100	↓	↓	↓	X	X	X	
12	VPS-6-0	86879.12	↓	1125	↓	↓	↓	X	X	X	
13	VPS-6-1	86879.13	↓	1130	↓	↓	↓	X	X	X	
14	VPS-7-0	86879.14	↓	1145	↓	↓	↓	X	X	X	
15	VPS-7-1	86879.15	↓	1155	↓	↓	↓	X	X	X	

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED	Y / N / NA
CUSTODY SEALS	Y / N / NA	SAMPLES INTACT	Y / N / NA
RECEIVED IN GOOD COND.	Y / N	SAMPLES ACCEPTED	Y / N

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature: AETL
Printed Name: Steve Dodson	Printed Name:	Printed Name: Antin
Date: 3/3/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600
RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: 3.
Signature: AETL	Signature:	Signature: AETL
Printed Name: Antin	Printed Name:	Printed Name: Antin
Date: 03/03/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600

TURN AROUND TIME

- [x] NORMAL
- [ ] RUSH
  - [ ] SAME DAY
  - [ ] NEXT DAY
  - [ ] 2 DAYS
  - [ ] 3 DAYS

DATA DELIVERABLE REQUIRED

- [ ] HARD COPY
- [x] PDF
- [ ] GEOTRACKER (GLOBAL ID)
- [x] OTHER (PLEASE SPECIFY) level III

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CHAIN OF CUSTODY RECORD

100946

AETL JOB No. 86879

COMPANY: Tetra Tech Inc.
PROJECT MANAGER: Randy Westhaus
COMPANY ADDRESS:
PHONE:
FAX:
PROJECT NAME: same as page 1
PROJECT #: 100-SGA-T36771.02
SITE NAME AND ADDRESS:
PO #:

ANALYSIS REQUESTED

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA 6010/7471A (Hg)	EPA 6010B	EPA 7199	TEST INSTRUCTIONS & COMMENTS
1	VPS-8-0	86879.16	3/2/17	1215	S	1	none	X	X	X	
2	VPS-8-1	86879.17	↓	1220	↓	↓	↓	X	X	X	
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	2	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y/ N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) level III

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: AETL 3.
Signature:	Signature:	Signature:
Printed Name: Steve Sabin	Printed Name:	Printed Name: Ardin
Date: 3/3/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600
RECEIVED BY: AETL 1.	**RECEIVED BY:** 2.	**RECEIVED BY LABORATORY:** AETL 3.
Signature:	Signature:	Signature:
Printed Name: Ardin	Printed Name:	Printed Name: Ardin
Date: 03/03/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

APPENDIX C: LABORATORY DATA REPORTS

Appendix C
Laboratory Report List

	AETL Data Package	AETL Report Date	Electronic File ID	Corresponding DVSR	Explanation
1	86878	3/16/2017	PDF86878.pdf	5/27/17	Level II Data package for original analytical runs for methods SW6020/7471A, SW6010B, and SW7199 (dust samples)
2	86879	3/16/2017	PDF86879.pdf	5/27/17	Level II Data package for original analytical runs for methods SW6020/7471A, SW6010B, and SW7199 (soil samples)
3	86878	4/7/2017	PDF86878-2nd Report.pdf	6/2/17	Level II Data package for re-analysis of SW7199 and original analysis of SW7196 (dust samples)
4	86879	4/7/2017	PDF86879-2nd Report.pdf	6/2/17	Level II Data package for re-analysis of SW7199 and original analysis of SW7196 (soil samples)
5	86878	3/16/2017	DP86878.pdf	6/1/17	Level IV report of SW7199 data for samples originally reported on 3/16/17 (dust samples)
6	86879	3/16/2017	DP86879.pdf	6/1/17	Level IV report of SW7199 data for samples originally reported on 3/16/17 (soil samples)
7	86878 and 86879	4/7/2017	Supplementary DP-EPA7196A-8687886879-05162017.pdf	5/24/17	Level IV report of SW7196 data for samples originally reported on 4/7/16 (dust and soil samples)

1. AETL Package No. 86878

3/16/2017

File Name: PDF86878.pdf

Level II Data package for original analytical runs for methods

SW6020/7471A, SW6010B, and SW7199

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Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: Randy Westhous

Number of Pages 19
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86878	03/03/2017	T/TSB

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1
Site: Village Park
15150 Illinois Ave.
Paramount, CA 90723

Enclosed please find results of analyses of 6 dust samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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CHAIN OF CUSTODY RECORD

100949

AETL JOB No. 86878

Page 1 of 1

COMPANY: Tetra Tech
PROJECT MANAGER: Randy Wetthaus
COMPANY ADDRESS: 5383 Hollister Ave. Suite 130
PHONE: 805 681-3101
FAX:
PROJECT NAME: Village Park SI
PROJECT #: 100-SB-T3677102
SITE NAME AND ADDRESS: Village Park ~~SB~~, 15150 Illinois Ave Paramount CA
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	CAM17 by 6020	Titanium 6010	Manganese 6010	Tin 6010	Mercury 7471A	Hex Chrome 7199	TEST INSTRUCTIONS & COMMENTS
1	VPD-1	86878.01	3/2/17	0845	Dust	1 bag filter		X	X	X	X			Split Prep - complete dry filtration using #60 Screen, then split remaining fine dust. Retain half of split and send other ½ to DTSC (Contact Steve Dei[illegible]) Tare = 50.9 g
2	VPD-2	86878.02		0945	Dust	1 bag filter								
3	DUSTDUP1	86878.03		1200	Dust	1 bag filter								
4	VPD-3	86878.04		1155	Dust	1 bag filter								Split Prep
5	VPD-4	86878.05		1305	Dust	1 Bag Filter								Split Prep
6	VPD-5	86878.06		1415	Dust	1 Bag Filter								Split Prep
7	~~VPD-5-D~~													
8														
9														
10														
11														
12														
13														
14														
15														

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	6	PROPERLY COOLED	Y / N / NA
CUSTODY SEALS	Y / N / NA	SAMPLES INTACT	Y / N / NA
RECEIVED IN GOOD COND.	Y / N	SAMPLES ACCEPTED	Y / N

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) Level III

	1.	2.	3.
RELINQUISHED BY SAMPLER:		RELINQUISHED BY:	RELINQUISHED BY: AETL
Signature:		Signature:	Signature:
Printed Name:	Steve Deilson	Printed Name:	Printed Name: Anthony
Date:	3/3/17	Date:	03/03/17
Time:	12 DO	Time:	1600
RECEIVED BY:	AETL	RECEIVED BY:	RECEIVED BY LABORATORY: AETL
Signature:		Signature:	Signature:
Printed Name:	Anthony	Printed Name:	Printed Name: Anthony
Date:	03/03/17	Date:	03/03/17
Time:	1200	Time:	1600

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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COOLER RECEIPT FORM

Client Name: Tetratech
Project Name:
AETL Job Number: 86878
Date Received: 03/03/17 Received by: Antin
Carrier: ☒ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS
☐ Others:

Samples were received in: ☒ Cooler (/) ☐ Other (Specify):
Inside temperature of shipping container No 1: 3.3°C, No 2: _____, No 3: _____
Type of sample containers: ☐ VOA, ☐ Glass bottles, ☐ Wide mouth jars, ☐ HDPE bottles, ☐ Metal sleeves, ☐ Others (Specify): 6x bag filter
How are samples preserved: ☐ None, ☐ Ice, ☒ Blue Ice, ☐ Dry Ice
☒ None, _ HNO_3, _ NaOH, _ ZnOAc, _ HCl, _ $Na_2S_2O_3$, _ MeOH
_ Other (Specify):

	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	✓		
2. Are the Sample labels legible?	✓		
3. Do samples match the COC?	✓		
4. Are the required analyses clear?	✓		
5. Is there enough samples for required analysis?	✓		
6. Are samples sealed with evidence tape?		✓	
7. Are sample containers in good condition?	✓		
8. Are samples preserved?	✓		
9. Are samples preserved properly for the intended analysis?	✓		
10. Are the VOAs free of headspace?	N/A		
11. Are the jars free of headspace?	✓		

Explain all "No" answers for above questions:

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Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: Randy Westhous

Project ID: 100-SBA-T36771-02
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86878	03/03/2017	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 6 samples with the following specification on 03/03/2017.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
86878.01	VPD-1	03/02/2017	Dust	1
86878.02	VPD-2	03/02/2017	Dust	1
86878.03	DUSTDUP1	03/02/2017	Dust	1
86878.04	VPD-3	03/02/2017	Dust	1
86878.05	VPD-4	03/02/2017	Dust	1
86878.06	VPD-5	03/02/2017	Dust	1

Method ^ Submethod	*Req Date*	*Priority*	*TAT*	*Units*
(6010BSCAN) ^ MN	03/10/2017	2	Normal	mg/Kg
(6010BSCAN) ^ SN-TI	03/10/2017	2	Normal	mg/Kg
(6020) ^ CAM-16-MG	03/10/2017	2	Normal	mg/Kg
(7199) ^ LOWMDL	03/10/2017	2	Normal	mg/Kg
7471A ^ LL-MG/KG	03/10/2017	2	Normal	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody.
No analytical non-conformances were encountered.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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Site

Village Park
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Page: 2

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0308171C2

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			03/08/2017				
Preparation Method			3050B				
Date Analyzed			03/09/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Antimony	0.25	0.50	ND				
Arsenic	0.10	0.50	ND				
Barium	0.25	0.50	ND				
Beryllium	0.10	0.25	ND				
Cadmium	0.10	0.25	ND				
Chromium	0.25	0.50	ND				
Cobalt	0.25	0.50	ND				
Copper	0.25	0.50	ND				
Lead	0.25	0.50	ND				
Molybdenum	0.25	0.50	ND				
Nickel	0.25	0.50	ND				
Selenium	0.25	0.50	ND				
Silver	0.25	0.50	ND				
Thallium	0.10	0.25	ND				
Vanadium	0.25	0.50	ND				
Zinc	0.25	0.50	ND				

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Page: 3

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0308171C2

Our Lab I.D.			86878.01	86878.02	86878.03	86878.04	86878.05
Client Sample I.D.			VPD-1	VPD-2	DUSTDUP1	VPD-3	VPD-4
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/09/2017	03/09/2017	03/09/2017	03/09/2017	03/09/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Antimony	2.50	5	ND	ND	ND	ND	ND
Arsenic	1.00	5	4.13J	2.53J	2.63J	1.52J	4.89J
Barium	2.50	5	182	176	182	88.5	271
Beryllium	1.00	2.50	ND	ND	ND	ND	ND
Cadmium	1.00	2.50	1.60J	1.07J	1.23J	ND	1.83J
Chromium	2.50	5	38.6	42.1	38.1	20.5	43.0
Cobalt	2.50	5	13.4	23.8	21.2	8.54	22.3
Copper	2.50	5	198	138	111	67.6	138
Lead	2.50	5	67.3	24.8	25.2	9.55	41.9
Molybdenum	2.50	5	10.1	15.7	14.6	4.87J	14.8
Nickel	2.50	5	73.7	139	117	47.6	126
Selenium	2.50	5	ND	ND	ND	ND	ND
Silver	2.50	5	ND	ND	ND	ND	ND
Thallium	1.00	2.50	ND	ND	ND	ND	ND
Vanadium	2.50	5	21.7	19.0	11.5	10.9	28.4
Zinc	2.50	5	644	10.3	10.5	581	879

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0308171C2

Our Lab I.D.			**86878.06**				
Client Sample I.D.			VPD-5				
Date Sampled			03/02/2017				
Date Prepared			03/08/2017				
Preparation Method			3050B				
Date Analyzed			03/09/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			10				
Analytes	**MDL**	**PQL**	**Results**				
Antimony	2.50	5	ND				
Arsenic	1.00	5	4.49J				
Barium	2.50	5	252				
Beryllium	1.00	2.50	ND				
Cadmium	1.00	2.50	1.41J				
Chromium	2.50	5	49.6				
Cobalt	2.50	5	22.6				
Copper	2.50	5	193				
Lead	2.50	5	40.4				
Molybdenum	2.50	5	16.1				
Nickel	2.50	5	139				
Selenium	2.50	5	ND				
Silver	2.50	5	ND				
Thallium	1.00	2.50	ND				
Vanadium	2.50	5	26.8				
Zinc	2.50	5	757				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			03/08/2017				
Preparation Method			3050B				
Date Analyzed			03/09/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Manganese	1.0	5.0	ND				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1

Our Lab I.D.			**86878.01**				
Client Sample I.D.			VPD-1				
Date Sampled			03/02/2017				
Date Prepared			03/08/2017				
Preparation Method			3050B				
Date Analyzed			03/09/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			10				
Analytes	**MDL**	**PQL**	**Results**				
Manganese	10	50	295				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1

Our Lab I.D.			**86878.02**	**86878.03**	**86878.04**		
Client Sample I.D.			VPD-2	DUSTDUP1	VPD-3		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/08/2017	03/08/2017	03/08/2017		
Preparation Method			3050B	3050B	3050B		
Date Analyzed			03/09/2017	03/09/2017	03/09/2017		
Matrix			Dust	Dust	Dust		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Manganese	1.0	5.0	156	152	72.8		

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1

Our Lab I.D.			**86878.05**	**86878.06**			
Client Sample I.D.			VPD-4	VPD-5			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/08/2017	03/08/2017			
Preparation Method			3050B	3050B			
Date Analyzed			03/09/2017	03/09/2017			
Matrix			Dust	Dust			
Units			mg/Kg	mg/Kg			
Dilution Factor			10	10			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Manganese	10	50	333	324			

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0308172C3

Our Lab I.D.			Method Blank	**86878.01**	**86878.02**	**86878.03**	**86878.04**
Client Sample I.D.				VPD-1	VPD-2	DUSTDUP1	VPD-3
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/10/2017	03/10/2017	03/10/2017	03/10/2017	03/10/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Tin	2.50	5.00	ND	10.7	7.59	8.07	3.16J
Titanium	1.00	2.50	ND	615	605	592	266

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Site

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0308172C3

Our Lab I.D.			86878.05	86878.06			
Client Sample I.D.			VPD-4	VPD-5			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/08/2017	03/08/2017			
Preparation Method			3050B	3050B			
Date Analyzed			03/10/2017	03/10/2017			
Matrix			Dust	Dust			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Tin	2.50	5.00	8.10	7.84			
Titanium	1.00	2.50	760	722			

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-3

Our Lab I.D.			Method Blank	**86878.01**	**86878.02**	**86878.03**	**86878.04**
Client Sample I.D.				VPD-1	VPD-2	DUSTDUP1	VPD-3
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7471A	7471A	7471A	7471A	7471A
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Mercury	0.003	0.006	ND	0.050	0.070	0.077	0.047

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-3

Our Lab I.D.			**86878.05**	**86878.06**			
Client Sample I.D.			VPD-4	VPD-5			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/08/2017	03/08/2017			
Preparation Method			7471A	7471A			
Date Analyzed			03/08/2017	03/08/2017			
Matrix			Dust	Dust			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Mercury	0.003	0.006	0.095	0.029			

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030817-1

Our Lab I.D.			Method Blank	**86878.01**	**86878.02**	**86878.03**	**86878.04**
Client Sample I.D.				VPD-1	VPD-2	DUSTDUP1	VPD-3
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7199	7199	7199	7199	7199
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	0.067J	0.066J	0.052J	0.068J

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ANALYTICAL RESULTS

Ordered By

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5383 Hollister Avenue
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Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: Randy Westhous

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: **14**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030817-1

Our Lab I.D.			**86878.05**	**86878.06**			
Client Sample I.D.			VPD-4	VPD-5			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/08/2017	03/08/2017			
Preparation Method			7199	7199			
Date Analyzed			03/08/2017	03/08/2017			
Matrix			Dust	Dust			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Chromium (VI)	0.05	0.10	ND	ND			

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QUALITY CONTROL RESULTS

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Site

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Paramount, CA 90723

Page: **15**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1; Dup or Spiked Sample: 86878.01; LCS: ; QC Prepared: 03/08/2017; QC Analyzed: 03/09/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Manganese	254	50.0	282 #	56.0	50.0	281 #	54.0	3.64	75-125	<15

QC Batch No: 0308172C1; Dup or Spiked Sample: 86878.01; LCS: ; QC Prepared: 03/08/2017; QC Analyzed: 03/09/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Manganese	50.0	47.5	95.0	50.0	47.2	94.4	<1	75-125	<15	

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Page: **16**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0308172C3; Dup or Spiked Sample: 86878.01; LCS: ; LCS Prepared: 03/08/2017; LCS Analyzed: 03/10/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Tin	50.0	51.0	102	50.0	51.0	102	<1	75-125	<15	
Titanium	50.0	50.5	101	50.0	50.5	101	<1	75-125	<15	

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Page: **17**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0308171C2; Dup or Spiked Sample: 86878.01; LCS: ; LCS Prepared: 03/08/2017; LCS Analyzed: 03/09/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Antimony	1.00	1.00	100	1.00	1.01	101	<1	75-125	<15	
Arsenic	1.00	1.01	101	1.00	1.01	101	<1	75-125	<15	
Barium	1.00	1.00	100	1.00	1.01	101	<1	75-125	<15	
Beryllium	1.00	1.14	114	1.00	1.14	114	<1	75-125	<15	
Cadmium	1.00	1.01	101	1.00	1.02	102	<1	75-125	<15	
Chromium	1.00	1.08	108	1.00	1.05	105	2.82	75-125	<15	
Cobalt	1.00	1.05	105	1.00	1.06	106	<1	75-125	<15	
Copper	1.00	1.03	103	1.00	1.05	105	1.92	75-125	<15	
Lead	1.00	1.04	104	1.00	1.03	103	<1	75-125	<15	
Molybdenum	1.00	1.05	105	1.00	1.07	107	1.89	75-125	<15	
Nickel	1.00	1.04	104	1.00	1.00	100	3.92	75-125	<15	
Selenium	1.00	0.900	90.0	1.00	0.973	97.3	7.79	75-125	<15	
Silver	1.00	1.01	101	1.00	1.02	102	<1	75-125	<15	
Thallium	1.00	1.01	101	1.00	1.02	102	<1	75-125	<15	
Vanadium	1.00	1.08	108	1.00	1.09	109	<1	75-125	<15	
Zinc	1.00	0.984	98.4	1.00	0.965	96.5	1.95	75-125	<15	

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Site

Village Park
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Paramount, CA 90723

Page: **18**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030817-1; LCS: ; LCS Prepared: 03/08/2017; LCS Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	0.986	98.6	1.00	0.986	98.6	<1	80-120	<20	

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Site

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Paramount, CA 90723

Page: **19**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-3; Dup or Spiked Sample: 86878.01; LCS: ; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Mercury	0.0500	0.0300	0.0742	80.8	0.0300	0.0739	79.6	1.5	75-125	<15

QC Batch No: 030817-3; Dup or Spiked Sample: 86878.01; LCS: ; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Mercury	0.0300	0.0268	89.2	0.0300	0.0263	87.6	1.8	75-125	<15	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

2 AETL Package No. 86879

3/16/2017

File Name: PDF86879.pdf

Level II Data package for original analytical runs for methods

SW6020/7471A, SW6010B, and SW7199

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Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: Randy Westhaus

Number of Pages 39
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86879	03/03/2017	T/TSB

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1
Site: Village Park
15150 Illinois Ave.
Paramount, CA 90723

Enclosed please find results of analyses of 17 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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CHAIN OF CUSTODY RECORD

100950

COMPANY: Tetra Tech inc.
PROJECT MANAGER: Randy Westhaus
COMPANY ADDRESS: 5383 Hollister Ave. Suite
PHONE:
FAX:
PROJECT NAME: Village Park
PROJECT #: 100-SBA-T36771.02
SITE NAME AND ADDRESS: Paramount, CA
PO #:

AETL JOB No. 86879

Page 1 of 2

ANALYSIS REQUESTED

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA 8020/8471A (full)	EPA 6010B	EPA 7199	TEST INSTRUCTIONS & COMMENTS
1	VPS-1-0	86879.01	3/2/17	0900	S	1	none	X	X	X	
2	VPS-1-1	86879.02	↓	0905	↓	↓	↓	X	X	X	
3	VPS-2-0	86879.03	↓	0925	↓	↓	↓	X	X	X	
4	VPS-2-1	86879.04	↓	0930	↓	↓	↓	X	X	X	
5	SOILDup1	86879.05	↓	0935	↓	↓	↓	X	X	X	
6	VPS-3-0	86879.06	↓	0955	↓	↓	↓	X	X	X	
7	VPS-3-1	86879.07	↓	1000	↓	↓	↓	X	X	X	
8	VPS-4-0	86879.08	↓	1030	↓	↓	↓	X	X	X	
9	VPS-4-1	86879.09	↓	1035	↓	↓	↓	X	X	X	
10	VPS-5-0	86879.10	↓	1050	↓	↓	↓	X	X	X	
11	VPS-5-1	86879.11	↓	1100	↓	↓	↓	X	X	X	
12	VPS-6-0	86879.12	↓	1125	↓	↓	↓	X	X	X	
13	VPS-6-1	86879.13	↓	1130	↓	↓	↓	X	X	X	
14	VPS-7-0	86879.14	↓	1145	↓	↓	↓	X	X	X	
15	VPS-7-1	86879.15	↓	1155	↓	↓	↓	X	X	X	

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED	Y / N / NA
CUSTODY SEALS Y / N / NA		SAMPLES INTACT	Y / N / NA
RECEIVED IN GOOD COND.	Y / N	SAMPLES ACCEPTED	Y / N

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature: AETL
Printed Name: Steve Dodson	Printed Name:	Printed Name: Antin
Date: 3/3/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600
RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: 3.
Signature: AETL	Signature:	Signature: AETL
Printed Name: Antin	Printed Name:	Printed Name: Antin
Date: 03/03/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600

TURN AROUND TIME

☒ NORMAL ☐ RUSH
☐ SAME DAY
☐ NEXT DAY
☐ 2 DAYS
☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) level III

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

100946

AETL JOB No. 86879

COMPANY: Tetra Tech Inc.
PROJECT MANAGER: Randy Westhaus
COMPANY ADDRESS:
PHONE:
FAX:
PROJECT NAME: same as page 1
PROJECT #: 100-SGA-T36771.02
SITE NAME AND ADDRESS:
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA 6010/7471A (TL)	EPA 6010B	EPA 7199	TEST INSTRUCTIONS & COMMENTS
1	VPS-8-0	86879.16	3/2/17	1215	S	1	none	X	X	X	
2	VPS-8-1	86879.17	↓	1220	↓	↓	↓	X	X	X	
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

ANALYSIS REQUESTED

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	2	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y/ N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: AETL 3.
Signature:	Signature:	Signature:
Printed Name: Steve Sabin	Printed Name:	Printed Name: Andin
Date: 3/3/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600
RECEIVED BY: AETL 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: AETL 3.
Signature:	Signature:	Signature:
Printed Name: Andin	Printed Name:	Printed Name: Andin
Date: 03/03/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) level III

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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COOLER RECEIPT FORM

Client Name: Tetratech

Project Name:

AETL Job Number: 86879

Date Received: 03/03/17 Received by: Anton

Carrier: ☒ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS

☐ Others:

Samples were received in: ☒ Cooler (/) ☐ Other (Specify):

Inside temperature of shipping container No 1: 3.2°C, No 2: _____, No 3: _____

Type of sample containers: ☐ VOA, ☐ Glass bottles, ☒ Wide mouth jars, ☐ HDPE bottles, ☒ Metal sleeves, ☐ Others (Specify):

How are samples preserved: ☐ None, ☒ Ice, ☒ Blue Ice, ☐ Dry Ice

☒ None, _ HNO_3, _ NaOH, _ ZnOAc, _ HCl, _ $Na_2S_2O_3$, _ MeOH

_ Other (Specify):

	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	✓		
2. Are the Sample labels legible?	✓		
3. Do samples match the COC?	✓		
4. Are the required analyses clear?	✓		
5. Is there enough samples for required analysis?	✓		
6. Are samples sealed with evidence tape?		✓	
7. Are sample containers in good condition?	✓		
8. Are samples preserved?	✓		
9. Are samples preserved properly for the intended analysis?	✓		
10. Are the VOAs free of headspace?	N/A		
11. Are the jars free of headspace?	✓		

Explain all "No" answers for above questions:

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Project ID: 100-SBA-T36771-02
Date Received 03/03/2017
Date Reported 03/16/2017

Telephone: (805)681-3100
Attention: Randy Westhaus

Job Number	Order Date	Client
86879	03/03/2017	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 17 samples with the following specification on 03/03/2017.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
86879.01	VPS-1-0	03/02/2017	Soil	1
86879.02	VPS-1-1	03/02/2017	Soil	1
86879.03	VPS-2-0	03/02/2017	Soil	1
86879.04	VPS-2-1	03/02/2017	Soil	1
86879.05	Solid DUP 1	03/02/2017	Soil	1
86879.06	VPS-3-0	03/02/2017	Soil	1
86879.07	VPS-3-1	03/02/2017	Soil	1
86879.08	VPS-4-0	03/02/2017	Soil	1
86879.09	VPS-4-1	03/02/2017	Soil	1
86879.10	VPS-5-0	03/02/2017	Soil	1
86879.11	VPS-5-1	03/02/2017	Soil	1
86879.12	VPS-6-0	03/02/2017	Soil	1
86879.13	VPS-6-1	03/02/2017	Soil	1
86879.14	VPS-7-0	03/02/2017	Soil	1
86879.15	VPS-7-1	03/02/2017	Soil	1
86879.16	VPS-8-0	03/02/2017	Soil	1
86879.17	VPS-8-1	03/02/2017	Soil	1

Method ^ Submethod	*Req Date*	*Priority*	*TAT*	*Units*
(6010BSCAN) ^ MN	03/10/2017	2	Normal	mg/Kg
(6010BSCAN) ^ SN-TI	03/10/2017	2	Normal	mg/Kg
(6020) ^ CAM-16-MG	03/10/2017	2	Normal	mg/Kg
(7199) ^ LOWMDL	03/10/2017	2	Normal	mg/Kg
7471A ^ LL-MG/KG	03/10/2017	2	Normal	mg/Kg

Continued

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5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: Randy Westhaus

Project ID: 100-SBA-T36771-02
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86879	03/03/2017	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

The samples were analyzed as specified on the enclosed chain of custody. Analytical non-conformances have been noted on the report.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

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Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			03/07/2017				
Preparation Method			3050B				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Antimony	0.25	0.50	ND				
Arsenic	0.10	0.50	ND				
Barium	0.25	0.50	ND				
Beryllium	0.10	0.25	ND				
Cadmium	0.10	0.25	ND				
Chromium	0.25	0.50	ND				
Cobalt	0.25	0.50	ND				
Copper	0.25	0.50	ND				
Lead	0.25	0.50	ND				
Molybdenum	0.25	0.50	ND				
Nickel	0.25	0.50	ND				
Selenium	0.25	0.50	ND				
Silver	0.25	0.50	ND				
Thallium	0.10	0.25	ND				
Vanadium	0.25	0.50	ND				
Zinc	0.25	0.50	ND				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3

Our Lab I.D.			86879.01	86879.02	86879.03	86879.04	86879.05
Client Sample I.D.			VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1	Solid DUP 1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Antimony	2.50	5	ND	ND	ND	ND	ND
Arsenic	1.00	5	3.19J	3.15J	3.63J	3.79J	3.42J
Barium	2.50	5	105	99.4	112	122	111
Beryllium	1.00	2.50	ND	ND	ND	ND	ND
Cadmium	1.00	2.50	ND	ND	ND	ND	ND
Chromium	2.50	5	20.2	21.7	20.5	22.9	22.3
Cobalt	2.50	5	6.35	6.54	6.73	6.84	6.85
Copper	2.50	5	25.7	26.2	30.1	31.6	31.2
Lead	2.50	5	46.0	53.1	115	101	96.0
Molybdenum	2.50	5	ND	ND	ND	ND	ND
Nickel	2.50	5	25.2	27.0	27.2	28.5	28.0
Selenium	2.50	5	ND	ND	ND	ND	ND
Silver	2.50	5	ND	ND	ND	ND	ND
Thallium	1.00	2.50	ND	ND	ND	ND	ND
Vanadium	2.50	5	26.4	30.1	30.1	32.5	32.5
Zinc	2.50	5	129	124	115	120	116

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Page: **4**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3

Our Lab I.D.			**86879.06**	**86879.07**	**86879.08**	**86879.09**	**86879.10**
Client Sample I.D.			VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1	VPS-5-0
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Antimony	2.50	5	ND	ND	ND	ND	ND
Arsenic	1.00	5	2.59J	3.03J	2.39J	2.83J	3.34J
Barium	2.50	5	58.1	67.5	78.9	97.5	128
Beryllium	1.00	2.50	ND	ND	ND	ND	ND
Cadmium	1.00	2.50	ND	ND	ND	ND	ND
Chromium	2.50	5	12.3	12.8	16.0	18.2	23.8
Cobalt	2.50	5	4.06J	4.54J	4.60J	5.23	8.02
Copper	2.50	5	12.8	14.3	19.1	22.0	29.1
Lead	2.50	5	16.4	19.7	31.9	39.7	52.2
Molybdenum	2.50	5	ND	ND	ND	ND	ND
Nickel	2.50	5	17.8	18.9	20.1	21.9	32.8
Selenium	2.50	5	ND	ND	ND	ND	ND
Silver	2.50	5	ND	ND	ND	ND	ND
Thallium	1.00	2.50	ND	ND	ND	ND	ND
Vanadium	2.50	5	20.3	22.3	22.1	26.0	34.8
Zinc	2.50	5	53.0	56.0	90.9	101	123

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Village Park
15150 Illinois Ave.
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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			03/07/2017				
Preparation Method			3050B				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Antimony	0.25	0.50	ND				
Arsenic	0.10	0.50	ND				
Barium	0.25	0.50	ND				
Beryllium	0.10	0.25	ND				
Cadmium	0.10	0.25	ND				
Chromium	0.25	0.50	ND				
Cobalt	0.25	0.50	ND				
Copper	0.25	0.50	ND				
Lead	0.25	0.50	ND				
Molybdenum	0.25	0.50	ND				
Nickel	0.25	0.50	ND				
Selenium	0.25	0.50	ND				
Silver	0.25	0.50	ND				
Thallium	0.10	0.25	ND				
Vanadium	0.25	0.50	ND				
Zinc	0.25	0.50	ND				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4

Our Lab I.D.			86879.11	86879.12	86879.13	86879.14	86879.15
Client Sample I.D.			VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0	VPS-7-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Antimony	2.50	5	ND	ND	ND	ND	ND
Arsenic	1.00	5	3.44J	2.66J	3.30J	2.23J	2.25J
Barium	2.50	5	128	116	122	108	98.4
Beryllium	1.00	2.50	ND	ND	ND	ND	ND
Cadmium	1.00	2.50	ND	ND	ND	ND	ND
Chromium	2.50	5	26.2	23.4	27.7	20.5	20.8
Cobalt	2.50	5	7.98	7.02	8.45	5.68	5.74
Copper	2.50	5	29.2	37.2	43.2	26.3	25.2
Lead	2.50	5	53.0	41.5	52.0	31.7	30.2
Molybdenum	2.50	5	ND	ND	2.51J	ND	ND
Nickel	2.50	5	36.5	34.6	41.0	26.0	25.6
Selenium	2.50	5	ND	ND	ND	ND	ND
Silver	2.50	5	ND	ND	ND	ND	ND
Thallium	1.00	2.50	ND	ND	ND	ND	ND
Vanadium	2.50	5	39.1	25.9	31.4	23.8	25.7
Zinc	2.50	5	113	154	152	119	102

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Village Park
15150 Illinois Ave.
Paramount, CA 90723

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4

Our Lab I.D.			**86879.16**	**86879.17**			
Client Sample I.D.			VPS-8-0	VPS-8-1			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/07/2017	03/07/2017			
Preparation Method			3050B	3050B			
Date Analyzed			03/08/2017	03/08/2017			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			10	10			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Antimony	2.50	5	ND	ND			
Arsenic	1.00	5	3.14J	3.32J			
Barium	2.50	5	100	95.0			
Beryllium	1.00	2.50	ND	ND			
Cadmium	1.00	2.50	ND	ND			
Chromium	2.50	5	21.8	21.2			
Cobalt	2.50	5	6.95	6.84			
Copper	2.50	5	25.0	24.3			
Lead	2.50	5	41.0	41.6			
Molybdenum	2.50	5	ND	ND			
Nickel	2.50	5	30.9	29.4			
Selenium	2.50	5	ND	ND			
Silver	2.50	5	ND	ND			
Thallium	1.00	2.50	ND	ND			
Vanadium	2.50	5	31.6	31.5			
Zinc	2.50	5	109	96.1			

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C3

Our Lab I.D.			Method Blank	86879.01	86879.02	86879.03	86879.04
Client Sample I.D.				VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Manganese	1.0	5.0	ND	223	215	223	227

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C3

Our Lab I.D.			86879.05	86879.06	86879.07	86879.08	86879.09
Client Sample I.D.			Solid DUP 1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Manganese	1.0	5.0	221	155	162	172	192

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C3

Our Lab I.D.			**86879.10**				
Client Sample I.D.			VPS-5-0				
Date Sampled			03/02/2017				
Date Prepared			03/07/2017				
Preparation Method			3050B				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Manganese	1.0	5.0	273				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C4

Our Lab I.D.			Method Blank	**86879.11**	**86879.12**	**86879.13**	**86879.14**
Client Sample I.D.				VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Manganese	1.0	5.0	ND	262	178	247	182

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C4

Our Lab I.D.			**86879.15**	**86879.16**	**86879.17**		
Client Sample I.D.			VPS-7-1	VPS-8-0	VPS-8-1		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/07/2017	03/07/2017	03/07/2017		
Preparation Method			3050B	3050B	3050B		
Date Analyzed			03/08/2017	03/08/2017	03/08/2017		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Manganese	1.0	5.0	204	227	225		

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Village Park
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Page: **13**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C5

Our Lab I.D.			Method Blank	**86879.01**	**86879.02**	**86879.03**	**86879.04**
Client Sample I.D.				VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Tin	2.50	5.00	ND	4.06J	4.05J	3.64J	3.77J
Titanium	1.00	2.50	ND	497	623	641	554

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C5

Our Lab I.D.			86879.05	86879.06	86879.07	86879.08	86879.09
Client Sample I.D.			Solid DUP 1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Tin	2.50	5.00	3.72J	2.60J	3.35J	2.50J	2.65J
Titanium	1.00	2.50	574	520	550	366	434

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C5

Our Lab I.D.			**86879.10**				
Client Sample I.D.			VPS-5-0				
Date Sampled			03/02/2017				
Date Prepared			03/07/2017				
Preparation Method			3050B				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Tin	2.50	5.00	3.96J				
Titanium	1.00	2.50	683				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C6

Our Lab I.D.			Method Blank	**86879.11**	**86879.12**	**86879.13**	**86879.14**
Client Sample I.D.				VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Tin	2.50	5.00	ND	3.50J	3.48J	3.44J	2.89J
Titanium	1.00	2.50	ND	757	452	521	377

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C6

Our Lab I.D.			**86879.15**	**86879.16**	**86879.17**		
Client Sample I.D.			VPS-7-1	VPS-8-0	VPS-8-1		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/07/2017	03/07/2017	03/07/2017		
Preparation Method			3050B	3050B	3050B		
Date Analyzed			03/08/2017	03/08/2017	03/08/2017		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Tin	2.50	5.00	3.07J	4.21J	3.75J		
Titanium	1.00	2.50	395	599	602		

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-1

Our Lab I.D.			Method Blank	**86879.01**	**86879.02**	**86879.03**	**86879.04**
Client Sample I.D.				VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7471A	7471A	7471A	7471A	7471A
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Mercury	0.003	0.006	ND	0.063	0.067	0.088	0.076

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-1

Our Lab I.D.			**86879.05**	**86879.06**	**86879.07**	**86879.08**	**86879.09**
Client Sample I.D.			Solid DUP 1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7471A	7471A	7471A	7471A	7471A
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Mercury	0.003	0.006	0.064	0.035	0.155	0.080	0.056

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-1

Our Lab I.D.			**86879.10**				
Client Sample I.D.			VPS-5-0				
Date Sampled			03/02/2017				
Date Prepared			03/08/2017				
Preparation Method			7471A				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Mercury	0.003	0.006	0.062				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-2

Our Lab I.D.			Method Blank	**86879.11**	**86879.12**	**86879.13**	**86879.14**
Client Sample I.D.				VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7471A	7471A	7471A	7471A	7471A
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Mercury	0.003	0.006	ND	0.068	0.094	0.091	0.068

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-2

Our Lab I.D.			**86879.15**	**86879.16**	**86879.17**		
Client Sample I.D.			VPS-7-1	VPS-8-0	VPS-8-1		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/08/2017	03/08/2017	03/08/2017		
Preparation Method			7471A	7471A	7471A		
Date Analyzed			03/08/2017	03/08/2017	03/08/2017		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Mercury	0.003	0.006	0.062	0.058	0.093		

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-1

Our Lab I.D.			Method Blank	**86879.01**	**86879.02**	**86879.03**	**86879.04**
Client Sample I.D.				VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/06/2017	03/06/2017	03/06/2017	03/06/2017	03/06/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	ND	ND	ND	ND

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-1

Our Lab I.D.			**86879.05**	**86879.06**	**86879.07**	**86879.08**	**86879.09**
Client Sample I.D.			Solid DUP 1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/06/2017	03/06/2017	03/06/2017	03/06/2017	03/06/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	ND	ND	ND	ND

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-1

Our Lab I.D.			**86879.10**				
Client Sample I.D.			VPS-5-0				
Date Sampled			03/02/2017				
Date Prepared			03/06/2017				
Preparation Method			3060A				
Date Analyzed			03/07/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Chromium (VI)	0.05	0.10	ND				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-2

Our Lab I.D.			Method Blank	**86879.11**	**86879.12**	**86879.13**	**86879.14**
Client Sample I.D.				VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/06/2017	03/06/2017	03/06/2017	03/06/2017	03/06/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	ND	ND	ND	ND

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-2

Our Lab I.D.			**86879.15**	**86879.16**	**86879.17**		
Client Sample I.D.			VPS-7-1	VPS-8-0	VPS-8-1		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/06/2017	03/06/2017	03/06/2017		
Preparation Method			3060A	3060A	3060A		
Date Analyzed			03/07/2017	03/07/2017	03/07/2017		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Chromium (VI)	0.05	0.10	ND	ND	ND		

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Manganese	223	50.0	277	108	50.0	277	108	<1	75-125	<15

QC Batch No: 0307172C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Manganese	50.0	50.0	100	50.0	50.0	100	<1	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Manganese	262	50.0	295 M	66.0	50.0	299 M	74.0	11.4	75-125	<15

QC Batch No: 0307172C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Manganese	50.0	49.1	98.2	50.0	49.3	98.6	<1	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C5; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; LCS Prepared: 03/07/2017; LCS Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Tin	50.0	53.5	107	50.0	57.5	115	7.2	75-125	<15	
Titanium	50.0	49.5	99.0	50.0	49.2	98.4	<1	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C6; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; LCS Prepared: 03/07/2017; LCS Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Tin	50.0	50.0	100	50.0	50.5	101	<1	75-125	<15	
Titanium	50.0	47.9	95.8	50.0	48.7	97.4	1.7	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Antimony	0.00	10.0	8.51	85.1	10.0	8.53	85.3	<1	75-125	<15
Arsenic	3.19	10.0	12.9	97.1	10.0	13.1	99.1	2.04	75-125	<15
Barium	105	10.0	117	119	10.0	115	99.0	18.3	75-125	<15
Beryllium	0.00	10.0	10.6	106	10.0	10.2	102	3.85	75-125	<15
Cadmium	0.00	10.0	9.43	94.3	10.0	9.27	92.7	1.71	75-125	<15
Chromium	20.2	10.0	30.8	106	10.0	31.1	109	2.79	75-125	<15
Cobalt	6.35	10.0	17.0	106	10.0	17.1	107	<1	75-125	<15
Copper	25.7	10.0	33.4	77.0	10.0	33.7	80.0	3.82	75-125	<15
Lead	46.0	10.0	56.6	106	10.0	56.5	105	<1	75-125	<15
Molybdenum	0.00	10.0	11.1	111	10.0	11.2	112	<1	75-125	<15
Nickel	25.2	10.0	27.7 M	25.0	10.0	36.4	112	127.0	75-125	<15
Selenium	0.00	10.0	10.1	101	10.0	10.3	103	1.96	75-125	<15
Silver	0.00	10.0	8.42	84.2	10.0	8.56	85.6	1.65	75-125	<15
Thallium	0.00	10.0	10.3	103	10.0	10.4	104	<1	75-125	<15
Vanadium	26.4	10.0	38.0	116	10.0	38.6	122	5.04	75-125	<15
Zinc	129	10.0	135 M	60.0	10.0	137	80.0	28.6	75-125	<15

QC Batch No: 0307171C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Antimony	1.00	1.02	102	1.00	1.01	101	<1	75-125	<15	
Arsenic	1.00	1.00	99.9	1.00	1.01	101	1.10	75-125	<15	
Barium	1.00	1.01	101	1.00	1.02	102	<1	75-125	<15	
Beryllium	1.00	1.08	108	1.00	1.10	110	1.83	75-125	<15	
Cadmium	1.00	1.04	104	1.00	1.02	102	1.94	75-125	<15	
Chromium	1.00	1.08	108	1.00	1.06	106	1.87	75-125	<15	
Cobalt	1.00	1.06	106	1.00	1.07	107	<1	75-125	<15	
Copper	1.00	1.07	107	1.00	1.05	105	1.89	75-125	<15	
Lead	1.00	1.05	105	1.00	1.04	104	<1	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Molybdenum	1.00	1.03	103	1.00	1.05	105	1.92	75-125	<15	
Nickel	1.00	1.05	105	1.00	1.05	105	<1	75-125	<15	
Selenium	1.00	0.960	96.0	1.00	1.03	103	7.04	75-125	<15	
Silver	1.00	1.05	105	1.00	1.06	106	<1	75-125	<15	
Thallium	1.00	1.05	105	1.00	1.04	104	<1	75-125	<15	
Vanadium	1.00	1.08	108	1.00	1.09	109	<1	75-125	<15	
Zinc	1.00	1.04	104	1.00	1.01	101	2.93	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Antimony	0.00	10.0	8.47	84.7	10.0	8.49	84.9	<1	75-125	<15
Arsenic	3.44	10.0	13.0	95.6	10.0	13.1	96.6	1.04	75-125	<15
Barium	128	10.0	148 M	200	10.0	148 M	200	<1	75-125	<15
Beryllium	0.00	10.0	10.3	103	10.0	10.2	102	<1	75-125	<15
Cadmium	0.00	10.0	9.88	98.8	10.0	9.93	99.3	<1	75-125	<15
Chromium	26.2	10.0	39.6 M	134	10.0	40.3 M	141	5.09	75-125	<15
Cobalt	7.98	10.0	19.7	117	10.0	19.8	118	<1	75-125	<15
Copper	29.2	10.0	39.3	101	10.0	39.4	102	<1	75-125	<15
Lead	53.0	10.0	68.2 M	152	10.0	68.7 M	157	3.24	75-125	<15
Molybdenum	0.00	10.0	12.4	124	10.0	12.6 M	126	1.60	75-125	<15
Nickel	36.5	10.0	36.1 M	-3.9	10.0	51.1 M	146	211.0	75-125	<15
Selenium	0.00	10.0	10.2	102	10.0	10.2	102	<1	75-125	<15
Silver	0.00	10.0	8.96	89.6	10.0	8.92	89.2	<1	75-125	<15
Thallium	0.00	10.0	10.7	107	10.0	10.6	106	<1	75-125	<15
Vanadium	39.1	10.0	17.9 M	-212.0	10.0	18.2 M	-209.0	1.43	75-125	<15
Zinc	113	10.0	129 M	156	10.0	128 M	146	6.62	75-125	<15

QC Batch No: 0307171C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Antimony	1.00	0.800	80.1	1.00	0.800	80.3	<1	75-125	<15	
Arsenic	1.00	0.960	95.8	1.00	0.960	95.8	<1	75-125	<15	
Barium	1.00	1.00	99.7	1.00	0.980	98.4	1.31	75-125	<15	
Beryllium	1.00	1.18	118	1.00	1.18	118	<1	75-125	<15	
Cadmium	1.00	0.840	83.7	1.00	0.840	84.2	<1	75-125	<15	
Chromium	1.00	1.16	116	1.00	1.17	117	<1	75-125	<15	
Cobalt	1.00	1.09	109	1.00	1.10	110	<1	75-125	<15	
Copper	1.00	1.00	100	1.00	1.00	100	<1	75-125	<15	
Lead	1.00	1.01	101	1.00	1.01	101	<1	75-125	<15	

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QUALITY CONTROL RESULTS

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Molybdenum	1.00	1.02	102	1.00	1.03	103	<1	75-125	<15	
Nickel	1.00	1.02	102	1.00	1.00	100	1.98	75-125	<15	
Selenium	1.00	1.12	112	1.00	0.940	94.3	17.2	75-125	<15	
Silver	1.00	0.860	85.9	1.00	0.890	88.7	3.21	75-125	<15	
Thallium	1.00	1.03	103	1.00	1.04	104	<1	75-125	<15	
Vanadium	1.00	1.16	116	1.00	1.16	116	<1	75-125	<15	
Zinc	1.00	0.920	92.0	1.00	0.930	92.5	<1	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-1; LCS: Clean Sand; LCS Prepared: 03/06/2017; LCS Analyzed: 03/07/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	0.942	94.2	1.00	0.932	93.2	1.1	80-120	<20	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-2; LCS: Clean Sand; LCS Prepared: 03/06/2017; LCS Analyzed: 03/07/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	0.914	91.4	1.00	0.930	93.0	1.7	80-120	<20	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-1; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Mercury	0.0630	0.0300	0.104M	136	0.0300	0.102M	129	5.3	75-125	<15

QC Batch No: 030817-1; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Mercury	0.0300	0.0309	103	0.0300	0.0303	101	2.0	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-2; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Mercury	0.0680	0.0300	0.100	108	0.0300	0.0983	101	6.7	75-125	<15

QC Batch No: 030817-2; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Mercury	0.0300	0.0309	103	0.0300	0.0309	103	<1	75-125	<15	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

3. AETL Package No. 86878

4/7/2017

File Name: PDF86878-2nd Report.pdf

Level II Data Package for Re-Analysis of SW7199 and

Original Analysis of SW7196

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Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: Randy Westhous

Number of Pages 8
Date Received 03/03/2017
Date Reported 04/07/2017

Job Number	Order Date	Client
86878	03/03/2017	T/TSB

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1
Site: Village Park
15150 Illinois Ave.
Paramount, CA 90723

Enclosed please find results of analyses of 6 dust samples which were re-prepared and re-analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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CHAIN OF CUSTODY RECORD

100949

AETL JOB No. 86878

Page 1 of 1

COMPANY: Tetra Tech
PROJECT MANAGER: Randy Wetthaus
COMPANY ADDRESS: 5383 Hollister Ave. Suite 130
PHONE: 805 681-3101
FAX:
PROJECT NAME: Village Park SI
PROJECT #: 100-SB-T3677102
SITE NAME AND ADDRESS: Village Park ~~SB~~, 15150 Illinois Ave Paramount CA
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	CAM17 by 6020	Titanium 6010	Manganese 6010	Tin 6010	Mercury 7471A	Hex Chrome 7199	TEST INSTRUCTIONS & COMMENTS
1	VPD-1	86878.01	3/2/17	0845	Dust	1 bag filter		X	X	X	X			Split Prep - complete dry filtration using #60 Screen, then split remaining fine dust. Retain half of split and send other ½ to DTSC (Contact Steve Dei[illegible]) Tare = 50.9 g
2	VPD-2	86878.02		0945	Dust	1 bag filter								
3	DUSTDUP1	86878.03		1200	Dust	1 bag filter								
4	VPD-3	86878.04		1155	Dust	1 bag filter								Split Prep
5	VPD-4	86878.05		1305	Dust	1 Bag Filter								Split Prep
6	VPD-5	86878.06		1415	Dust	1 Bag Filter								Split Prep
7	~~VPD-5-D~~													
8														
9														
10														
11														
12														
13														
14														
15														

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	6	PROPERLY COOLED	Y / N / NA
CUSTODY SEALS	Y / N / NA	SAMPLES INTACT	Y / N / NA
RECEIVED IN GOOD COND.	Y / N	SAMPLES ACCEPTED	Y / N

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) Level III

	1.	2.	3.
RELINQUISHED BY SAMPLER:		RELINQUISHED BY:	RELINQUISHED BY: AETL
Signature:		Signature:	Signature:
Printed Name:	Steve Deilson	Printed Name:	Printed Name: Anthony
Date:	3/3/17	Date:	03/03/17
Time:	12 DO	Time:	1600
RECEIVED BY:	AETL	RECEIVED BY:	RECEIVED BY LABORATORY: AETL
Signature:		Signature:	Signature:
Printed Name:	Anthony	Printed Name:	Printed Name: Anthony
Date:	03/03/17	Date:	03/03/17
Time:	1200	Time:	1600

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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COOLER RECEIPT FORM

Client Name: Tetratech
Project Name:
AETL Job Number: 86878
Date Received: 03/03/17 Received by: Antin
Carrier: ☒ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS
☐ Others:

Samples were received in: ☒ Cooler (/) ☐ Other (Specify):
Inside temperature of shipping container No 1: 3.3°C, No 2: _____, No 3: _____
Type of sample containers: ☐ VOA, ☐ Glass bottles, ☐ Wide mouth jars, ☐ HDPE bottles, ☐ Metal sleeves, ☐ Others (Specify): 6x bag filter
How are samples preserved: ☐ None, ☐ Ice, ☒ Blue Ice, ☐ Dry Ice
☒ None, _ HNO_3, _ NaOH, _ ZnOAc, _ HCl, _ $Na_2S_2O_3$, _ MeOH
_ Other (Specify):

	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	✓		
2. Are the Sample labels legible?	✓		
3. Do samples match the COC?	✓		
4. Are the required analyses clear?	✓		
5. Is there enough samples for required analysis?	✓		
6. Are samples sealed with evidence tape?		✓	
7. Are sample containers in good condition?	✓		
8. Are samples preserved?	✓		
9. Are samples preserved properly for the intended analysis?	✓		
10. Are the VOAs free of headspace?	N/A		
11. Are the jars free of headspace?	✓		

Explain all "No" answers for above questions:

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Ordered By

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5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: Randy Westhous

Project ID: 100-SBA-T36771-02
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86878	03/03/2017	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 6 samples with the following specification on 03/03/2017.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
86878.01	VPD-1	03/02/2017	Dust	1
86878.02	VPD-2	03/02/2017	Dust	1
86878.03	DUSTDUP1	03/02/2017	Dust	1
86878.04	VPD-3	03/02/2017	Dust	1
86878.05	VPD-4	03/02/2017	Dust	1
86878.06	VPD-5	03/02/2017	Dust	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010BSCAN) ^ MN	03/10/2017	2	Normal	mg/Kg
(6010BSCAN) ^ SN-TI	03/10/2017	2	Normal	mg/Kg
(6020) ^ CAM-16-MG	03/10/2017	2	Normal	mg/Kg
(7199) ^ LOWMDL	03/10/2017	2	Normal	mg/Kg
7471A ^ LL-MG/KG	03/10/2017	2	Normal	mg/Kg

86878.07	VPD-1 REP	03/02/2017	Dust	1
86878.08	VPD-2 REP	03/02/2017	Dust	1
86878.09	DUSPDUP1 REP	03/02/2017	Dust	1
86878.10	VPD-3 REP	03/02/2017	Dust	1
86878.11	VPD-4 REP	03/02/2017	Dust	1
86878.12	VPD-5 REP	03/02/2017	Dust	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(7196A)	03/10/2017	2	Normal	mg/Kg
(7199) ^ LOWMDL	03/10/2017	2	Normal	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody.
No analytical non-conformances were encountered.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

Christine Novshadayan

From: Westhaus, Randy [Randy.Westhaus@tetratech.com]
Sent: Tuesday, April 04, 2017 3:56 PM
To: Cyrus Razmara
Cc: Christine Novshadayan; Elliot, James; Dodson, Steve
Subject: FW: Village Park Paramount

Cyrus,

Forwarded for your review. Please see the request from DTSC and give me a call to discuss further. We would like your input on this issue before we respond to DTSC.

Thanks!

Randy

Randy Westhaus, P.E.| Director
Direct: 805.681.3101 | Main: 805.681.3100 | Cell: 805.455-0603 | Fax: 805.681.3108
randy.westhaus@tetratech.com
Tetra Tech DIV | Complex World, Clear Solutions
Office Address: 5383 Hollister Avenue, Suite 130 | Santa Barbara, CA 93111| www.tetratech.com
Think Green

From: Salloum, Haissam@DTSC [mailto:Haissam.Salloum@dtsc.ca.gov]
Sent: Tuesday, April 04, 2017 1:07 PM
To: Westhaus, Randy <Randy.Westhaus@tetratech.com>
Cc: John Moreno <JMoreno@paramountcity.com>
Subject: Village Park Paramount

Hi Randy,

I have been in extensive discussions with the DTSC Lab Manager regarding the difference in results of Cr VI. We have decided to re-prepare and re-analyze the same samples again (slightly past the holding time) for Cr VI. Due to DTSC's past experience with methods 3060 and 7199, we found that the high pH of the digests can cause problems with the 7199 analysis. DTSC is concerned about large difference in results and the low matrix spike recoveries by the laboratory considering our laboratory was able to get spike recoveries while both labs had the same matrix. DTSC request that your laboratory also re-prepare and re-analyze the same samples again using methods 3060 and 7196 so that we can compare all the results together under the same preparation and analysis. Hopefully this will resolve the Cr VI difference in analysis results issue

Regards,

Haissam Y. Salloum, P.E.
Senior Engineer

Brownfields & Environmental Restoration Program
Cal EPA / Department of Toxic Substances Control

California Department of
Toxic Substances Control

Phone (818)717-6538, Fax (818)717-6527

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ANALYTICAL RESULTS

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue
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Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: Randy Westhous

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: **2**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040617-1

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			04/06/2017				
Preparation Method			3060A				
Date Analyzed			04/06/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Chromium (VI)	0.25	0.50	ND				

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Village Park
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Page: 3

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040617-1

Our Lab I.D.			86878.07	86878.08	86878.09	86878.10	86878.11
Client Sample I.D.			VPD-1 REP	VPD-2 REP	DUSPDUP1 REP	VPD-3 REP	VPD-4 REP
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			04/06/2017	04/06/2017	04/06/2017	04/06/2017	04/06/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			04/06/2017	04/06/2017	04/06/2017	04/06/2017	04/06/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			5	5	5	5	5
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	1.25	2.50	ND	1.80J	1.90J	ND	ND

Comment(s):
86878.07: Analyzed under dilution due to matrix interference 86878.10: Analyzed under dilution due to matrix interference 86878.11: Analyzed under dilution due to matrix interference

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Page: **4**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040617-1

Our Lab I.D.			**86878.12**				
Client Sample I.D.			VPD-5 REP				
Date Sampled			03/02/2017				
Date Prepared			04/06/2017				
Preparation Method			3060A				
Date Analyzed			04/06/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			5				
Analytes	**MDL**	**PQL**	**Results**				
Chromium (VI)	1.25	2.50	ND				

Comment(s):
86878.12: Analyzed under dilution due to matrix interference

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Village Park
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Page: 5

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040617-1

Our Lab I.D.			Method Blank	**86878.07**	**86878.08**	**86878.09**	**86878.10**
Client Sample I.D.				VPD-1 REP	VPD-2 REP	DUSPDUP1 REP	VPD-3 REP
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			04/06/2017	04/06/2017	04/06/2017	04/06/2017	04/06/2017
Preparation Method			7199	7199	7199	7199	7199
Date Analyzed			04/06/2017	04/06/2017	04/06/2017	04/06/2017	04/06/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	ND	ND	ND	ND

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Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: 6

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040617-1

Our Lab I.D.			**86878.11**	**86878.12**			
Client Sample I.D.			VPD-4 REP	VPD-5 REP			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			04/06/2017	04/06/2017			
Preparation Method			7199	7199			
Date Analyzed			04/06/2017	04/06/2017			
Matrix			Dust	Dust			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Chromium (VI)	0.05	0.10	ND	ND			

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QUALITY CONTROL RESULTS

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Attn: Randy Westhous

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: **7**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040617-1; Dup or Spiked Sample: 86878.10; LCS: ; QC Prepared: 04/06/2017; QC Analyzed: 04/06/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Chromium (VI)	0.00	1.00	0.00100	0.1M	1.00	0.00100	0.1M	<1	80-120	<20

QC Batch No: HC040617-1; Dup or Spiked Sample: 86878.10; LCS: ; QC Prepared: 04/06/2017; QC Analyzed: 04/06/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	1.06	106	1.00	0.980	98.0	7.8	80-120	<20	

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QUALITY CONTROL RESULTS

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Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: 8

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040617-1; Dup or Spiked Sample: 86878.10; LCS: ; QC Prepared: 04/06/2017; QC Analyzed: 04/06/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Chromium (VI)	0.00	1.00	0.00100	0.1M	1.00	0.00100	0.1M	<1	75-125	<20

QC Batch No: HC040617-1; Dup or Spiked Sample: 86878.10; LCS: ; QC Prepared: 04/06/2017; QC Analyzed: 04/06/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	1.03	103	1.00	1.06	106	2.9	80-120	<20	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

American Environmental Testing Laboratory Inc.
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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

4. AETL Package No. 86879

4/7/2017

File Name: PDF86879-2nd Report.pdf

Level II Data Package for Re-Analysis of SW7199 and

Original Analysis of SW7196

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Ordered By

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Telephone: (805)681-3100
Attention: Randy Westhaus

Number of Pages 17
Date Received 03/03/2017
Date Reported 04/07/2017

Job Number	Order Date	Client
86879	03/03/2017	T/TSB

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1
Site: Village Park
15150 Illinois Ave.
Paramount, CA 90723

Enclosed please find results of analyses of 17 soil samples which were re-prepared and re-analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.
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CHAIN OF CUSTODY RECORD

100950

COMPANY: Tetra Tech inc.
PROJECT MANAGER: Randy Westhaus
COMPANY ADDRESS: 5383 Hollister Ave. Suite
PHONE:
FAX:
PROJECT NAME: Village Park
PROJECT #: 100-SBA-T36771.02
SITE NAME AND ADDRESS: Paramount, CA
PO #:

AETL JOB No. 86879

Page 1 of 2

ANALYSIS REQUESTED

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA 8020/8471A (full)	EPA 6010B	EPA 7199	TEST INSTRUCTIONS & COMMENTS
1	VPS-1-0	86879.01	3/2/17	0900	S	1	none	X	X	X	
2	VPS-1-1	86879.02	↓	0905	↓	↓	↓	X	X	X	
3	VPS-2-0	86879.03	↓	0925	↓	↓	↓	X	X	X	
4	VPS-2-1	86879.04	↓	0930	↓	↓	↓	X	X	X	
5	SOILDup1	86879.05	↓	0935	↓	↓	↓	X	X	X	
6	VPS-3-0	86879.06	↓	0955	↓	↓	↓	X	X	X	
7	VPS-3-1	86879.07	↓	1000	↓	↓	↓	X	X	X	
8	VPS-4-0	86879.08	↓	1030	↓	↓	↓	X	X	X	
9	VPS-4-1	86879.09	↓	1035	↓	↓	↓	X	X	X	
10	VPS-5-0	86879.10	↓	1050	↓	↓	↓	X	X	X	
11	VPS-5-1	86879.11	↓	1100	↓	↓	↓	X	X	X	
12	VPS-6-0	86879.12	↓	1125	↓	↓	↓	X	X	X	
13	VPS-6-1	86879.13	↓	1130	↓	↓	↓	X	X	X	
14	VPS-7-0	86879.14	↓	1145	↓	↓	↓	X	X	X	
15	VPS-7-1	86879.15	↓	1155	↓	↓	↓	X	X	X	

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED	Y / N / NA
CUSTODY SEALS Y / N / NA		SAMPLES INTACT	Y / N / NA
RECEIVED IN GOOD COND.	Y / N	SAMPLES ACCEPTED	Y / N

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature: AETL
Printed Name: Steve Dodson	Printed Name:	Printed Name: Antin
Date: 3/3/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600
RECEIVED BY: 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: 3.
Signature: AETL	Signature:	Signature: AETL
Printed Name: Antin	Printed Name:	Printed Name: Antin
Date: 03/03/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600

TURN AROUND TIME

☒ NORMAL ☐ RUSH
☐ SAME DAY
☐ NEXT DAY
☐ 2 DAYS
☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) level III

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

100946

AETL JOB No. 86879

COMPANY: Tetra Tech Inc.
PROJECT MANAGER: Randy Westhaus
COMPANY ADDRESS:
PHONE:
FAX:
PROJECT NAME: same as page 1
PROJECT #: 100-SGA-T36771.02
SITE NAME AND ADDRESS:
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA 6010/7471A (TL)	EPA 6010B	EPA 7199	TEST INSTRUCTIONS & COMMENTS
1	VPS-8-0	86879.16	3/2/17	1215	S	1	none	X	X	X	
2	VPS-8-1	86879.17	↓	1220	↓	↓	↓	X	X	X	
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

ANALYSIS REQUESTED

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	2	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y/ N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: AETL 3.
Signature:	Signature:	Signature:
Printed Name: Steve Sabin	Printed Name:	Printed Name: Andin
Date: 3/3/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600
RECEIVED BY: AETL 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: AETL 3.
Signature:	Signature:	Signature:
Printed Name: Andin	Printed Name:	Printed Name: Andin
Date: 03/03/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) level III

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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COOLER RECEIPT FORM

Client Name: Tetratech

Project Name:

AETL Job Number: 86879

Date Received: 03/03/17 Received by: Anton

Carrier: ☒ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS

☐ Others:

Samples were received in: ☒ Cooler (/) ☐ Other (Specify):

Inside temperature of shipping container No 1: 3.2°C, No 2: _____, No 3: _____

Type of sample containers: ☐ VOA, ☐ Glass bottles, ☒ Wide mouth jars, ☐ HDPE bottles, ☒ Metal sleeves, ☐ Others (Specify):

How are samples preserved: ☐ None, ☒ Ice, ☒ Blue Ice, ☐ Dry Ice

☒ None, _ HNO_3, _ NaOH, _ ZnOAc, _ HCl, _ $Na_2S_2O_3$, _ MeOH

_ Other (Specify):

	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	✓		
2. Are the Sample labels legible?	✓		
3. Do samples match the COC?	✓		
4. Are the required analyses clear?	✓		
5. Is there enough samples for required analysis?	✓		
6. Are samples sealed with evidence tape?		✓	
7. Are sample containers in good condition?	✓		
8. Are samples preserved?	✓		
9. Are samples preserved properly for the intended analysis?	✓		
10. Are the VOAs free of headspace?	N/A		
11. Are the jars free of headspace?	✓		

Explain all "No" answers for above questions:

Christine Novshadayan

From: Westhaus, Randy [Randy.Westhaus@tetratech.com]
Sent: Tuesday, April 04, 2017 3:56 PM
To: Cyrus Razmara
Cc: Christine Novshadayan; Elliot, James; Dodson, Steve
Subject: FW: Village Park Paramount

Cyrus,

Forwarded for your review. Please see the request from DTSC and give me a call to discuss further. We would like your input on this issue before we respond to DTSC.

Thanks!

Randy

Randy Westhaus, P.E.| Director
Direct: 805.681.3101 | Main: 805.681.3100 | Cell: 805.455-0603 | Fax: 805.681.3108
randy.westhaus@tetratech.com
Tetra Tech DIV | Complex World, Clear Solutions
Office Address: 5383 Hollister Avenue, Suite 130 | Santa Barbara, CA 93111| www.tetratech.com
Think Green

From: Salloum, Haissam@DTSC [mailto:Haissam.Salloum@dtsc.ca.gov]
Sent: Tuesday, April 04, 2017 1:07 PM
To: Westhaus, Randy <Randy.Westhaus@tetratech.com>
Cc: John Moreno <JMoreno@paramountcity.com>
Subject: Village Park Paramount

Hi Randy,

I have been in extensive discussions with the DTSC Lab Manager regarding the difference in results of Cr VI. We have decided to re-prepare and re-analyze the same samples again (slightly past the holding time) for Cr VI. Due to DTSC's past experience with methods 3060 and 7199, we found that the high pH of the digests can cause problems with the 7199 analysis. DTSC is concerned about large difference in results and the low matrix spike recoveries by the laboratory considering our laboratory was able to get spike recoveries while both labs had the same matrix. DTSC request that your laboratory also re-prepare and re-analyze the same samples again using methods 3060 and 7196 so that we can compare all the results together under the same preparation and analysis. Hopefully this will resolve the Cr VI difference in analysis results issue

Regards,

Haissam Y. Salloum, P.E.
Senior Engineer

Brownfields & Environmental Restoration Program
Cal EPA / Department of Toxic Substances Control

California Department of
Toxic Substances Control

Phone (818)717-6538, Fax (818)717-6527

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Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Project ID: 100-SBA-T36771-02
Date Received 03/03/2017
Date Reported 03/16/2017

Telephone: (805)681-3100
Attention: Randy Westhaus

Job Number	Order Date	Client
86879	03/03/2017	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 17 samples with the following specification on 03/03/2017.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
86879.01	VPS-1-0	03/02/2017	Soil	1
86879.02	VPS-1-1	03/02/2017	Soil	1
86879.03	VPS-2-0	03/02/2017	Soil	1
86879.04	VPS-2-1	03/02/2017	Soil	1
86879.05	Solid DUP 1	03/02/2017	Soil	1
86879.06	VPS-3-0	03/02/2017	Soil	1
86879.07	VPS-3-1	03/02/2017	Soil	1
86879.08	VPS-4-0	03/02/2017	Soil	1
86879.09	VPS-4-1	03/02/2017	Soil	1
86879.10	VPS-5-0	03/02/2017	Soil	1
86879.11	VPS-5-1	03/02/2017	Soil	1
86879.12	VPS-6-0	03/02/2017	Soil	1
86879.13	VPS-6-1	03/02/2017	Soil	1
86879.14	VPS-7-0	03/02/2017	Soil	1
86879.15	VPS-7-1	03/02/2017	Soil	1
86879.16	VPS-8-0	03/02/2017	Soil	1
86879.17	VPS-8-1	03/02/2017	Soil	1

Method ^ Submethod	*Req Date*	*Priority*	*TAT*	*Units*
(6010BSCAN) ^ MN	03/10/2017	2	Normal	mg/Kg
(6010BSCAN) ^ SN-TI	03/10/2017	2	Normal	mg/Kg
(6020) ^ CAM-16-MG	03/10/2017	2	Normal	mg/Kg
(7199) ^ LOWMDL	03/10/2017	2	Normal	mg/Kg
7471A ^ LL-MG/KG	03/10/2017	2	Normal	mg/Kg

86879.18	VPS-1-0 REP	03/02/2017	Soil	1
86879.19	VPS-1-1 REP	03/02/2017	Soil	1

Continued

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Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: Randy Westhaus

Project ID: 100-SBA-T36771-02
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86879	03/03/2017	T/TSB

CERTIFICATE OF ANALYSIS

CASE NARRATIVE

86879.20	VPS-2-0 REP	03/02/2017	Soil	1
86879.21	VPS-2-1 REP	03/02/2017	Soil	1
86879.22	Solid DUP 1 REP	03/02/2017	Soil	1
86879.23	VPS-3-0 REP	03/02/2017	Soil	1
86879.24	VPS-3-1 REP	03/02/2017	Soil	1
86879.25	VPS-4-0 REP	03/02/2017	Soil	1
86879.26	VPS-4-1 REP	03/02/2017	Soil	1
86879.27	VPS-5-0 REP	03/02/2017	Soil	1
86879.28	VPS-5-1 REP	03/02/2017	Soil	1
86879.29	VPS-6-0 REP	03/02/2017	Soil	1
86879.30	VPS-6-1 REP	03/02/2017	Soil	1
86879.31	VPS-7-0 REP	03/02/2017	Soil	1
86879.32	VPS-7-1 REP	03/02/2017	Soil	1
86879.33	VPS-8-0 REP	03/02/2017	Soil	1
86879.34	VPS-8-1 REP	03/02/2017	Soil	1

Method ^ Submethod	*Req Date*	*Priority*	*TAT*	*Units*
(7196A)	03/10/2017	2	Normal	mg/Kg
(7199) ^ LOWMDL	03/10/2017	2	Normal	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody. Analytical non-conformances have been noted on the report.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: Randy Westhaus

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: **2**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040517-3

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			04/05/2017				
Preparation Method			3060A				
Date Analyzed			04/05/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Chromium (VI)	0.25	0.50	ND				

American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

Ordered By

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Telephone: (805)681-3100
Attn: Randy Westhaus

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: 3

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040517-3

Our Lab I.D.			86879.18	86879.19	86879.20	86879.21	86879.22
Client Sample I.D.			VPS-1-0 REP	VPS-1-1 REP	VPS-2-0 REP	VPS-2-1 REP	Solid DUP 1 REP
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			5	5	5	5	5
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	1.25	2.50	ND	ND	ND	ND	ND

Comment(s):
86879.18: Analyzed under dilution due to matrix interference 86879.19: Analyzed under dilution due to matrix interference 86879.20: Analyzed under dilution due to matrix interference 86879.21: Analyzed under dilution due to matrix interference 86879.22: Analyzed under dilution due to matrix interference

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ANALYTICAL RESULTS

Ordered By

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Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: Randy Westhaus

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: **4**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040517-3

Our Lab I.D.			**86879.23**	**86879.24**	**86879.25**	**86879.26**	
Client Sample I.D.			VPS-3-0 REP	VPS-3-1 REP	VPS-4-0 REP	VPS-4-1 REP	
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	
Date Prepared			04/05/2017	04/05/2017	04/05/2017	04/05/2017	
Preparation Method			3060A	3060A	3060A	3060A	
Date Analyzed			04/05/2017	04/05/2017	04/05/2017	04/05/2017	
Matrix			Soil	Soil	Soil	Soil	
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	
Dilution Factor			1	1	1	1	
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	
Chromium (VI)	0.25	0.50	ND	ND	ND	ND	

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ANALYTICAL RESULTS

Ordered By

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Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: 5

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040517-3

Our Lab I.D.			**86879.27**				
Client Sample I.D.			VPS-5-0 REP				
Date Sampled			03/02/2017				
Date Prepared			04/05/2017				
Preparation Method			3060A				
Date Analyzed			04/05/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			5				
Analytes	**MDL**	**PQL**	**Results**				
Chromium (VI)	1.25	2.50	ND				

Comment(s):
86879.27: Analyzed under dilution due to matrix interference

American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

Ordered By

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Telephone: (805)681-3100
Attn: Randy Westhaus

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: 6

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040517-4

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			04/05/2017				
Preparation Method			3060A				
Date Analyzed			04/05/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Chromium (VI)	0.25	0.50	ND				

American Environmental Testing Laboratory Inc.

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ANALYTICAL RESULTS

Ordered By

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Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: Randy Westhaus

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: **7**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040517-4

Our Lab I.D.			**86879.28**	**86879.29**	**86879.30**	**86879.31**	**86879.32**
Client Sample I.D.			VPS-5-1 REP	VPS-6-0 REP	VPS-6-1 REP	VPS-7-0 REP	VPS-7-1 REP
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			5	5	5	5	5
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	1.25	2.50	ND	ND	ND	ND	ND

Comment(s):
86879.28: Analyzed under dilution due to matrix interference 86879.29: Analyzed under dilution due to matrix interference 86879.30: Analyzed under dilution due to matrix interference 86879.31: Analyzed under dilution due to matrix interference 86879.32: Analyzed under dilution due to matrix interference

American Environmental Testing Laboratory Inc.

2834 & 2908 North Naomi Street Burbank, CA 91504 • DOHS NO: 1541, LACSD NO: 10181
Tel: (888) 288-AETL • (818) 845-8200 • Fax: (818) 845-8840 • www.aetlab.com

ANALYTICAL RESULTS

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: Randy Westhaus

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: 8

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040517-4

Our Lab I.D.			86879.33	86879.34			
Client Sample I.D.			VPS-8-0 REP	VPS-8-1 REP			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			04/05/2017	04/05/2017			
Preparation Method			3060A	3060A			
Date Analyzed			04/05/2017	04/05/2017			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			5	5			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Chromium (VI)	1.25	2.50	ND	ND			

Comment(s):
86879.33: Analyzed under dilution due to matrix interference 86879.34: Analyzed under dilution due to matrix interference

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Village Park
15150 Illinois Ave.
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Page: 9

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040517-1

Our Lab I.D.			Method Blank	**86879.18**	**86879.19**	**86879.20**	**86879.21**
Client Sample I.D.				VPS-1-0 REP	VPS-1-1 REP	VPS-2-0 REP	VPS-2-1 REP
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	0.0687J	0.0815J	ND	0.0795J

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Village Park
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Page: **10**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040517-1

Our Lab I.D.			**86879.22**	**86879.23**	**86879.24**	**86879.25**	**86879.26**
Client Sample I.D.			Solid DUP 1 REP	VPS-3-0 REP	VPS-3-1 REP	VPS-4-0 REP	VPS-4-1 REP
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	0.130	0.118	0.0670J	ND

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Village Park
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Page: **11**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040517-1

Our Lab I.D.			**86879.27**				
Client Sample I.D.			VPS-5-0 REP				
Date Sampled			03/02/2017				
Date Prepared			04/05/2017				
Preparation Method			3060A				
Date Analyzed			04/05/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Chromium (VI)	0.05	0.10	ND				

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Site

Village Park
15150 Illinois Ave.
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Page: **12**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040517-2

Our Lab I.D.			Method Blank	**86879.28**	**86879.29**	**86879.30**	**86879.31**
Client Sample I.D.				VPS-5-1 REP	VPS-6-0 REP	VPS-6-1 REP	VPS-7-0 REP
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			04/05/2017	04/05/2017	04/05/2017	04/05/2017	04/05/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	ND	0.0570J	0.118	0.128

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Site

Village Park
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Page: **13**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040517-2

Our Lab I.D.			**86879.32**	**86879.33**	**86879.34**		
Client Sample I.D.			VPS-7-1 REP	VPS-8-0 REP	VPS-8-1 REP		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			04/05/2017	04/05/2017	04/05/2017		
Preparation Method			3060A	3060A	3060A		
Date Analyzed			04/05/2017	04/05/2017	04/05/2017		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Chromium (VI)	0.05	0.10	ND	ND	ND		

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QUALITY CONTROL RESULTS

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Site

Village Park
15150 Illinois Ave.
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Page: **14**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040517-3; Dup or Spiked Sample: 86879.18; LCS: Clean Sand; QC Prepared: 04/05/2017; QC Analyzed: 04/05/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Chromium (VI)	0.00	1.00	0.00100	M0.1	1.00	0.00100	M0.1	<1	80-120	<20

QC Batch No: HC040517-3; Dup or Spiked Sample: 86879.18; LCS: Clean Sand; QC Prepared: 04/05/2017; QC Analyzed: 04/05/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	0.920	92.0	1.00	0.920	92.0	<1	80-120	<20	

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Village Park
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Page: **15**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7196A), Chromium, Hexavalent (Colorimetric)

QC Batch No: HC040517-4; Dup or Spiked Sample: 86879.28; LCS: Clean Sand; QC Prepared: 04/05/2017; QC Analyzed: 04/05/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Chromium (VI)	0.00	1.00	0.00100	M0.1	1.00	0.00100	M0.1	<1	80-120	<20

QC Batch No: HC040517-4; Dup or Spiked Sample: 86879.28; LCS: Clean Sand; QC Prepared: 04/05/2017; QC Analyzed: 04/05/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	0.920	92.0	1.00	0.940	94.0	2.2	80-120	<20	

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Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040517-1; Dup or Spiked Sample: 86879.18; LCS: Clean Sand; QC Prepared: 04/05/2017; QC Analyzed: 04/05/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Chromium (VI)	0.0690	1.00	0.0700M	0.1	1.00	0.0700M	0.1	<1	75-125	<20

QC Batch No: HC040517-1; Dup or Spiked Sample: 86879.18; LCS: Clean Sand; QC Prepared: 04/05/2017; QC Analyzed: 04/05/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	1.03	103	1.00	1.03	103	<1	80-120	<20	

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Site

Village Park
15150 Illinois Ave.
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Page: **17**

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC040517-2; Dup or Spiked Sample: 86879.28; LCS: Clean Sand; QC Prepared: 04/05/2017; QC Analyzed: 04/05/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Chromium (VI)	0.0410	1.00	0.0420M	0.1	1.00	0.0420M	0.1	<1	75-125	<20

QC Batch No: HC040517-2; Dup or Spiked Sample: 86879.28; LCS: Clean Sand; QC Prepared: 04/05/2017; QC Analyzed: 04/05/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	1.00	100	1.00	1.00	100	<1	80-120	<20	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

5. AETL Package No. 86878

3/16/2017

File Name: DP86878.pdf

Level IV Report of SW7199 Data for Samples

Originally Reported on 3/16/17

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Cover Page

DATA PACKAGE
LEVEL IV
For Chromium Hexavalent by EPA 7199 Only

OF

AETL Job Number 86878
Dated 03/16/2017

FOR

Tetra Tech
5383 Hollister Ave, Ste 130
Santa Barbara, CA 9311

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number 86878

Chromium Hexavalent by EPA 7199 by IC

		Page Number
Original Report, COC, and Cooler Receipt Form	✓	1-30
Case Narrative	✓	31-33
Sample Results and Data	✓	34-50
QC Results and Data	✓	51-68
Initial Calibration (IC) Data and Graph	✓	69-86
Second Source Verification (ICV)	✓	87-89
Daily Calibration (CCV)	✓	90-96
Analytical Logs	✓	97-107

AETL Job Number 86878

Chromium Hexavalent by 7199

ORIGINAL REPORT, COC, AND COOLER RECEIPT FORM

American Environmental Testing Laboratory Inc.

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Ordered By

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Telephone: (805) 681-3100
Attention: Randy Westhous

Number of Pages 19
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86878	03/03/2017	T/TSB

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1
Site: Village Park
15150 Illinois Ave.
Paramount, CA 90723

Enclosed please find results of analyses of 6 dust samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: C. Razmara

Cyrus Razmara, Ph.D.
Laboratory Director

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CHAIN OF CUSTODY RECORD

100949

AETL JOB No. 86878

Page 1 of 1

COMPANY: Tetra Tech
PROJECT MANAGER: Randy Werthaus
COMPANY ADDRESS: 5383 Hollister Ave. Suite 130
PHONE: 805 681-3101
FAX:
PROJECT NAME: Village Park SI
PROJECT #: 100-SB-T3677-02
SITE NAME AND ADDRESS: Village Park ~~SB~~, 15150 Illinois Ave Paramount CA
PO #:

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	CAM17 by 6020	Titanium 6010	Manganese 6010	Tin 6010	Mercury 7471A	Hex Chrome 7199	TEST INSTRUCTIONS & COMMENTS
1	VPD-1	86878.01	3/2/17	0845	Dust	1 bag filter		X	X	X	X			Split Prep - complete dry filtration using #60 Screen, then split remaining fine dust. Retain half of split and send other ½ to DTSC (contact Steve)
2	VPD-2	86878.02		0945	Dust	1 bag filter								Tare = 50.9 g
3	DUSTDUP1	86878.03		1200	Dust	1 bag filter								
4	VPD-3	86878.04		1155	Dust	1 bag filter								Split Prep
5	VPD-4	86878.05		1305	Dust	1 Bag Filter								Split Prep
6	VPD-5	86878.06		1415	Dust	1 Bag Filter								Split Prep
7	~~VPD-5 SD~~													
8														
9														
10														
11														
12														
13														
14														
15														

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	6	PROPERLY COOLED	Y / N / NA
CUSTODY SEALS	Y / N / NA	SAMPLES INTACT	Y / N / NA
RECEIVED IN GOOD COND	Y / N	SAMPLES ACCEPTED	Y / N

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) Level III

	1.	2.	3.
RELINQUISHED BY SAMPLER:		RELINQUISHED BY:	RELINQUISHED BY: AETL
Signature:		Signature:	Signature:
Printed Name:	Steve Dodson	Printed Name:	Printed Name: Anthin
Date:	3/3/17	Date:	03/03/17
Time:	1200	Time:	1600
RECEIVED BY:	AETL	RECEIVED BY:	RECEIVED BY LABORATORY: AETL
Signature:		Signature:	Signature:
Printed Name:	Anthin	Printed Name:	Printed Name: Anthin
Date:	03/03/17	Date:	03/03/17
Time:	1200	Time:	1600

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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COOLER RECEIPT FORM

Client Name: Tetratech
Project Name:
AETL Job Number: 86878
Date Received: 03/03/17 Received by: Antin
Carrier: ☒ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS
☐ Others:

Samples were received in: ☒ Cooler (/) ☐ Other (Specify):
Inside temperature of shipping container No 1: 3.3°C, No 2: _____, No 3: _____
Type of sample containers: ☐ VOA, ☐ Glass bottles, ☐ Wide mouth jars, ☐ HDPE bottles, ☐ Metal sleeves, ☐ Others (Specify): 6x bag filter
How are samples preserved: ☐ None, ☐ Ice, ☒ Blue Ice, ☐ Dry Ice
☒ None, _ HNO_3, _ NaOH, _ ZnOAc, _ HCl, _ $Na_2S_2O_3$, _ MeOH
_ Other (Specify):

	Yes	No, explain below	Name, if client was notified
1. Are the COCs Correct?	✓		
2. Are the Sample labels legible?	✓		
3. Do samples match the COC?	✓		
4. Are the required analyses clear?	✓		
5. Is there enough samples for required analysis?	✓		
6. Are samples sealed with evidence tape?		✓	
7. Are sample containers in good condition?	✓		
8. Are samples preserved?	✓		
9. Are samples preserved properly for the intended analysis?	✓		
10. Are the VOAs free of headspace?	N/A		
11. Are the jars free of headspace?	✓		

Explain all "No" answers for above questions:

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5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805) 681-3100
Attention: Randy Westhous

Project ID: 100-SBA-T36771-02
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86878	03/03/2017	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 6 samples with the following specification on 03/03/2017.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
86878.01	VPD-1	03/02/2017	Dust	1
86878.02	VPD-2	03/02/2017	Dust	1
86878.03	DUSTDUP1	03/02/2017	Dust	1
86878.04	VPD-3	03/02/2017	Dust	1
86878.05	VPD-4	03/02/2017	Dust	1
86878.06	VPD-5	03/02/2017	Dust	1

Method ^ Submethod	*Req Date*	*Priority*	*TAT*	*Units*
(6010BSCAN) ^ MN	03/10/2017	2	Normal	mg/Kg
(6010BSCAN) ^ SN-TI	03/10/2017	2	Normal	mg/Kg
(6020) ^ CAM-16-MG	03/10/2017	2	Normal	mg/Kg
(7199) ^ LOWMDL	03/10/2017	2	Normal	mg/Kg
7471A ^ LL-MG/KG	03/10/2017	2	Normal	mg/Kg

The samples were analyzed as specified on the enclosed chain of custody.
No analytical non-conformances were encountered.

Checked By: _____ Approved By: _____

Cyrus Razmara, Ph.D.
Laboratory Director

TABLE
Summary of Dust Analytical Results for Chromium Hexavalent by Ion Chromatography
Village Park 15150 Illinois Ave. Paramount, CA 90723

Chromium Hexavalent by Ion Chromatography. Method: (7199)

Sample ID	STLC Limit mg/L	TCLP Limit mg/L	TTLC Limit mg/Kg	Units	DUSTDUP1	VPD-1	VPD-2	VPD-3	VPD-4	VPD-5
Sample Date					3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number					86878	86878	86878	86878	86878	86878
Chromium (VI)	5.0	5.0	500	mg/Kg	**0.052J**	**0.067J**	**0.066J**	**0.068J**	ND<0.05	ND<0.05

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2) "J" INDICATES ANALYTE WAS DETECTED. HOWEVER, ANALYTE CONCENTRATION IS AN ESTIMATED VALUE WHICH IS BETWEEN THE METHOD DETECTION LIMIT (MDL) AND THE PRACTICAL QUANTITATION LIMIT(PQL).
3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: DT_7199.xls

TABLE
Summary of Dust Analytical Results for Title 22 Metals by ICP/MS
Village Park 15150 Illinois Ave. Paramount, CA 90723

Title 22 Metals by ICP/MS. Method: (6020)

Sample ID	STLC Limit mg/L	TCLP Limit mg/L	TTLC Limit mg/Kg	Units	DUSTDUP1	VPD-1	VPD-2	VPD-3	VPD-4	VPD-5
Sample Date					3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number					86878	86878	86878	86878	86878	86878
Antimony	15		500	mg/Kg	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Arsenic	5.0	5.0	500	mg/Kg	**2.63J**	**4.13J**	**2.53J**	**1.52J**	**4.89J**	**4.49J**
Barium	100	100	10000	mg/Kg	**182**	**182**	**176**	**88.5**	**271**	**252**
Beryllium	0.75		75	mg/Kg	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Cadmium	1.0	1.0	100	mg/Kg	**1.23J**	**1.60J**	**1.07J**	ND<1.00	**1.83J**	**1.41J**
Chromium	5.0	5.0	2500	mg/Kg	**38.1**	**38.6**	**42.1**	**20.5**	**43.0**	**49.6**
Cobalt	80		8000	mg/Kg	**21.2**	**13.4**	**23.8**	**8.54**	**22.3**	**22.6**
Copper	25		2500	mg/Kg	**111**	**198**	**138**	**67.6**	**138**	**193**
Lead	5.0	5.0	1000	mg/Kg	**25.2**	**67.3**	**24.8**	**9.55**	**41.9**	**40.4**
Molybdenum	350		3500	mg/Kg	**14.6**	**10.1**	**15.7**	**4.87J**	**14.8**	**16.1**
Nickel	20		2000	mg/Kg	**117**	**73.7**	**139**	**47.6**	**126**	**139**
Selenium	1.0	1.0	100	mg/Kg	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Silver	5.0	5.0	500	mg/Kg	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Thallium	7.0		700	mg/Kg	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Vanadium	24		2400	mg/Kg	**11.5**	**21.7**	**19.0**	**10.9**	**28.4**	**26.8**
Zinc	250		5000	mg/Kg	**10.5**	**644**	**10.3**	**581**	**879**	**757**

1) "ND<X" INDICATES CONSTITUENT(S) NOT DETECTED AT OR ABOVE METHOD DETECTION LIMIT.
2) "J" INDICATES ANALYTE WAS DETECTED. HOWEVER, ANALYTE CONCENTRATION IS AN ESTIMATED VALUE WHICH IS BETWEEN THE METHOD DETECTION LIMIT (MDL) AND THE PRACTICAL QUANTITATION LIMIT(PQL).
3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: DT_6020.xls

TABLE
Summary of Dust Analytical Results for Tin and Titanium by ICP
Village Park 15150 Illinois Ave. Paramount, CA 90723

Tin and Titanium by ICP. Method: (6010BSCAN)

Sample ID	Units	DUSTDUP1	VPD-1	VPD-2	VPD-3	VPD-4	VPD-5
Sample Date		3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number		86878	86878	86878	86878	86878	86878
Tin	mg/Kg	**8.07**	**10.7**	**7.59**	**3.16J**	**8.10**	**7.84**
Titanium	mg/Kg	**592**	**615**	**605**	**266**	**760**	**722**

1) "ND<X" INDICATES CONSTITUENT(S) NOT DETECTED AT OR ABOVE METHOD DETECTION LIMIT.
2) "J" INDICATES ANALYTE WAS DETECTED. HOWEVER, ANALYTE CONCENTRATION IS AN ESTIMATED VALUE WHICH IS BETWEEN THE METHOD DETECTION LIMIT (MDL) AND THE PRACTICAL QUANTITATION LIMIT(PQL).
3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: DT_6010BSCAN_1.xls

TABLE
Summary of Dust Analytical Results for Manganese by ICP
Village Park 15150 Illinois Ave. Paramount, CA 90723

Manganese by ICP. Method: (6010BSCAN)

Sample ID	Units	DUSTDUP1	VPD-1	VPD-2	VPD-3	VPD-4	VPD-5
Sample Date		3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number		86878	86878	86878	86878	86878	86878
Manganese	mg/Kg	**152**	**295**	**156**	**72.8**	**333**	**324**

1) "ND<X" INDICATES CONSTITUENT(S) NOT DETECTED AT OR ABOVE METHOD DETECTION LIMIT.
2) "J" INDICATES ANALYTE WAS DETECTED. HOWEVER, ANALYTE CONCENTRATION IS AN ESTIMATED VALUE WHICH IS BETWEEN THE METHOD DETECTION LIMIT (MDL) AND THE PRACTICAL QUANTITATION LIMIT(PQL).
3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: DT_6010BSCAN.xls

TABLE

Summary of Dust Analytical Results for Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

Village Park 15150 Illinois Ave. Paramount, CA 90723

Mercury in Solid or Semisolid Waste, Cold-Vapor Technique. Method: 7471A

Sample ID	STLC Limit mg/L	TCLP Limit mg/L	TTLC Limit mg/Kg	Units	DUSTDUP1	VPD-1	VPD-2	VPD-3	VPD-4	VPD-5
Sample Date					3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number					86878	86878	86878	86878	86878	86878
Mercury	0.2	0.2	20	mg/Kg	**0.077**	**0.050**	**0.070**	**0.047**	**0.095**	**0.029**

1) "ND<X" INDICATES CONSTITUENT(S) NOT DETECTED AT OR ABOVE METHOD DETECTION LIMIT.
2) "J" INDICATES ANALYTE WAS DETECTED. HOWEVER, ANALYTE CONCENTRATION IS AN ESTIMATED VALUE WHICH IS BETWEEN THE METHOD DETECTION LIMIT (MDL) AND THE PRACTICAL QUANTITATION LIMIT(PQL).
3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: DT_7471A.xls

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0308171C2

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			03/08/2017				
Preparation Method			3050B				
Date Analyzed			03/09/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Antimony	0.25	0.50	ND				
Arsenic	0.10	0.50	ND				
Barium	0.25	0.50	ND				
Beryllium	0.10	0.25	ND				
Cadmium	0.10	0.25	ND				
Chromium	0.25	0.50	ND				
Cobalt	0.25	0.50	ND				
Copper	0.25	0.50	ND				
Lead	0.25	0.50	ND				
Molybdenum	0.25	0.50	ND				
Nickel	0.25	0.50	ND				
Selenium	0.25	0.50	ND				
Silver	0.25	0.50	ND				
Thallium	0.10	0.25	ND				
Vanadium	0.25	0.50	ND				
Zinc	0.25	0.50	ND				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0308171C2

Our Lab I.D.			**86878.01**	**86878.02**	**86878.03**	**86878.04**	**86878.05**
Client Sample I.D.			VPD-1	VPD-2	DUSTDUP1	VPD-3	VPD-4
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/09/2017	03/09/2017	03/09/2017	03/09/2017	03/09/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Antimony	2.50	5	ND	ND	ND	ND	ND
Arsenic	1.00	5	4.13J	2.53J	2.63J	1.52J	4.89J
Barium	2.50	5	182	176	182	88.5	271
Beryllium	1.00	2.50	ND	ND	ND	ND	ND
Cadmium	1.00	2.50	1.60J	1.07J	1.23J	ND	1.83J
Chromium	2.50	5	38.6	42.1	38.1	20.5	43.0
Cobalt	2.50	5	13.4	23.8	21.2	8.54	22.3
Copper	2.50	5	198	138	111	67.6	138
Lead	2.50	5	67.3	24.8	25.2	9.55	41.9
Molybdenum	2.50	5	10.1	15.7	14.6	4.87J	14.8
Nickel	2.50	5	73.7	139	117	47.6	126
Selenium	2.50	5	ND	ND	ND	ND	ND
Silver	2.50	5	ND	ND	ND	ND	ND
Thallium	1.00	2.50	ND	ND	ND	ND	ND
Vanadium	2.50	5	21.7	19.0	11.5	10.9	28.4
Zinc	2.50	5	644	10.3	10.5	581	879

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0308171C2

Our Lab I.D.			**86878.06**				
Client Sample I.D.			VPD-5				
Date Sampled			03/02/2017				
Date Prepared			03/08/2017				
Preparation Method			3050B				
Date Analyzed			03/09/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			10				
Analytes	**MDL**	**PQL**	**Results**				
Antimony	2.50	5	ND				
Arsenic	1.00	5	4.49J				
Barium	2.50	5	252				
Beryllium	1.00	2.50	ND				
Cadmium	1.00	2.50	1.41J				
Chromium	2.50	5	49.6				
Cobalt	2.50	5	22.6				
Copper	2.50	5	193				
Lead	2.50	5	40.4				
Molybdenum	2.50	5	16.1				
Nickel	2.50	5	139				
Selenium	2.50	5	ND				
Silver	2.50	5	ND				
Thallium	1.00	2.50	ND				
Vanadium	2.50	5	26.8				
Zinc	2.50	5	757				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			03/08/2017				
Preparation Method			3050B				
Date Analyzed			03/09/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Manganese	1.0	5.0	ND				

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Page: 6

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1

Our Lab I.D.			**86878.01**				
Client Sample I.D.			VPD-1				
Date Sampled			03/02/2017				
Date Prepared			03/08/2017				
Preparation Method			3050B				
Date Analyzed			03/09/2017				
Matrix			Dust				
Units			mg/Kg				
Dilution Factor			10				
Analytes	**MDL**	**PQL**	**Results**				
Manganese	10	50	295				

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Village Park
15150 Illinois Ave.
Paramount, CA 90723

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1

Our Lab I.D.			**86878.02**	**86878.03**	**86878.04**		
Client Sample I.D.			VPD-2	DUSTDUP1	VPD-3		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/08/2017	03/08/2017	03/08/2017		
Preparation Method			3050B	3050B	3050B		
Date Analyzed			03/09/2017	03/09/2017	03/09/2017		
Matrix			Dust	Dust	Dust		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Manganese	1.0	5.0	156	152	72.8		

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Village Park
15150 Illinois Ave.
Paramount, CA 90723

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1

Our Lab I.D.			**86878.05**	**86878.06**			
Client Sample I.D.			VPD-4	VPD-5			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/08/2017	03/08/2017			
Preparation Method			3050B	3050B			
Date Analyzed			03/09/2017	03/09/2017			
Matrix			Dust	Dust			
Units			mg/Kg	mg/Kg			
Dilution Factor			10	10			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Manganese	10	50	333	324			

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0308172C3

Our Lab I.D.			Method Blank	86878.01	86878.02	86878.03	86878.04
Client Sample I.D.				VPD-1	VPD-2	DUSTDUP1	VPD-3
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/10/2017	03/10/2017	03/10/2017	03/10/2017	03/10/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Tin	2.50	5.00	ND	10.7	7.59	8.07	3.16J
Titanium	1.00	2.50	ND	615	605	592	266

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Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0308172C3

Our Lab I.D.			**86878.05**	**86878.06**			
Client Sample I.D.			VPD-4	VPD-5			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/08/2017	03/08/2017			
Preparation Method			3050B	3050B			
Date Analyzed			03/10/2017	03/10/2017			
Matrix			Dust	Dust			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Tin	2.50	5.00	8.10	7.84			
Titanium	1.00	2.50	760	722			

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-3

Our Lab I.D.			Method Blank	**86878.01**	**86878.02**	**86878.03**	**86878.04**
Client Sample I.D.				VPD-1	VPD-2	DUSTDUP1	VPD-3
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7471A	7471A	7471A	7471A	7471A
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Mercury	0.003	0.006	ND	0.050	0.070	0.077	0.047

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-3

Our Lab I.D.			**86878.05**	**86878.06**			
Client Sample I.D.			VPD-4	VPD-5			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/08/2017	03/08/2017			
Preparation Method			7471A	7471A			
Date Analyzed			03/08/2017	03/08/2017			
Matrix			Dust	Dust			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Mercury	0.003	0.006	0.095	0.029			

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030817-1

Our Lab I.D.			Method Blank	86878.01	86878.02	86878.03	86878.04
Client Sample I.D.				VPD-1	VPD-2	DUSTDUP1	VPD-3
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7199	7199	7199	7199	7199
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Dust	Dust	Dust	Dust	Dust
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	0.067J	0.066J	0.052J	0.068J

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030817-1

Our Lab I.D.			**86878.05**	**86878.06**			
Client Sample I.D.			VPD-4	VPD-5			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/08/2017	03/08/2017			
Preparation Method			7199	7199			
Date Analyzed			03/08/2017	03/08/2017			
Matrix			Dust	Dust			
Units			mg/Kg	mg/Kg			
Dilution Factor			1	1			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Chromium (VI)	0.05	0.10	ND	ND			

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0308172C1; Dup or Spiked Sample: 86878.01; LCS: ; QC Prepared: 03/08/2017; QC Analyzed: 03/09/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Manganese	254	50.0	282 #	56.0	50.0	281 #	54.0	3.64	75-125	<15

QC Batch No: 0308172C1; Dup or Spiked Sample: 86878.01; LCS: ; QC Prepared: 03/08/2017; QC Analyzed: 03/09/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Manganese	50.0	47.5	95.0	50.0	47.2	94.4	<1	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0308172C3; Dup or Spiked Sample: 86878.01; LCS: ; LCS Prepared: 03/08/2017; LCS Analyzed: 03/10/2017;
Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Tin	50.0	51.0	102	50.0	51.0	102	<1	75-125	<15	
Titanium	50.0	50.5	101	50.0	50.5	101	<1	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0308171C2; Dup or Spiked Sample: 86878.01; LCS: ; LCS Prepared: 03/08/2017; LCS Analyzed: 03/09/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Antimony	1.00	1.00	100	1.00	1.01	101	<1	75-125	<15	
Arsenic	1.00	1.01	101	1.00	1.01	101	<1	75-125	<15	
Barium	1.00	1.00	100	1.00	1.01	101	<1	75-125	<15	
Beryllium	1.00	1.14	114	1.00	1.14	114	<1	75-125	<15	
Cadmium	1.00	1.01	101	1.00	1.02	102	<1	75-125	<15	
Chromium	1.00	1.08	108	1.00	1.05	105	2.82	75-125	<15	
Cobalt	1.00	1.05	105	1.00	1.06	106	<1	75-125	<15	
Copper	1.00	1.03	103	1.00	1.05	105	1.92	75-125	<15	
Lead	1.00	1.04	104	1.00	1.03	103	<1	75-125	<15	
Molybdenum	1.00	1.05	105	1.00	1.07	107	1.89	75-125	<15	
Nickel	1.00	1.04	104	1.00	1.00	100	3.92	75-125	<15	
Selenium	1.00	0.900	90.0	1.00	0.973	97.3	7.79	75-125	<15	
Silver	1.00	1.01	101	1.00	1.02	102	<1	75-125	<15	
Thallium	1.00	1.01	101	1.00	1.02	102	<1	75-125	<15	
Vanadium	1.00	1.08	108	1.00	1.09	109	<1	75-125	<15	
Zinc	1.00	0.984	98.4	1.00	0.965	96.5	1.95	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030817-1; LCS: ; LCS Prepared: 03/08/2017; LCS Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	0.986	98.6	1.00	0.986	98.6	<1	80-120	<20	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86878	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-3; Dup or Spiked Sample: 86878.01; LCS: ; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Mercury	0.0500	0.0300	0.0742	80.8	0.0300	0.0739	79.6	1.5	75-125	<15

QC Batch No: 030817-3; Dup or Spiked Sample: 86878.01; LCS: ; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Mercury	0.0300	0.0268	89.2	0.0300	0.0263	87.6	1.8	75-125	<15	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

AETL Job Number 86878

Chromium Hexavalent by 7199

CASE NARRATIVE

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Case Narrative

AETL Job Number 86878

Project ID: 100-SBA-T36771-02

Project Name: Village Park S1

EPA 7199

Chromium Hexavalent by IC

A total of 6 dust samples were received on 03/03/2017 for the analysis of Chromium Hexavalent by EPA 7199.

Holding Time:

The holding time of these samples were 28 day. Samples were tested within holding time.

Instrument Performance and Calibration:

Multi-calibration points were generated to establish initial calibration (ICAL) which was found to be acceptable.

ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) was carried on at a frequency required by the project. All project calibration requirements were satisfied.

Method Blank:

Method blanks were analyzed at the frequency required by the project. All results were compliant to the project requirements.

Laboratory Control Sample:

One set of LCS/LCSD were analyzed in this batch of samples.

Percent recoveries for QC Batch No 030817-1 were within project requirement.

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Matrix QC Sample:

Sample 86878.01 was spiked for MS/MSD QC samples in QC Batch No: 030817-1. Percent recoveries for MS/MSD for QC Batch No 030817-1were not within QC limits, due to matrix interference.

Sample Duplicate:

Result of sample and sample duplicate were within QC limits of RPD < 20%.

Surrogate:

No surrogate was used in this analysis.

Sample Analysis:

Samples were analyzed according to prescribed analytical procedures.

All project requirements were met; otherwise anomalies were discussed within associated QC parameters.

AETL Job Number 86878

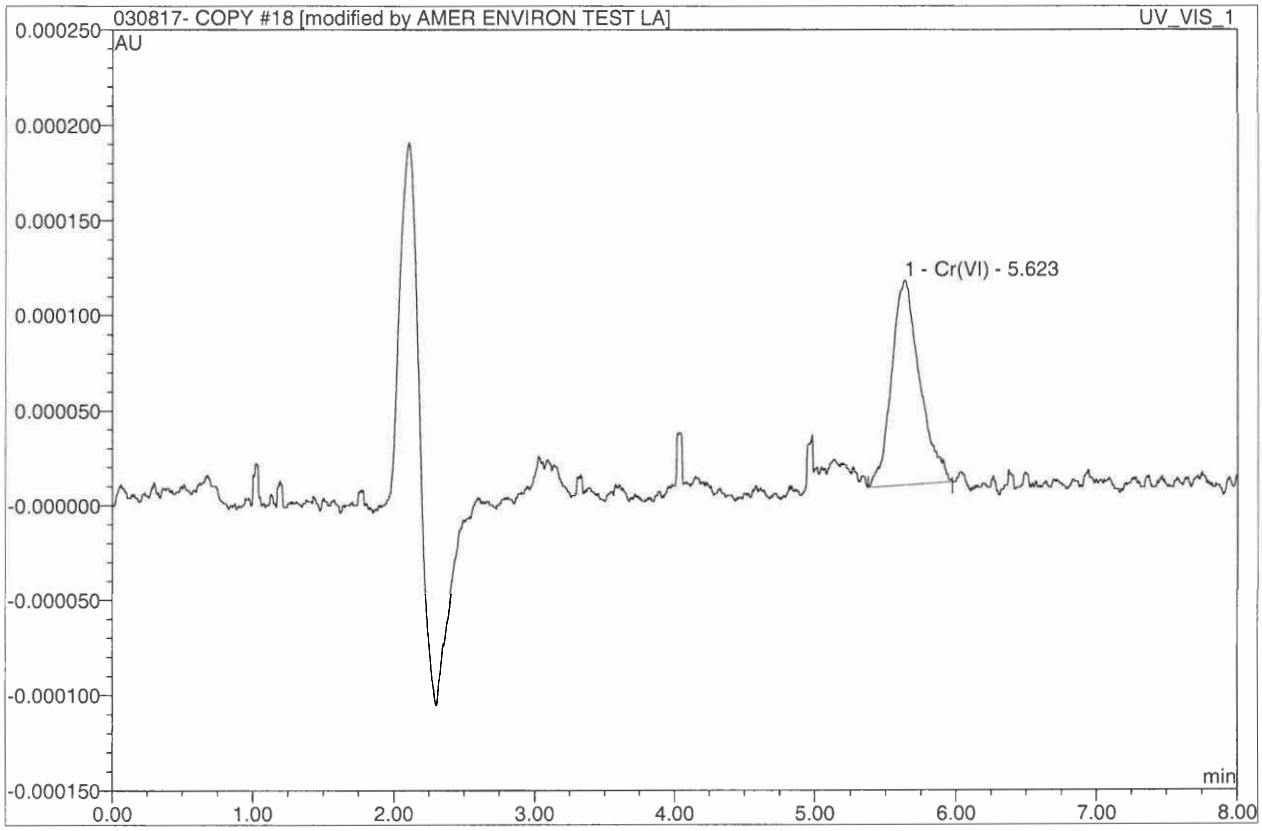
Chromium Hexavalent by 7199

SAMPLE RESULTS AND DATA

18 S-86878.01

7199 run by MK

Sample Name:	**S-86878.01**	*Injection Volume:*	**1000.0**
Vial Number:	**18**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 15:52**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.62	Cr(VI)	0.0001080	0.0000252	100.00	0.666	99.991
Total:			0.000	0.000	100.00	0.666	

$$\frac{0.666\ \mu g}{L} \times \frac{1L}{1000ml} \times \frac{50ml}{2.5g} \times \frac{1000g}{1Kg} \times \frac{1mg}{1000\mu g} \times \frac{50ml}{10ml} = 0.0666\ mg/Kg$$

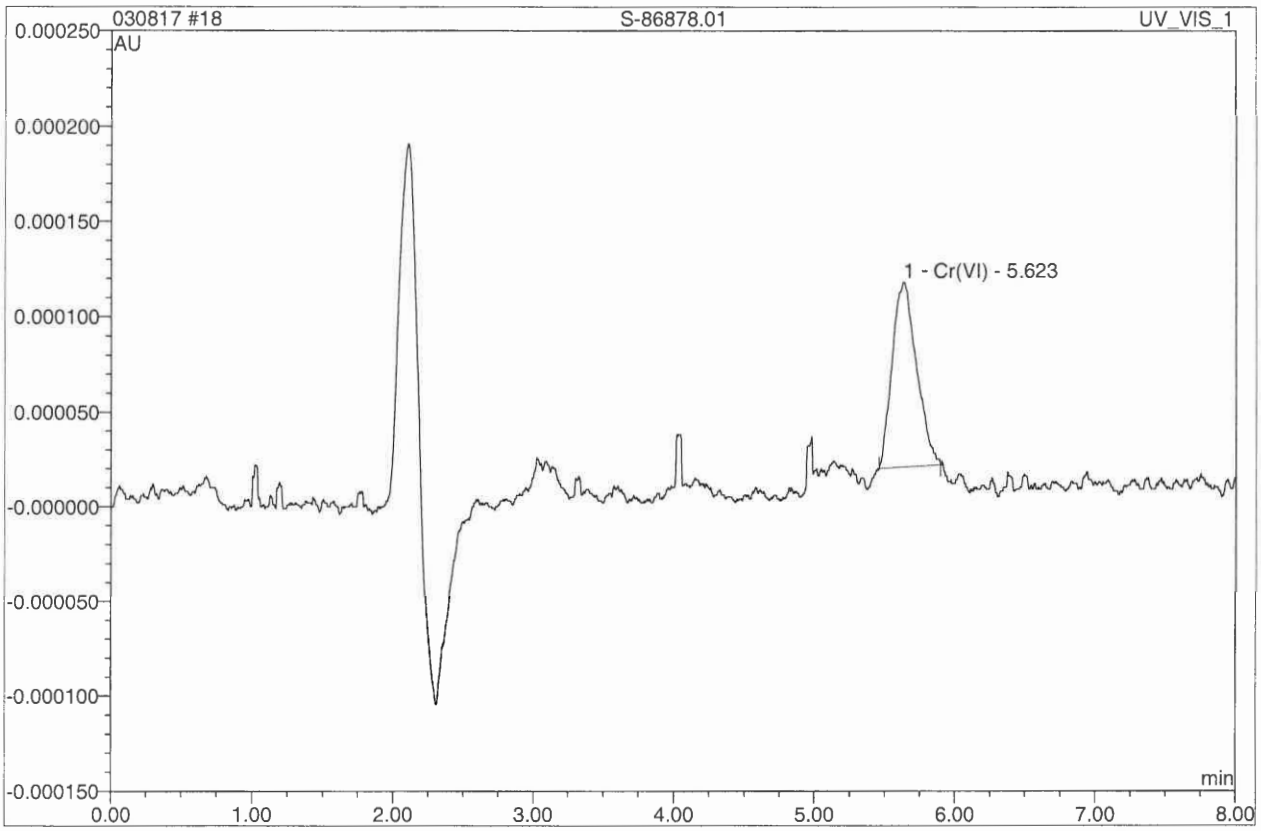
prep

dilution

18 S-86878.01

7199 run by MK

Sample Name:	**S-86878.01**	*Injection Volume:*	**1000.0**
Vial Number:	**18**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 15:52**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

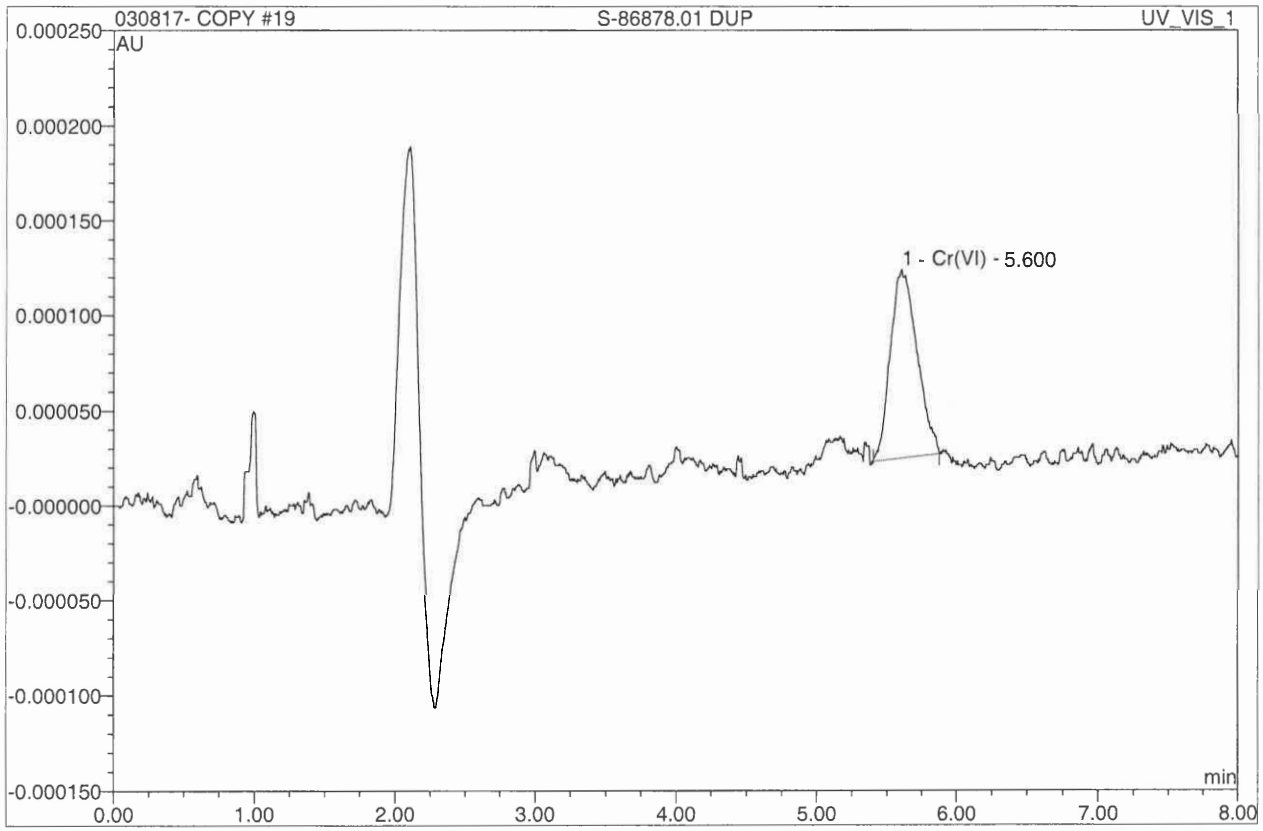


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.62	Cr(VI)	0.0000980	0.0000197	100.00	0.521	99.993
Total:			0.000	0.000	100.00	0.521	

19 S-86878.01 DUP

7199 run by MK

Sample Name:	**S-86878.01 DUP**	*Injection Volume:*	**1000.0**
Vial Number:	**19**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:03**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



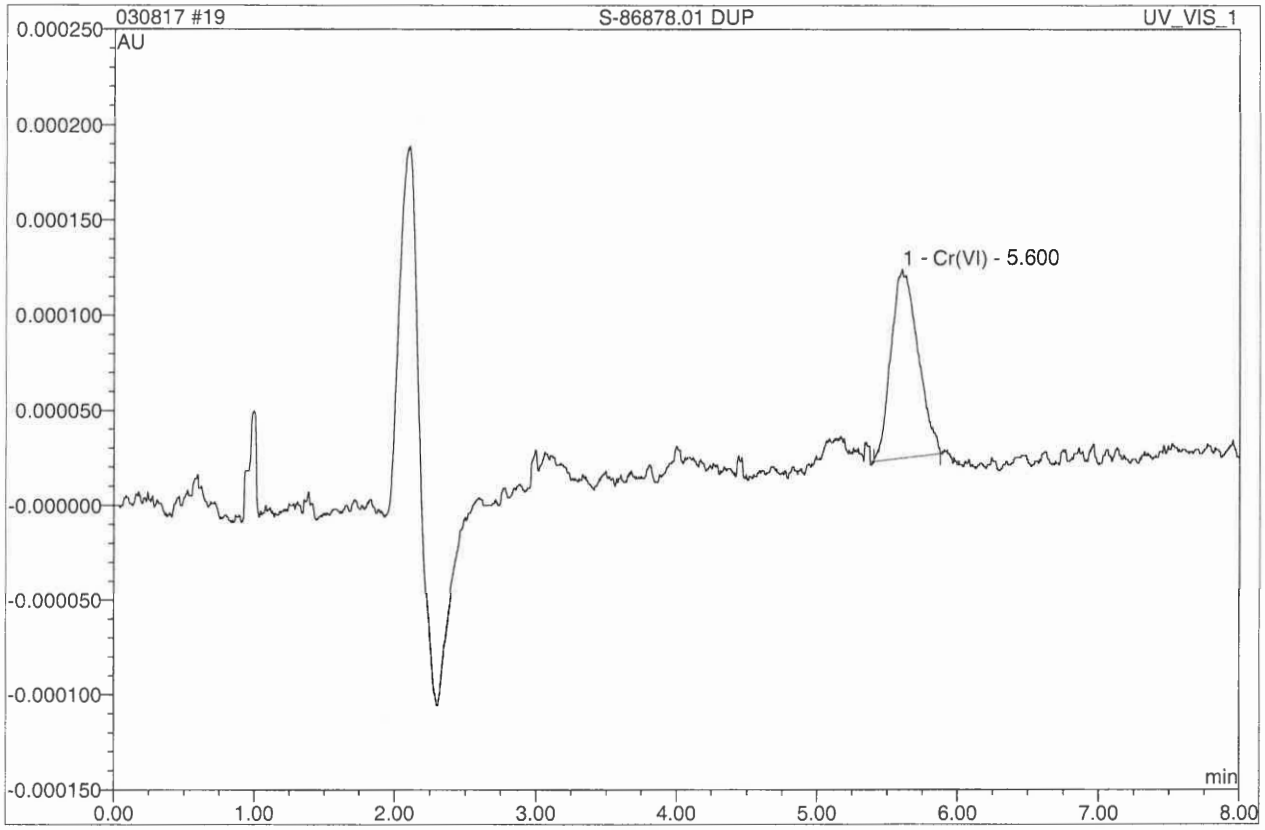
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.60	Cr(VI)	0.0001000	0.0000221	100.00	0.585	99.991
Total:			0.000	0.000	100.00	0.585	

$\frac{0.585 \text{ µg/L}}{2} \times 0.1 = 0.0585$ mg/kg

19 S-86878.01 DUP

7199 run by MK

Sample Name:	**S-86878.01 DUP**	*Injection Volume:*	**1000.0**
Vial Number:	**19**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:03**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

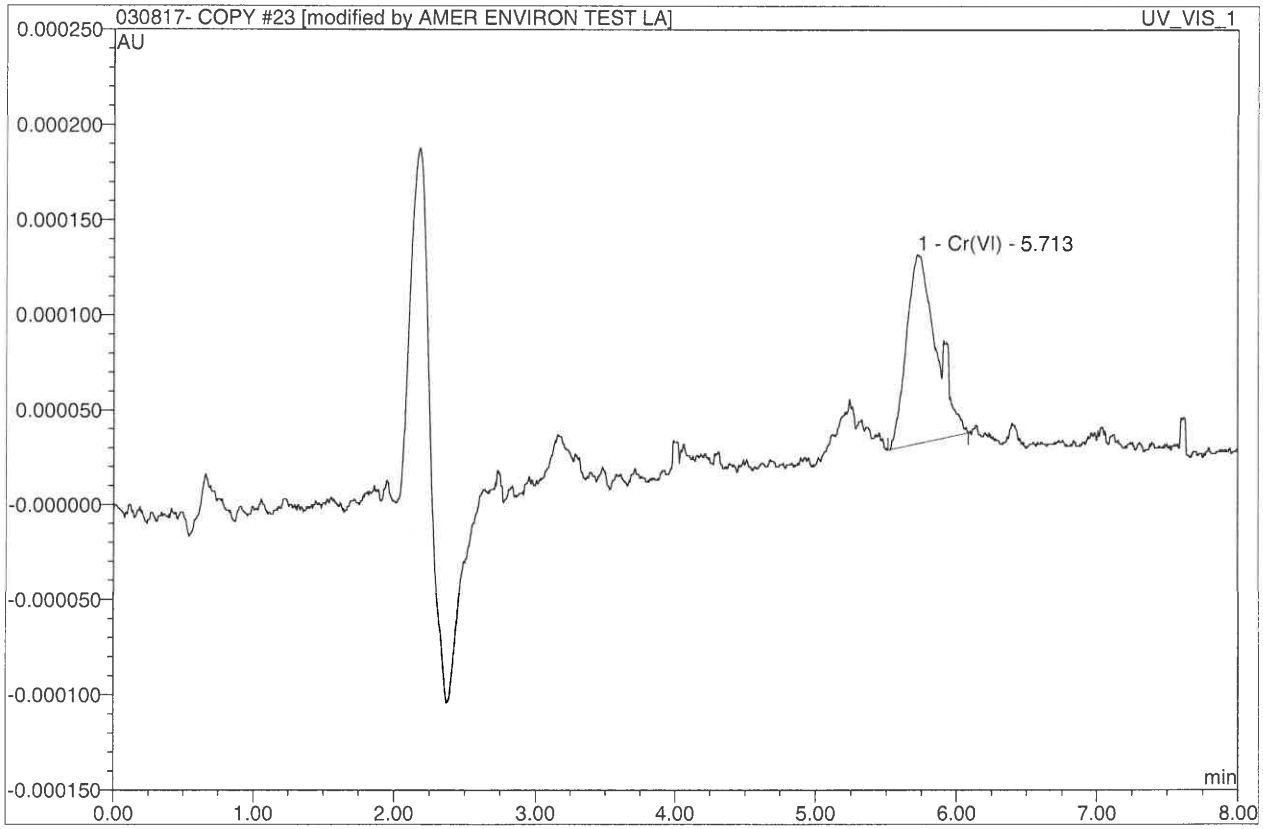


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.60	Cr(VI)	0.0001000	0.0000221	100.00	0.585	99.993
Total:			0.000	0.000	100.00	0.585	

23 S-86878.02

7199 run by MK

Sample Name:	**S-86878.02**	*Injection Volume:*	**1000.0**
Vial Number:	**23**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:45**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



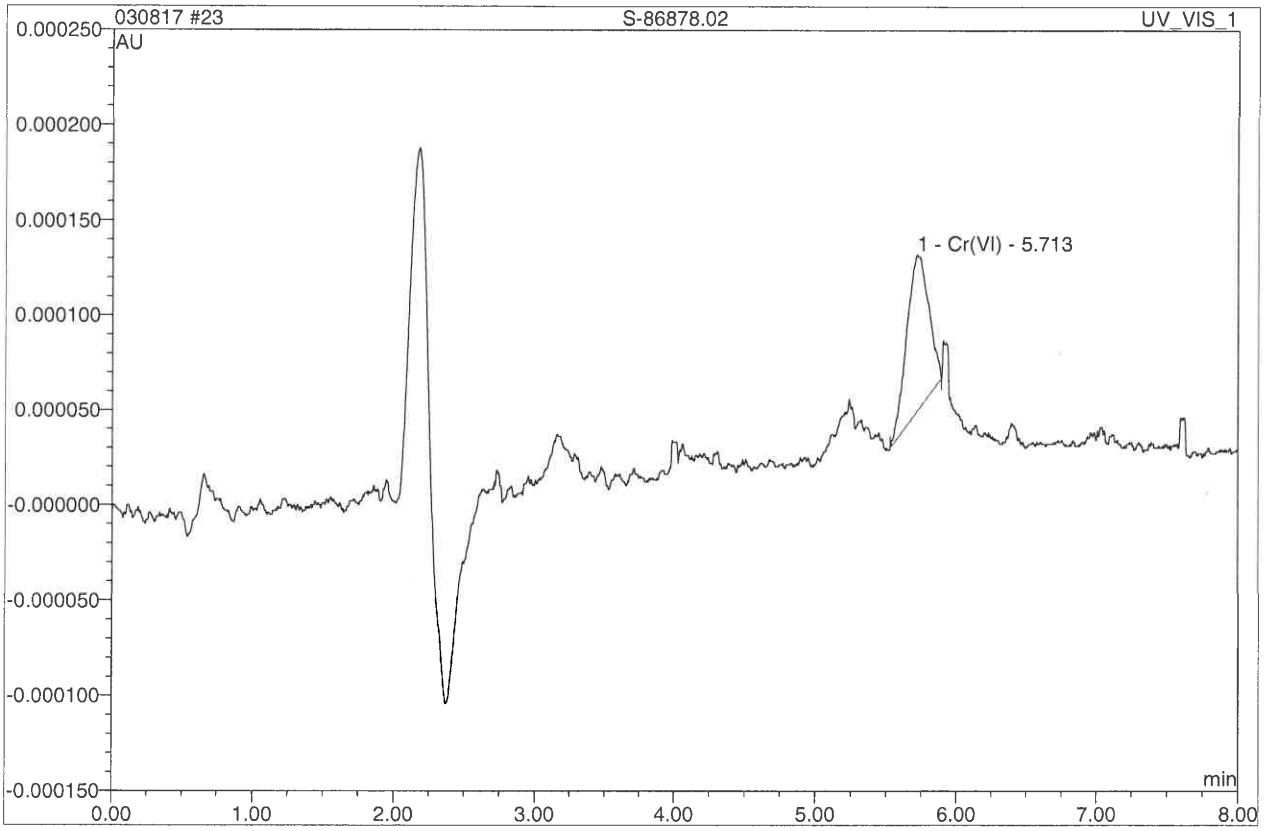
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.71	Cr(VI)	0.0001000	0.0000247	100.00	0.656	99.991
Total:			0.000	0.000	100.00	0.656	

$0.656 \frac{\mu g}{L} \times 0.1 = 0.0656$ mg/kg

23 S-86878.02

7199 run by MK

Sample Name:	**S-86878.02**	*Injection Volume:*	**1000.0**
Vial Number:	**23**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:45**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

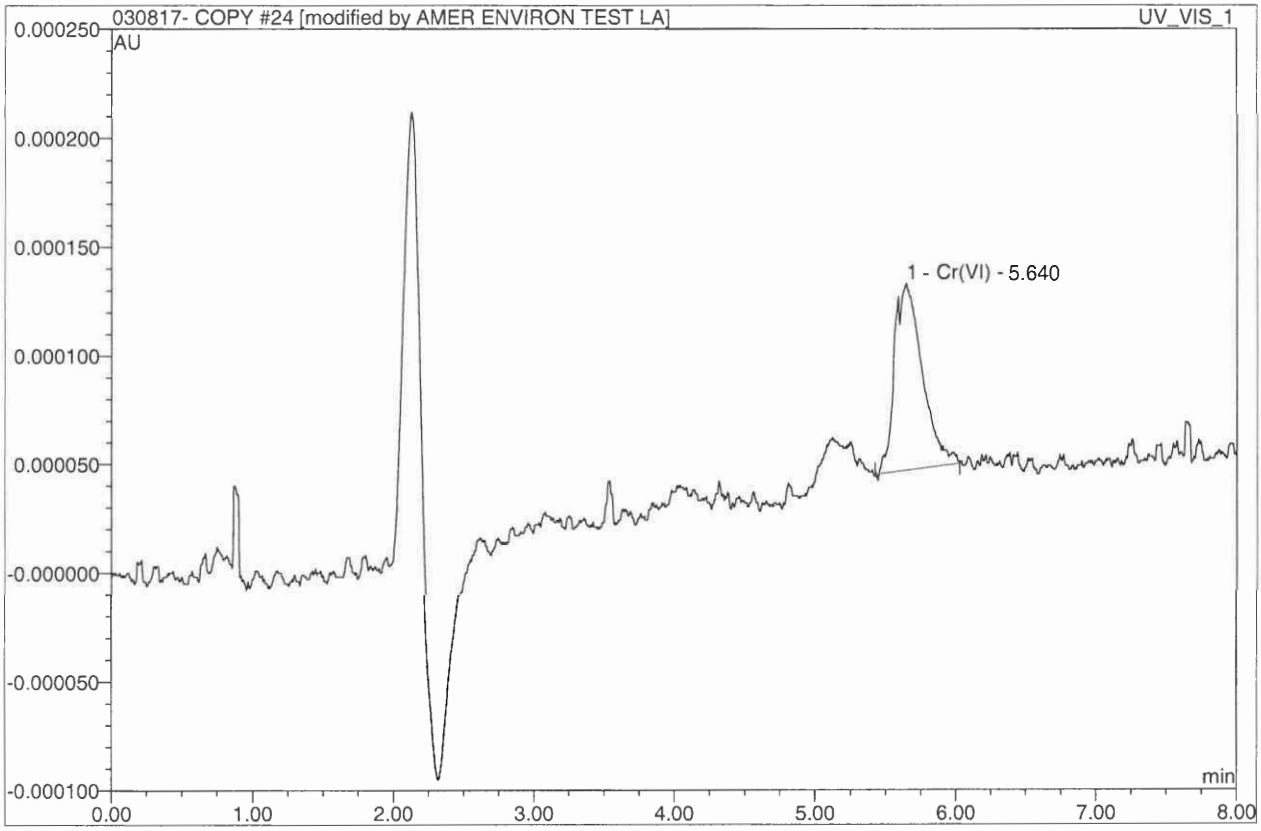


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.71	Cr(VI)	0.0000830	0.0000150	100.00	0.396	99.993
Total:			0.000	0.000	100.00	0.396	

24 S-86878.03

7199 run by MK

Sample Name:	**S-86878.03**	*Injection Volume:*	**1000.0**
Vial Number:	**24**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



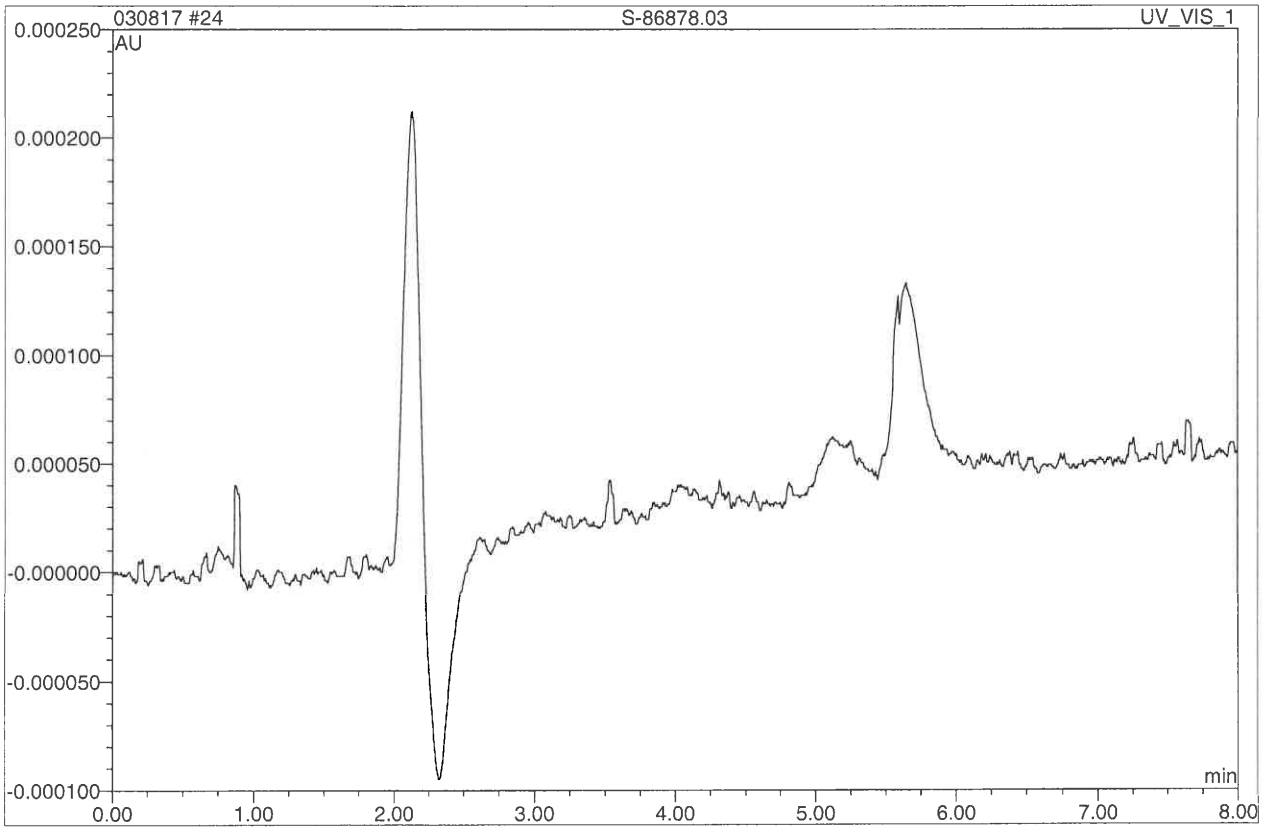
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.64	Cr(VI)	0.0000870	0.0000198	100.00	0.524	99.991
Total:			0.000	0.000	100.00	0.524	

$0.524 \frac{\mu g}{L} \times 0.1 = 0.0524$ mg/kg

24 S-86878.03

7199 run by MK

Sample Name:	**S-86878.03**	*Injection Volume:*	**1000.0**
Vial Number:	**24**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

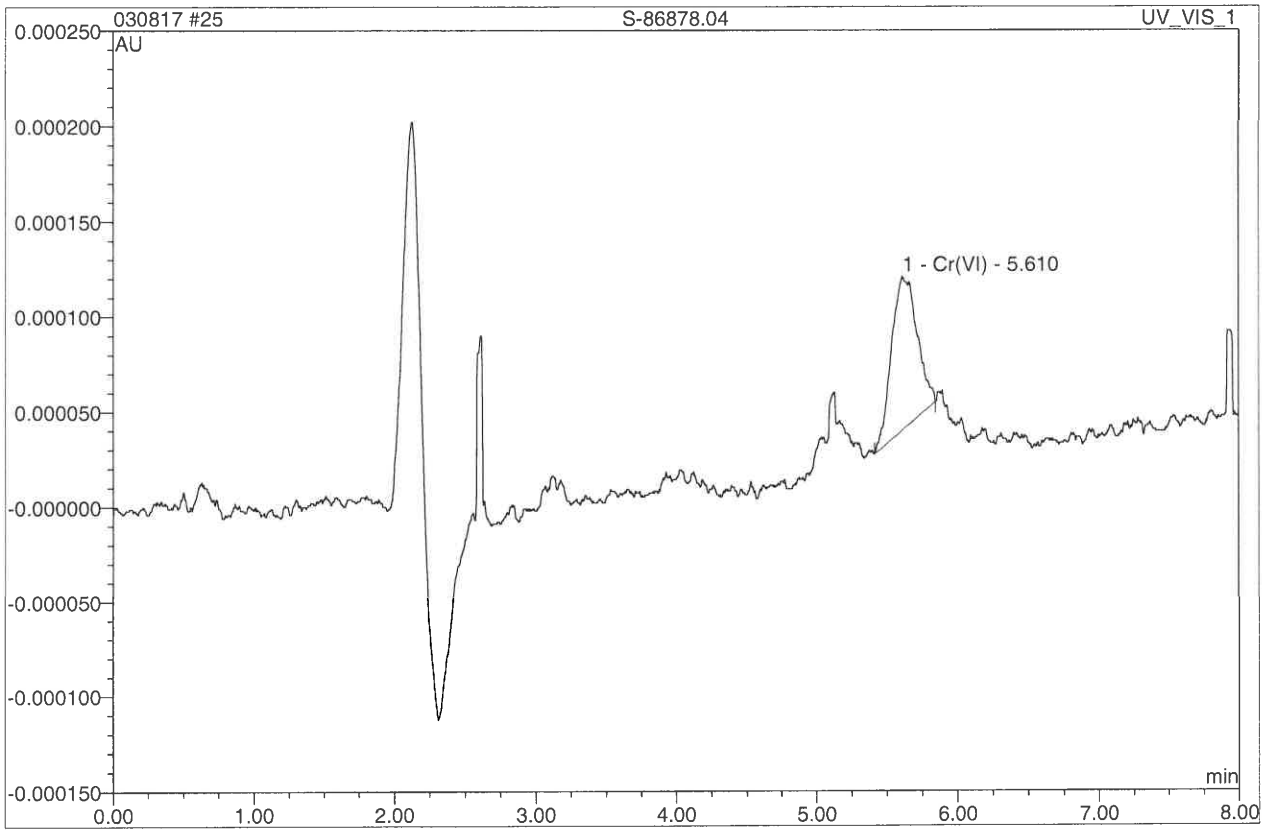


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

25 S-86878.04

7199 run by MK

Sample Name:	**S-86878.04**	*Injection Volume:*	**1000.0**
Vial Number:	**25**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:06**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

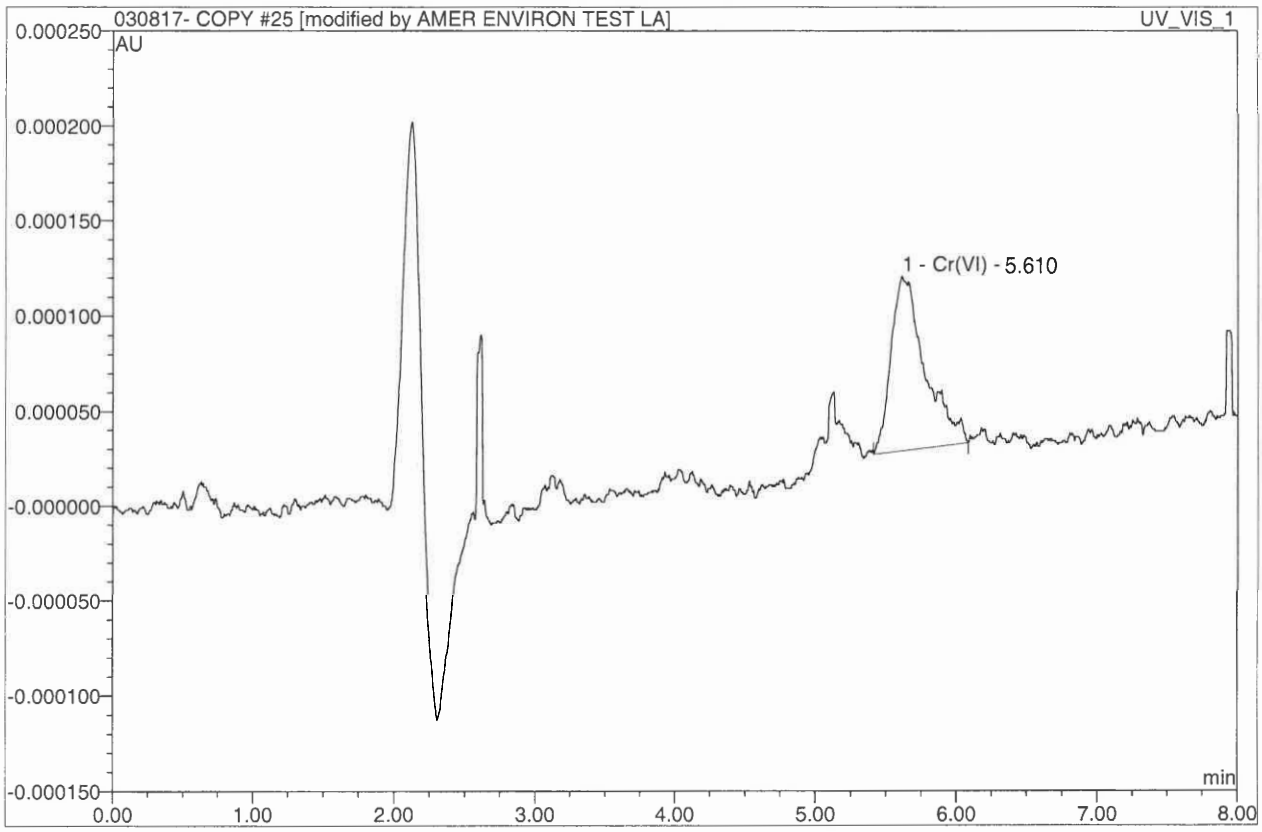


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.61	Cr(VI)	0.0000820	0.0000168	100.00	0.446	99.993
Total:			0.000	0.000	100.00	0.446	

25 S-86878.04

7199 run by MK

Sample Name:	**S-86878.04**	*Injection Volume:*	**1000.0**
Vial Number:	**25**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:06**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



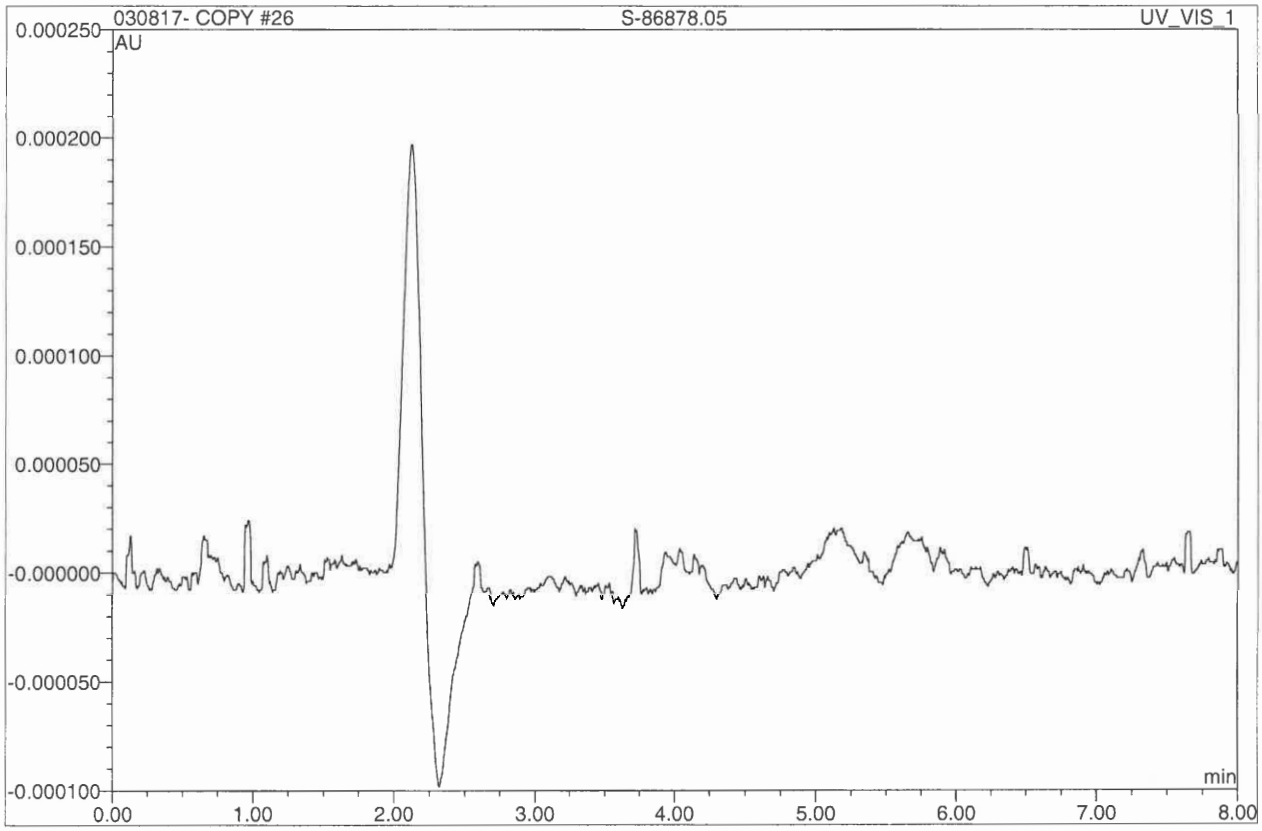
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.61	Cr(VI)	0.0000930	0.0000258	100.00	0.683	99.991
Total:			0.000	0.000	100.00	0.683	

$0.683 \frac{\mu g}{L} \times 0.1 = 0.0683$ mg/kg

26 S-86878.05

7199 run by MK

Sample Name:	**S-86878.05**	*Injection Volume:*	**1000.0**
Vial Number:	**26**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



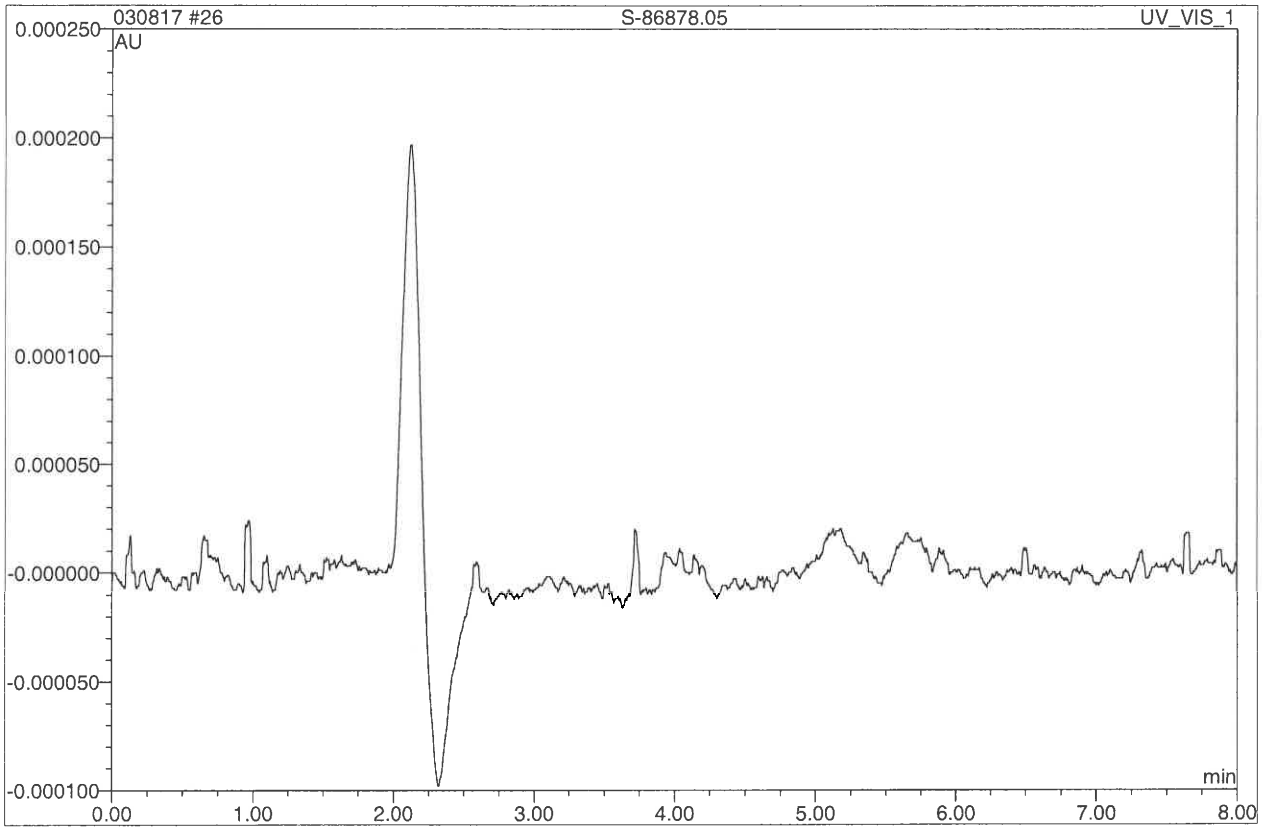
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

ND

26 S-86878.05

7199 run by MK

Sample Name:	**S-86878.05**	*Injection Volume:*	**1000.0**
Vial Number:	**26**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

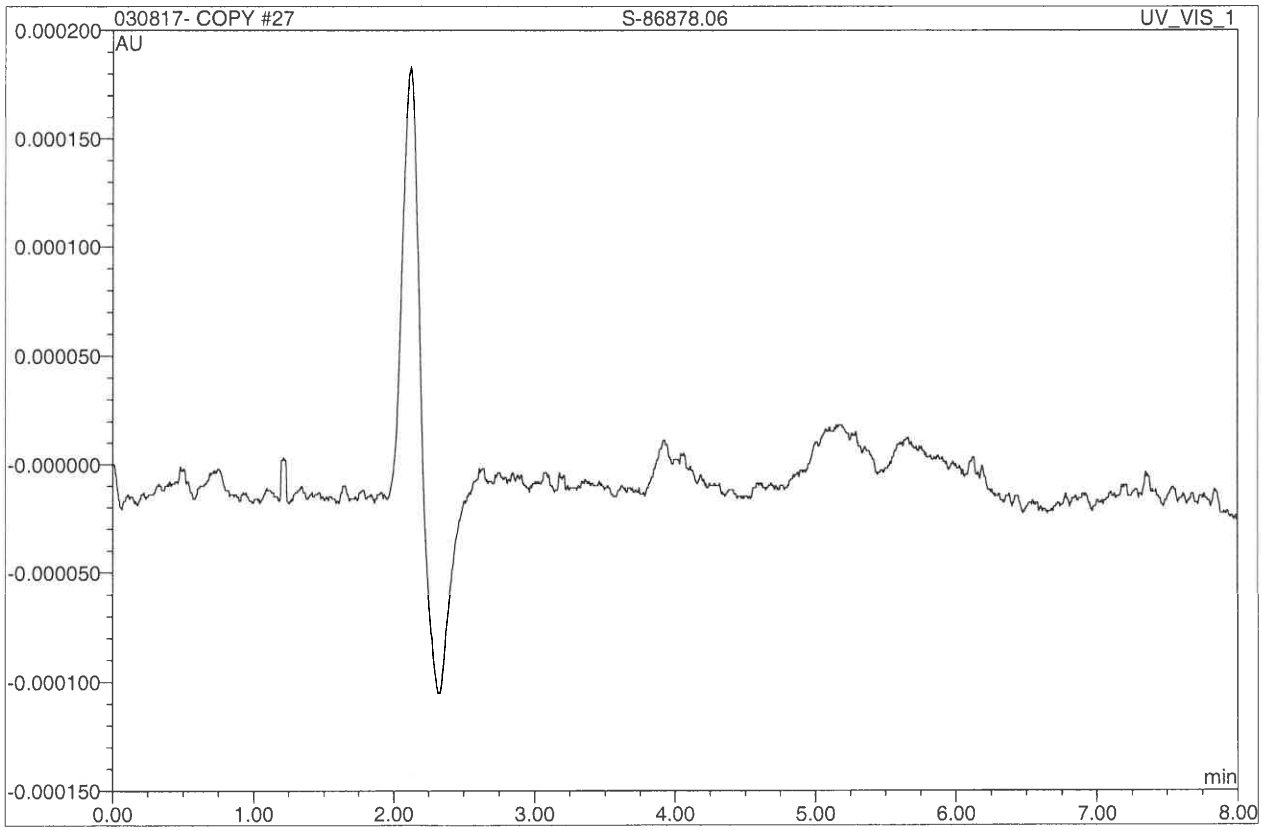


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

27 S-86878.06

7199 run by MK

Sample Name:	**S-86878.06**	*Injection Volume:*	**1000.0**
Vial Number:	**27**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



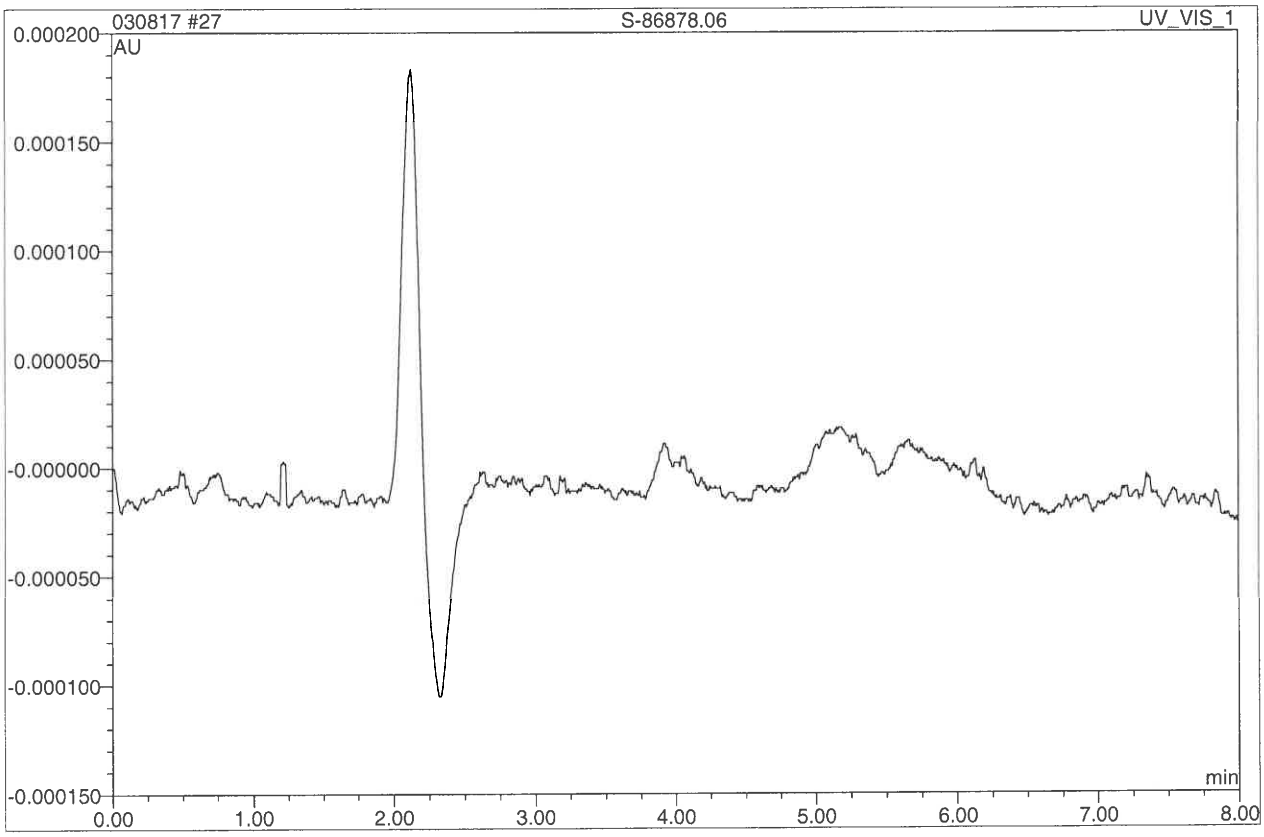
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

ND

27 S-86878.06

7199 run by MK

Sample Name:	**S-86878.06**	*Injection Volume:*	**1000.0**
Vial Number:	**27**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

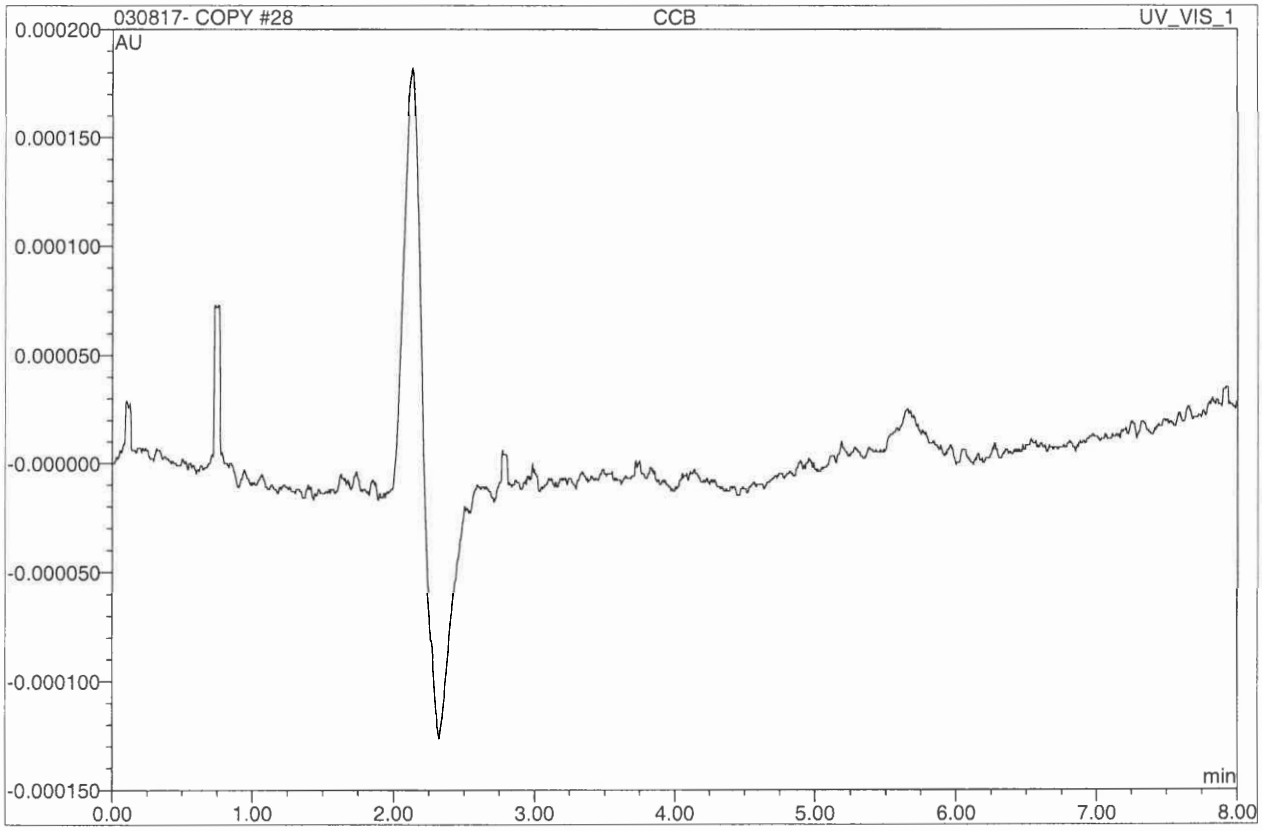


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

28 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**28**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:37**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

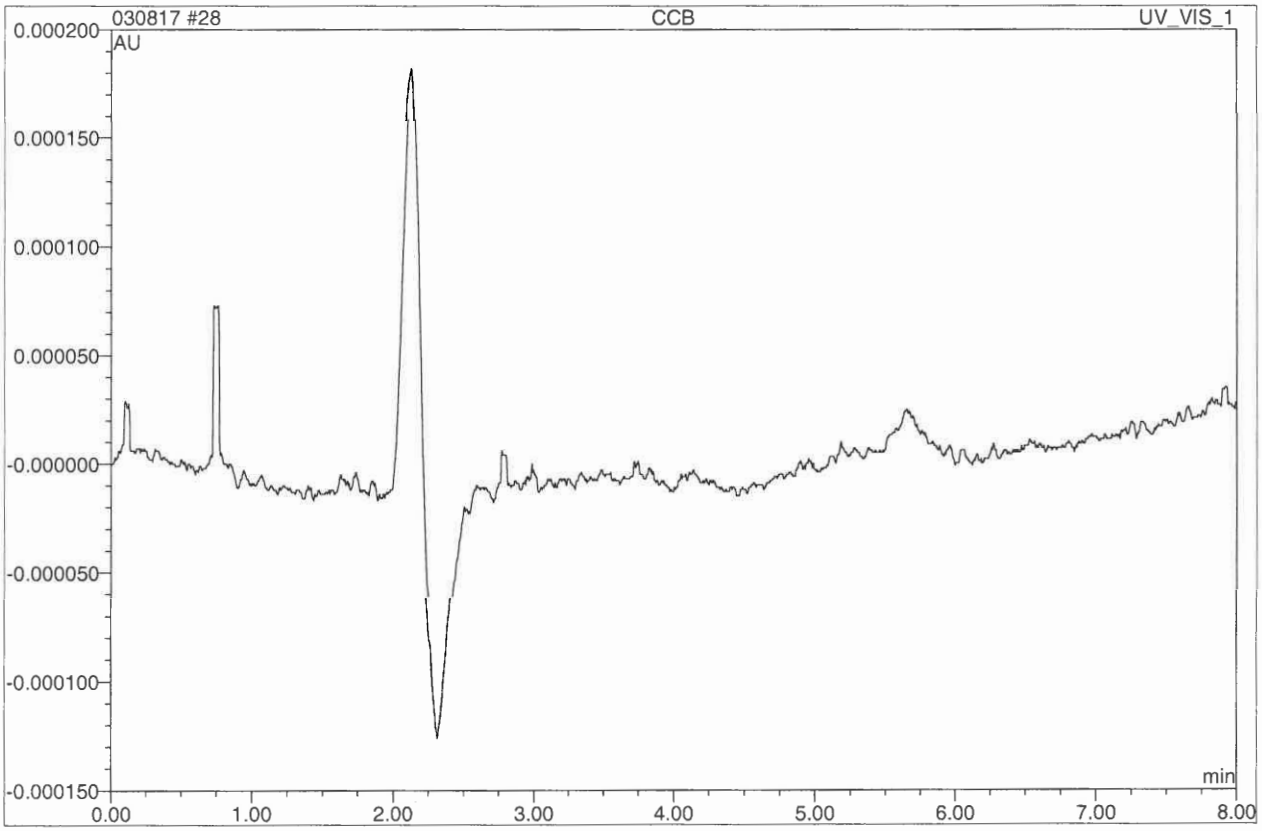


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

28 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**28**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:37**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86878

Chromium Hexavalent by 7199

QC RESULTS AND DATA

AETL Job Number 86878

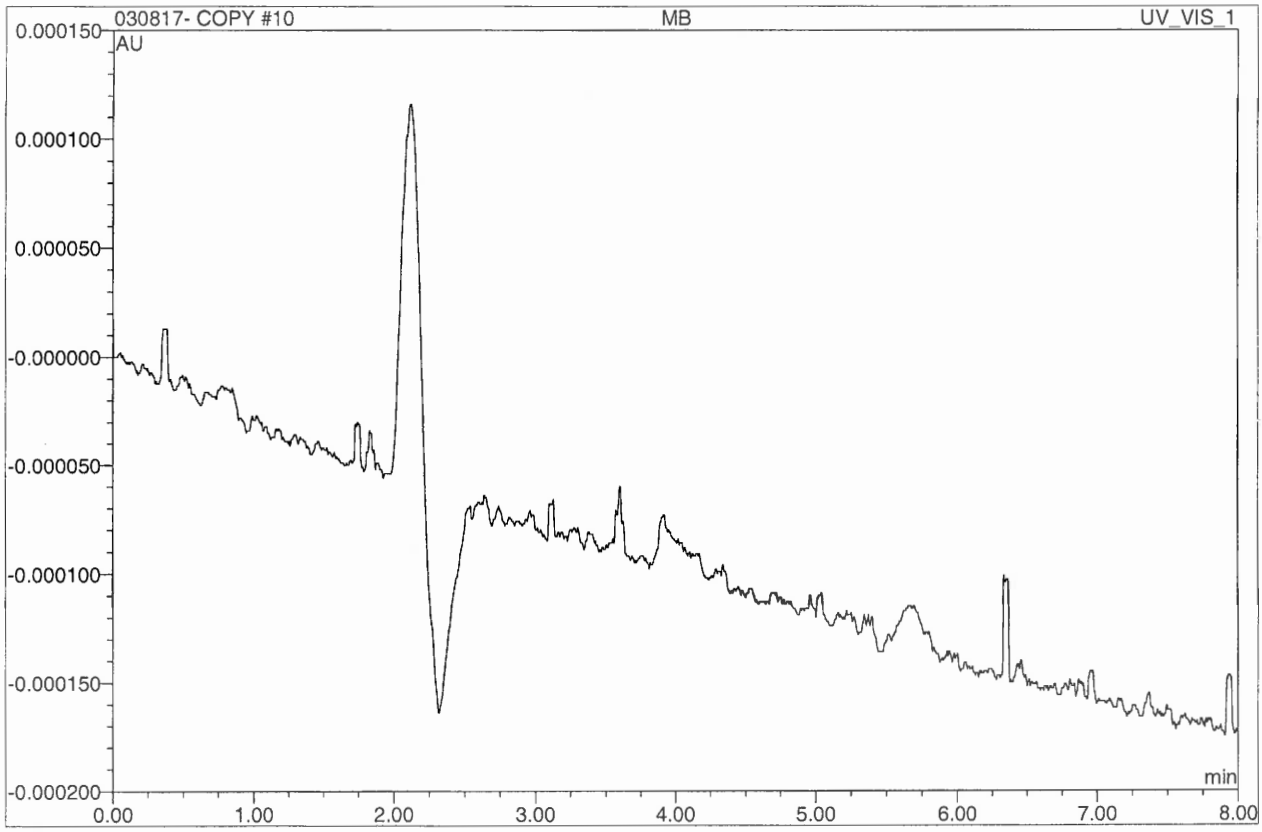
Chromium Hexavalent by 7199

METHOD BLANK

10 MB

7199 run by MK

Sample Name:	**MB**	*Injection Volume:*	**1000.0**
Vial Number:	**10**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:28**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

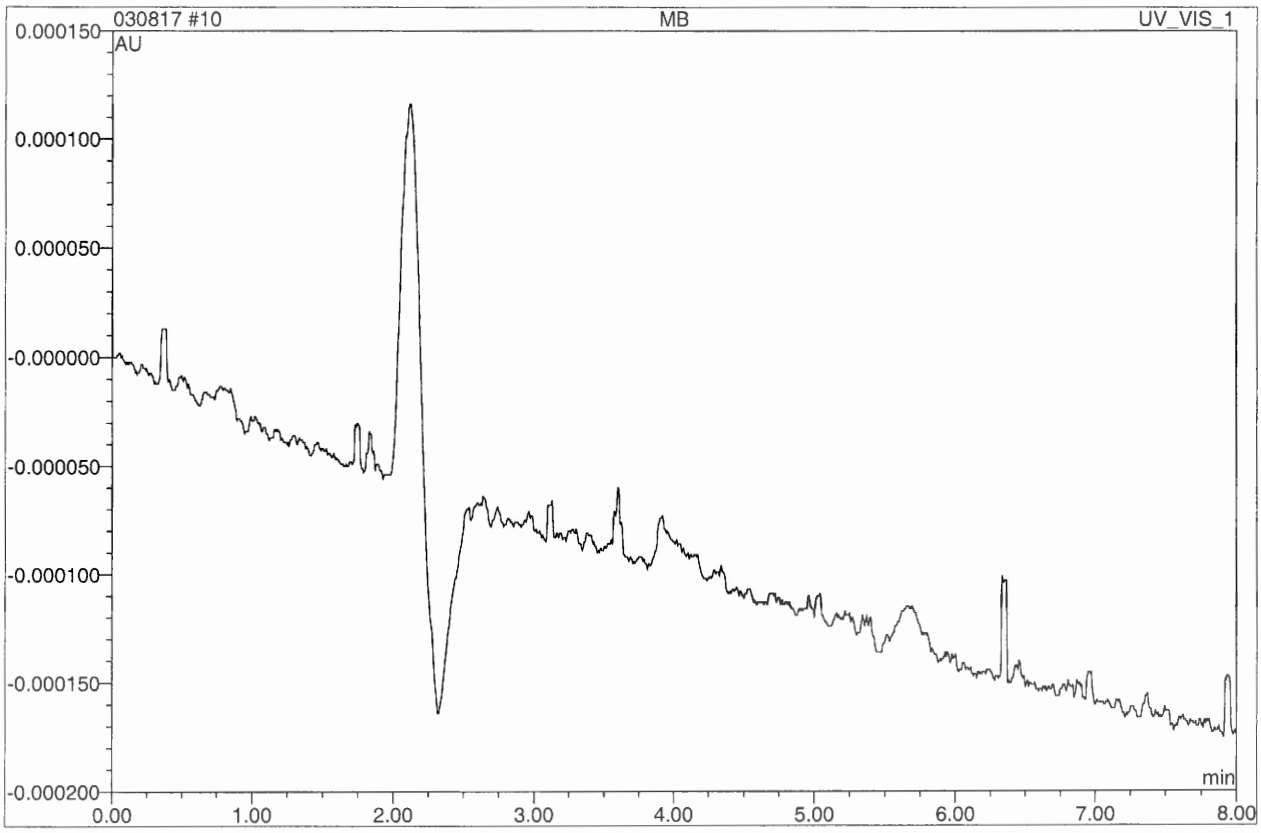


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

10 MB

7199 run by MK

Sample Name:	**MB**	*Injection Volume:*	**1000.0**
Vial Number:	**10**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:28**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86878

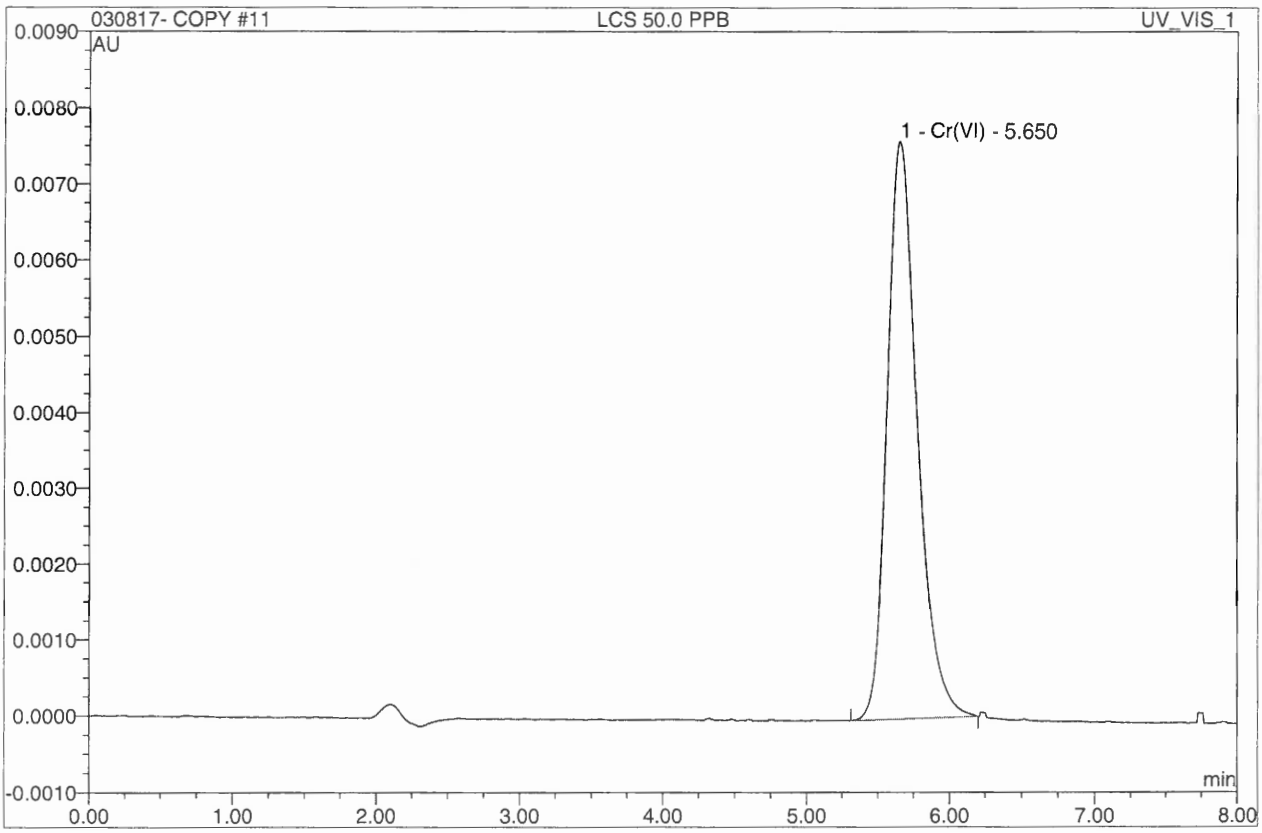
Chromium Hexavalent by 7199

LCS / LCSD

11 LCS 50.0 PPB

7199 run by MK

Sample Name:	**LCS 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**11**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:39**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



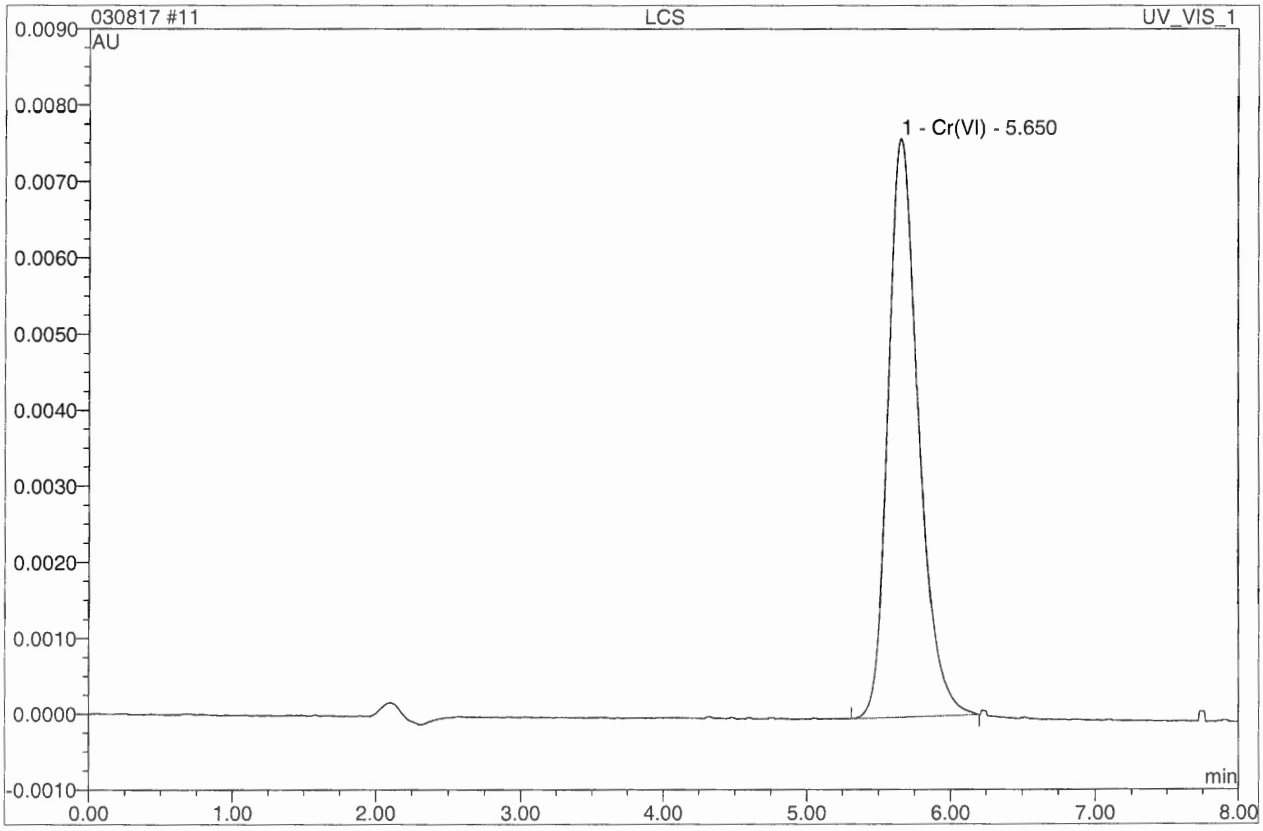
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.65	Cr(VI)	0.0076080	0.0018620	100.00	49.326	99.991
Total:			0.008	0.002	100.00	49.326	

$\frac{49.3}{50.0} = 98.6\%$

11 LCS

7199 run by MK

Sample Name:	**LCS**	*Injection Volume:*	**1000.0**
Vial Number:	**11**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:39**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

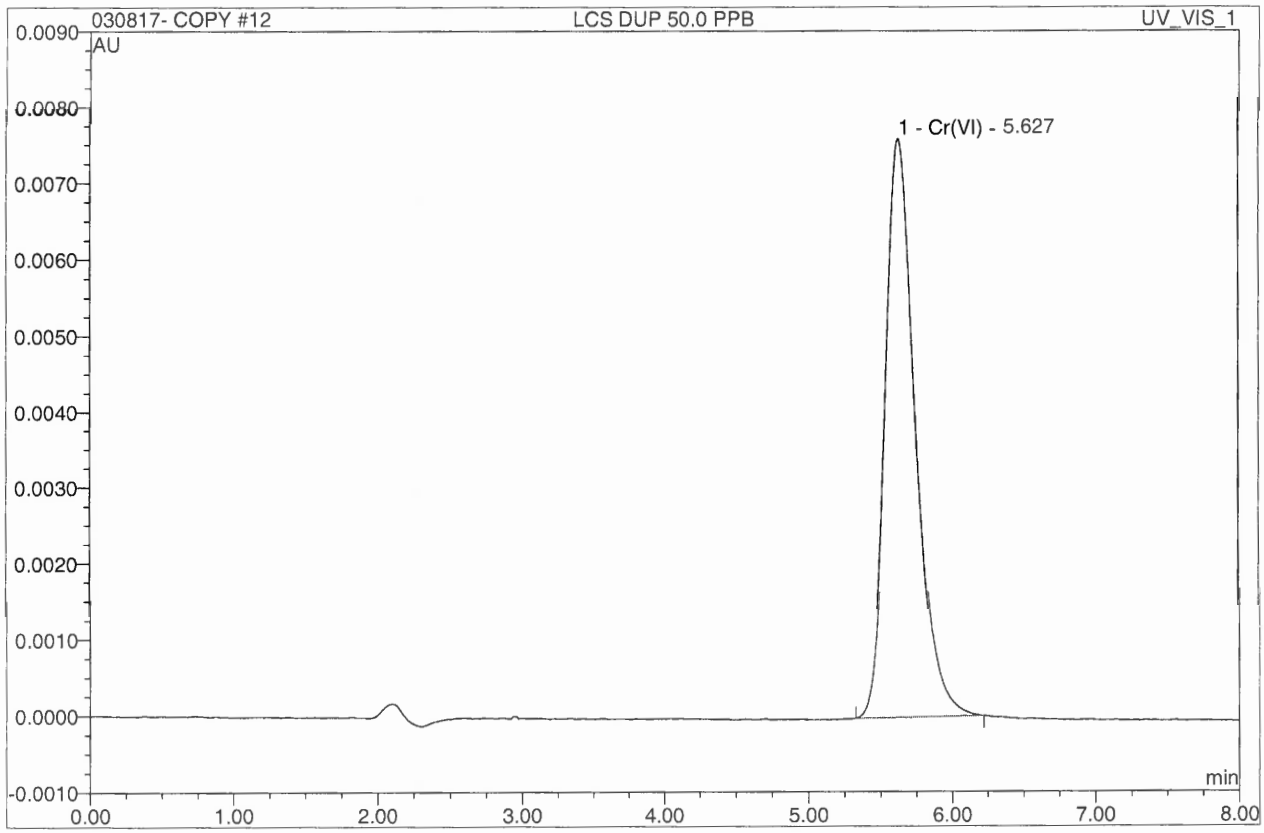


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.65	Cr(VI)	0.0076080	0.0018620	100.00	49.312	99.993
Total:			0.008	0.002	100.00	49.312	

12 LCS DUP 50.0 PPB

7199 run by MK

Sample Name:	**LCS DUP 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**12**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:49**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



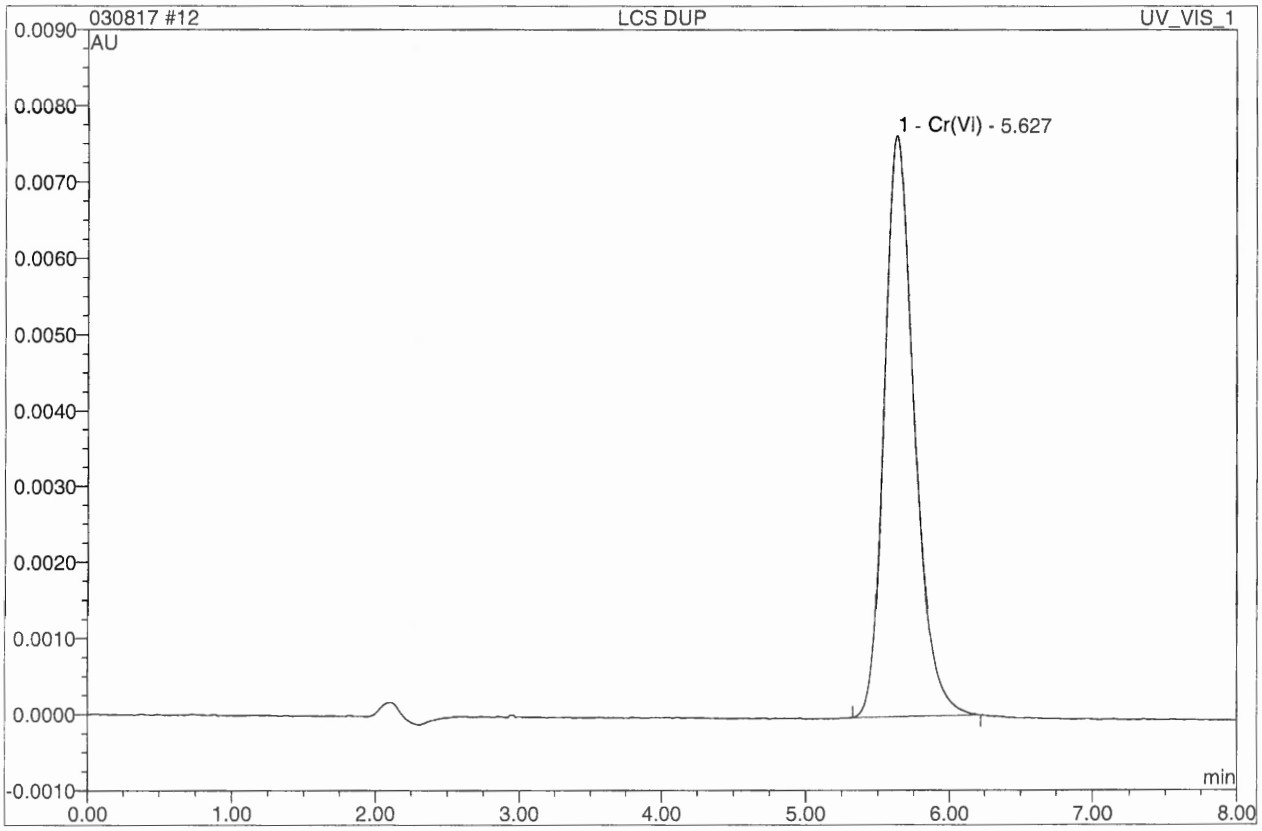
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.63	Cr(VI)	0.0076360	0.0018628	100.00	49.347	99.991
Total:			0.008	0.002	100.00	49.347	

$\frac{49.3}{50.0} = 98.6\%$

12 LCS DUP

7199 run by MK

Sample Name:	**LCS DUP**	*Injection Volume:*	**1000.0**
Vial Number:	**12**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:49**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

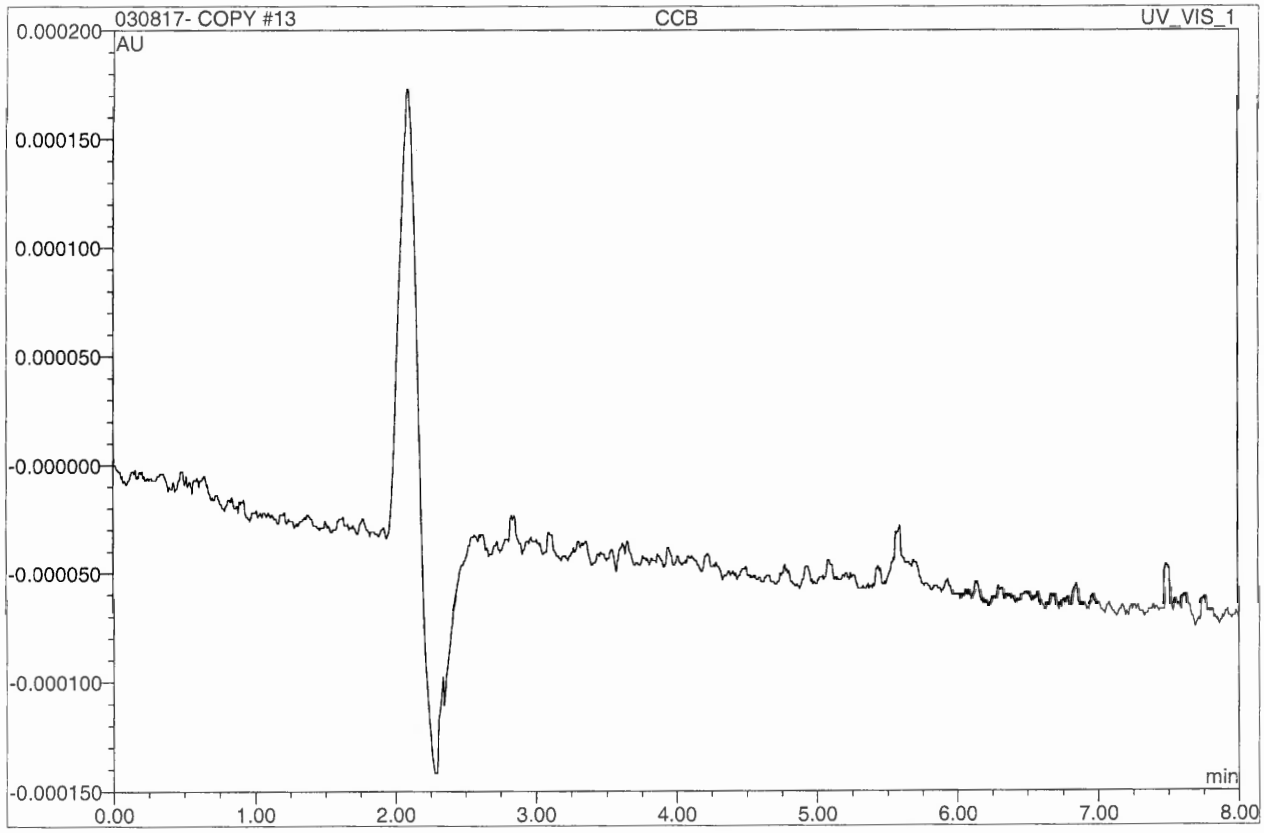


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.63	Cr(VI)	0.0076360	0.0018628	100.00	49.332	99.993
Total:			0.008	0.002	100.00	49.332	

13 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**13**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 15:00**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

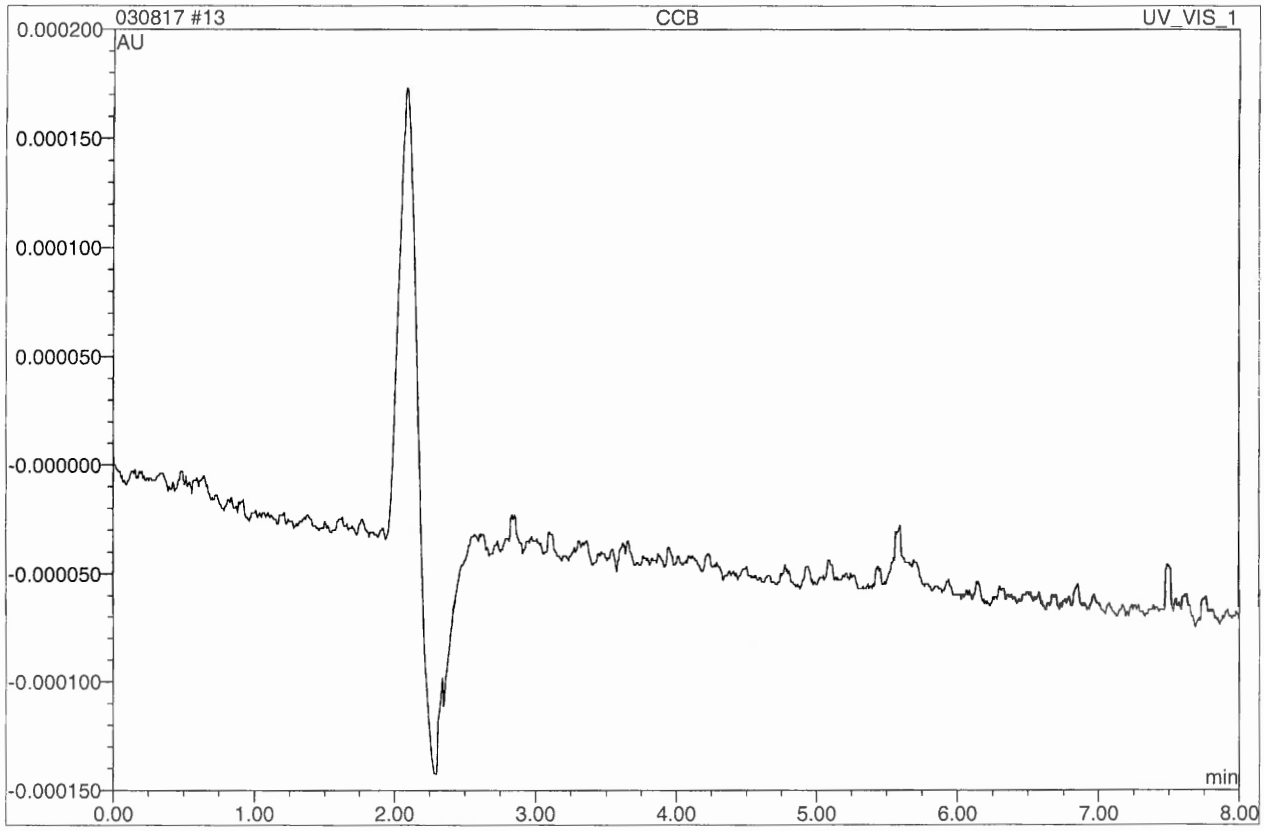


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

13 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**13**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 15:00**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86878

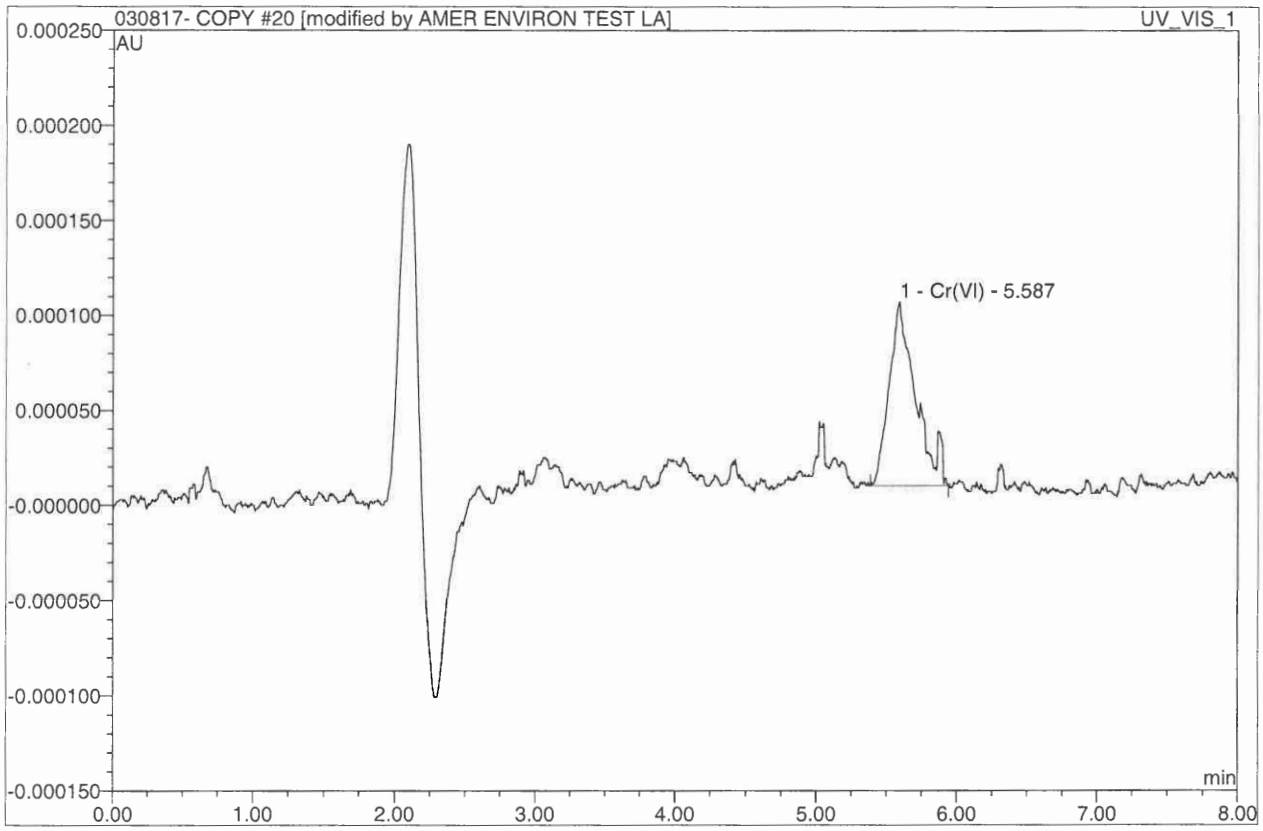
Chromium Hexavalent by 7199

MS / MSD

20 S-86878.01 MS 50.0 PPB

7199 run by MK

Sample Name:	**S-86878.01 MS 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**20**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:13**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



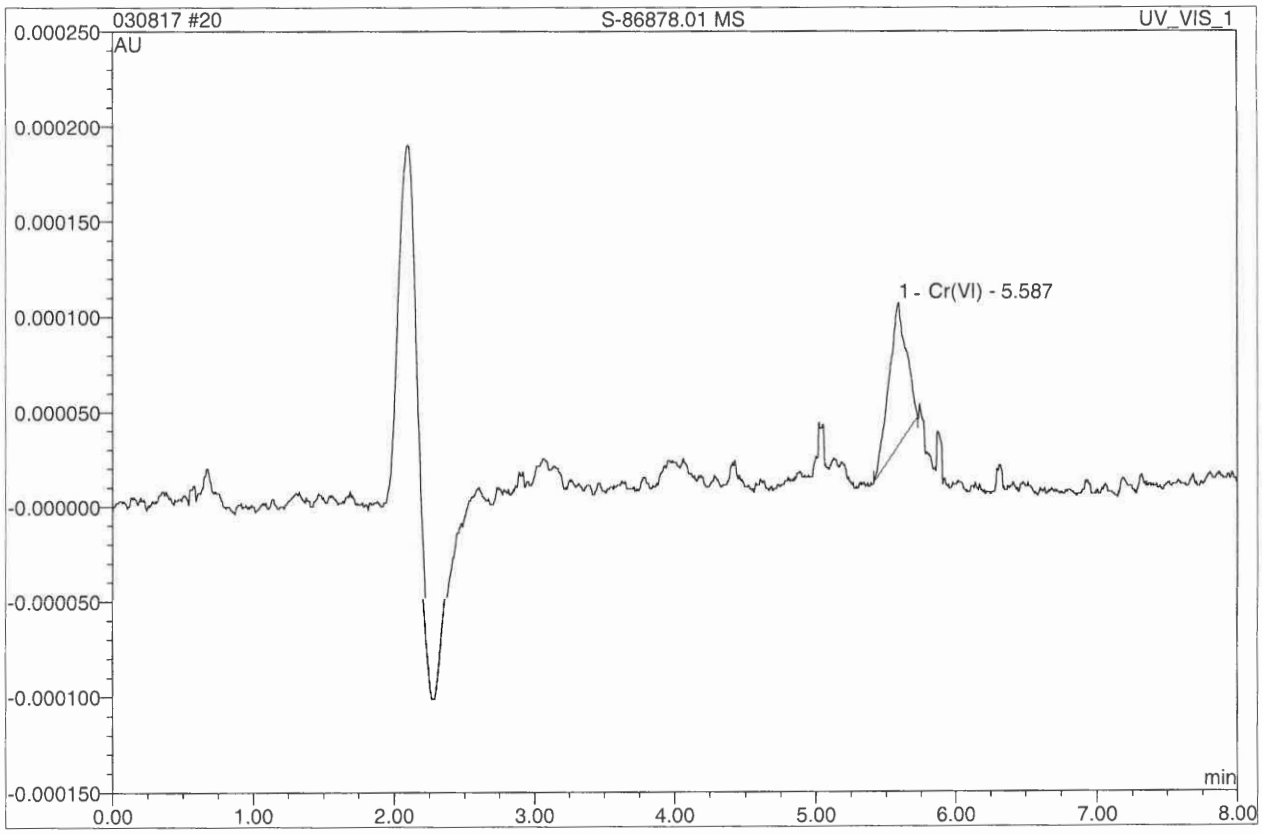
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.59	Cr(VI)	0.0000970	0.0000214	100.00	0.566	99.991
Total:			0.000	0.000	100.00	0.566	

Did not pass due to sample interference.
MK

20 S-86878.01 MS

7199 run by MK

Sample Name:	**S-86878.01 MS**	*Injection Volume:*	**1000.0**
Vial Number:	**20**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:13**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

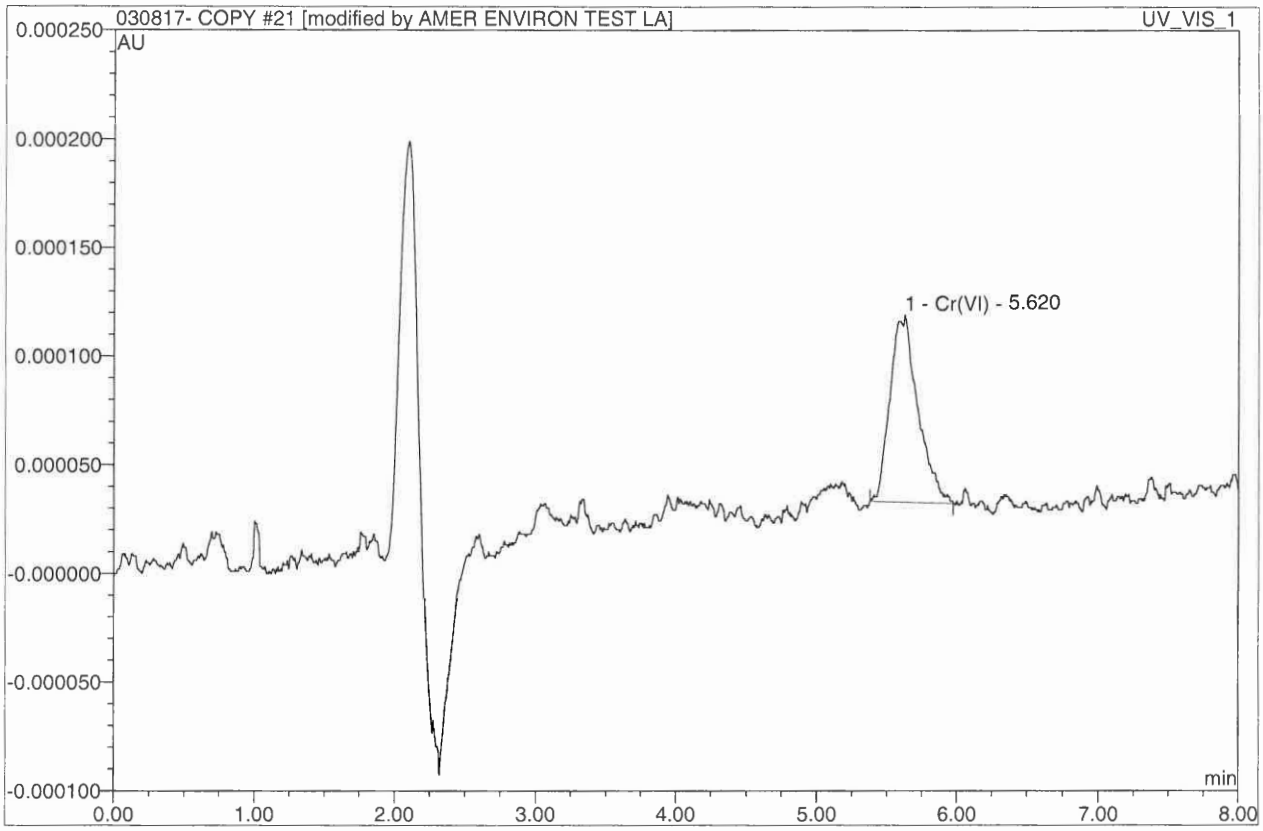


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.59	Cr(VI)	0.0000760	0.0000110	100.00	0.291	99.993
Total:			0.000	0.000	100.00	0.291	

21 S-86878.01 MSD 50.0 PPB

7199 run by MK

Sample Name:	**S-86878.01 MSD 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**21**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:24**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



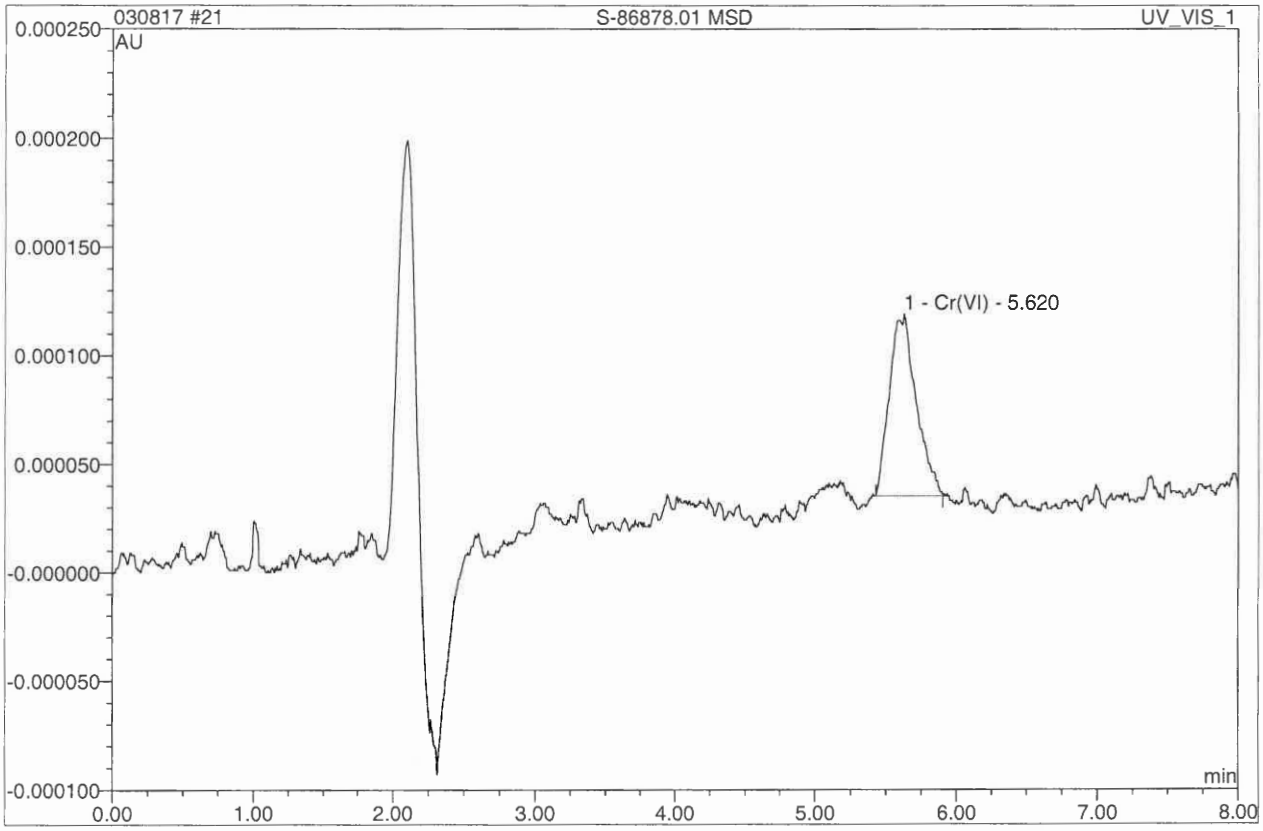
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.62	Cr(VI)	0.0000860	0.0000199	100.00	0.528	99.991
Total:			0.000	0.000	100.00	0.528	

Did not pass due to sample interference
MK

21 S-86878.01 MSD

7199 run by MK

Sample Name:	**S-86878.01 MSD**	*Injection Volume:*	**1000.0**
Vial Number:	**21**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:24**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

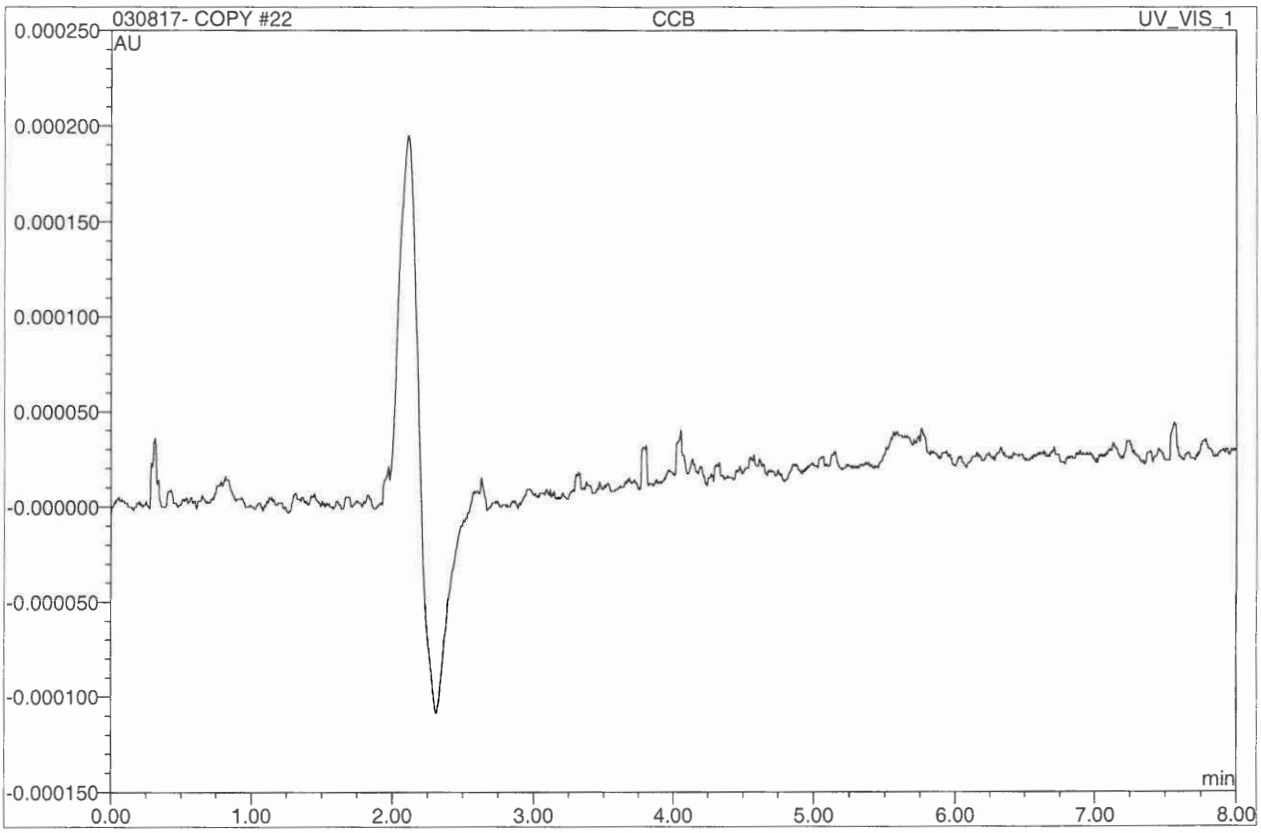


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.62	Cr(VI)	0.0000840	0.0000185	100.00	0.490	99.993
Total:			0.000	0.000	100.00	0.490	

22 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**22**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:34**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

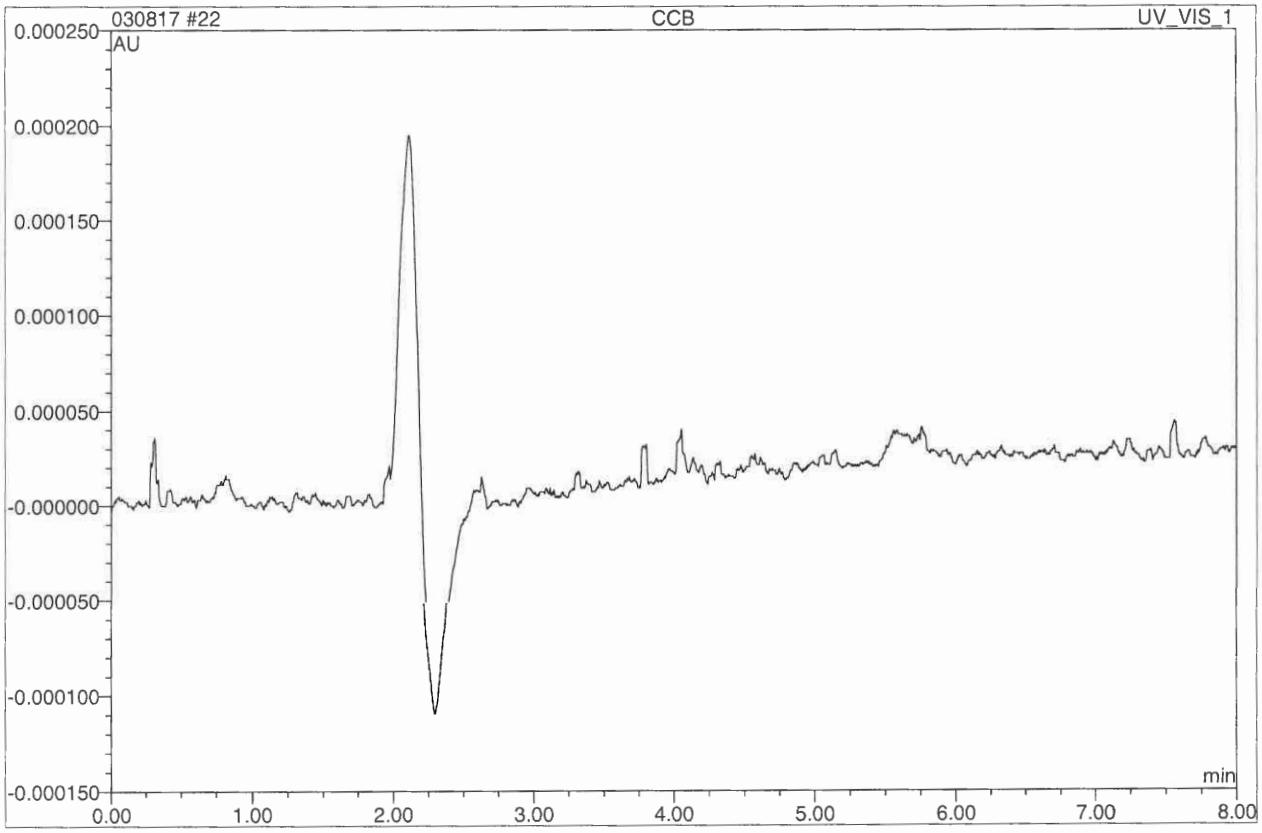


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

22 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**22**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 16:34**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86878

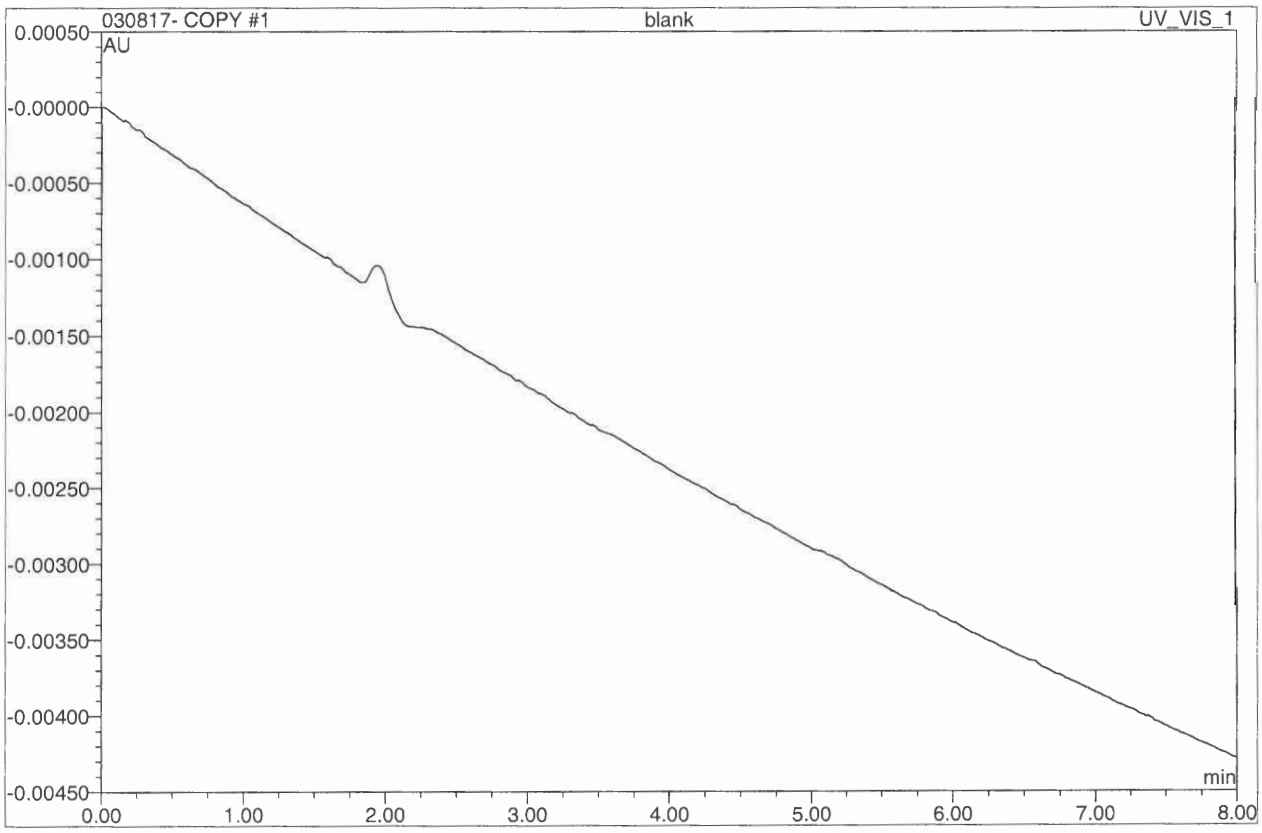
Chromium Hexavalent by 7199

INITIAL CALIBRATION (IC) DATA AND GRAPH

1 blank

7199 run by MK

Sample Name:	**blank**	*Injection Volume:*	**1000.0**
Vial Number:	**1**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 12:54**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

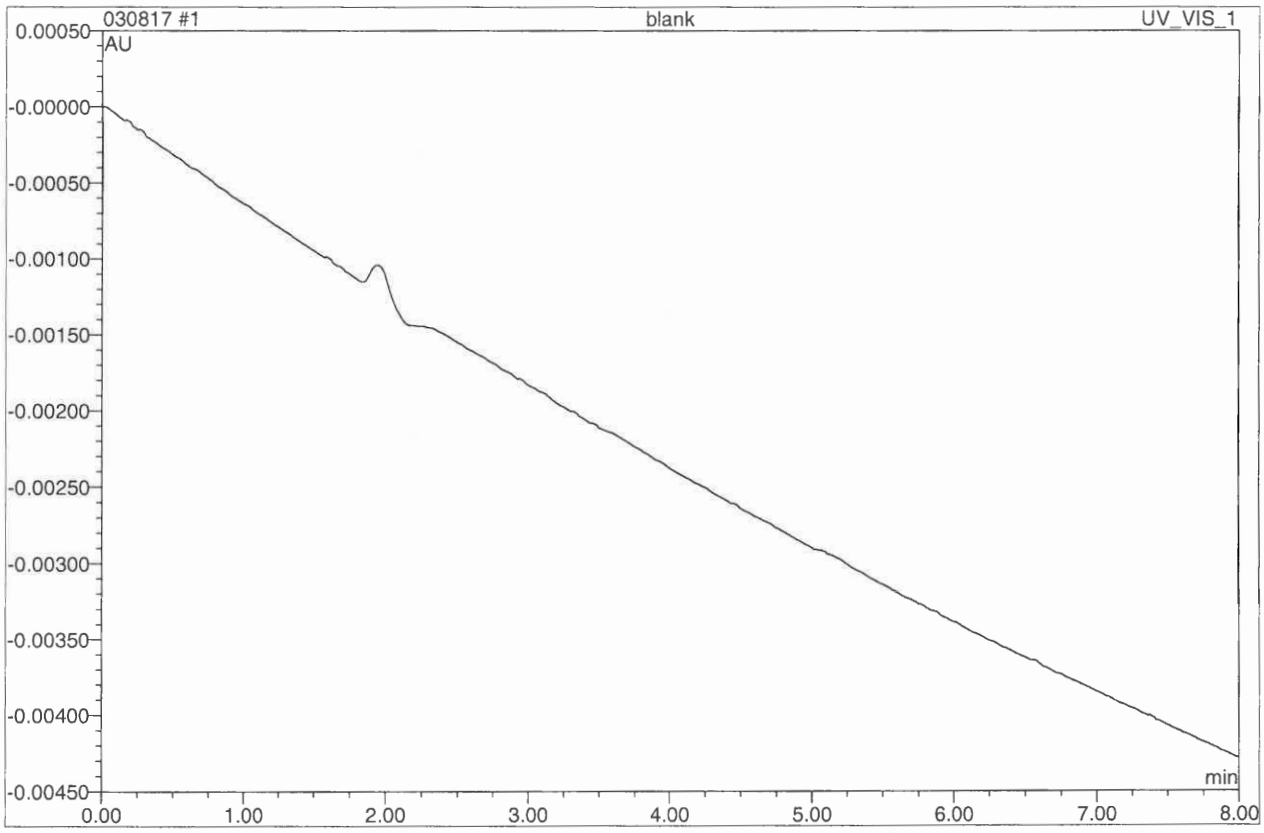


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

1 blank

7199 run by MK

Sample Name:	**blank**	*Injection Volume:*	**1000.0**
Vial Number:	**1**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 12:54**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

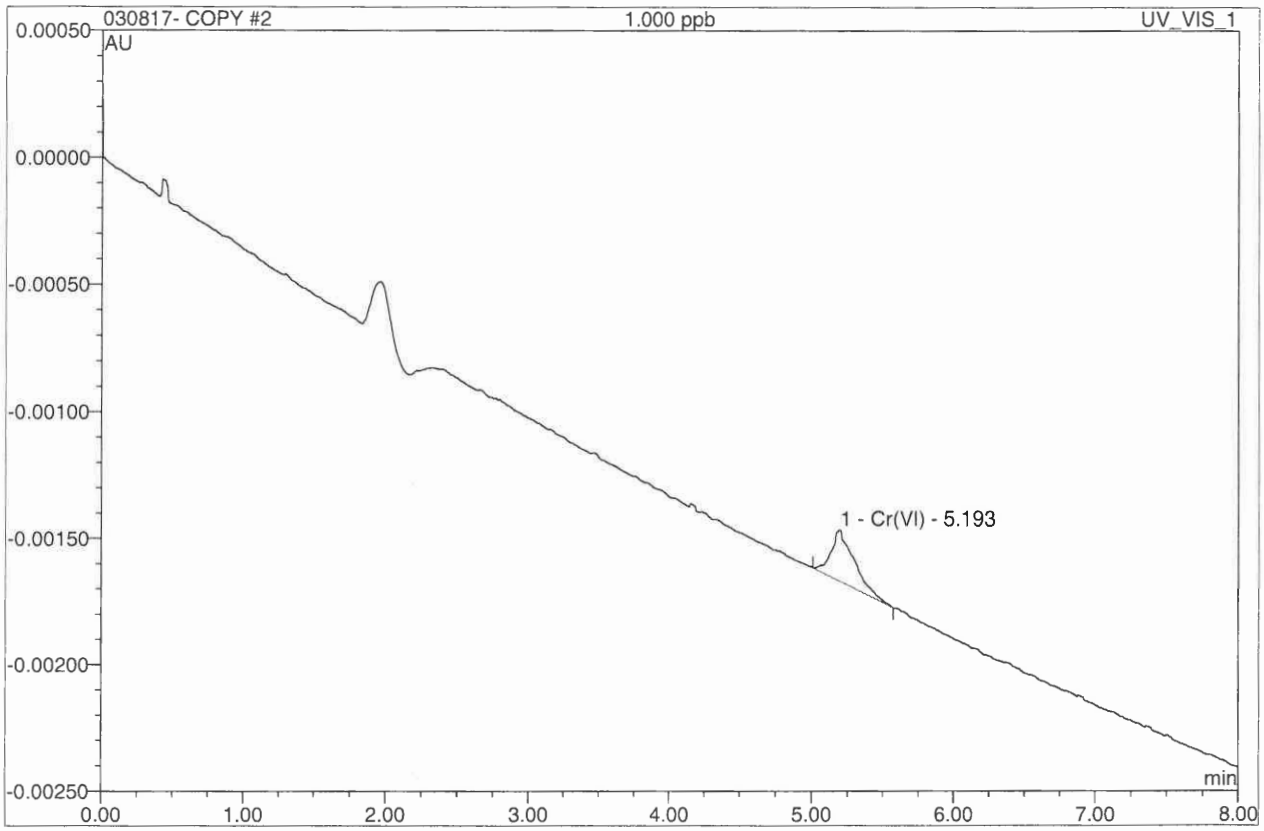


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

2 1.000 ppb

7199 run by MK

Sample Name:	**1.000 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**2**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

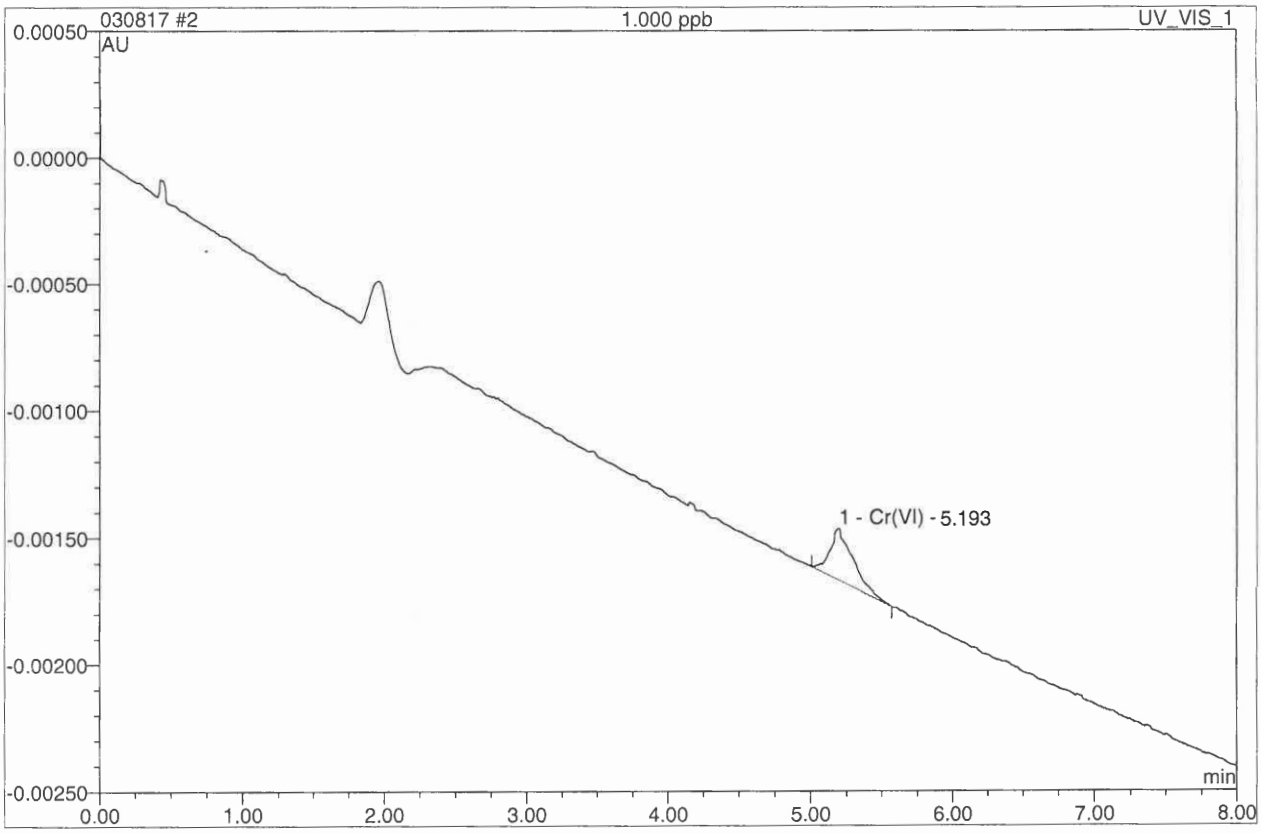


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.19	Cr(VI)	0.0002020	0.0000382	100.00	1.012	99.991
Total:			0.000	0.000	100.00	1.012	

2 1.000 ppb

7199 run by MK

Sample Name:	**1.000 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**2**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

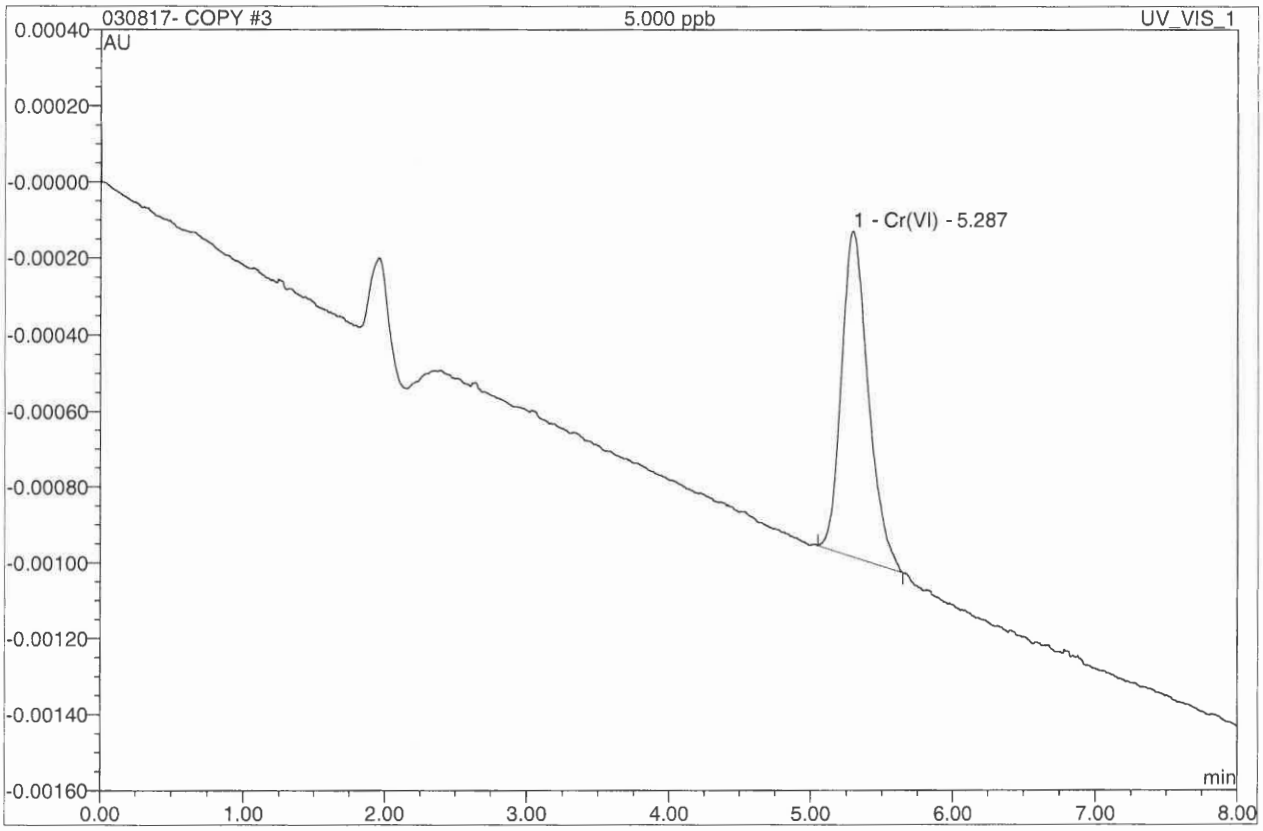


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.19	Cr(VI)	0.0002020	0.0000382	100.00	1.011	99.993
Total:			0.000	0.000	100.00	1.011	

3 5.000 ppb

7199 run by MK

Sample Name:	**5.000 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**3**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

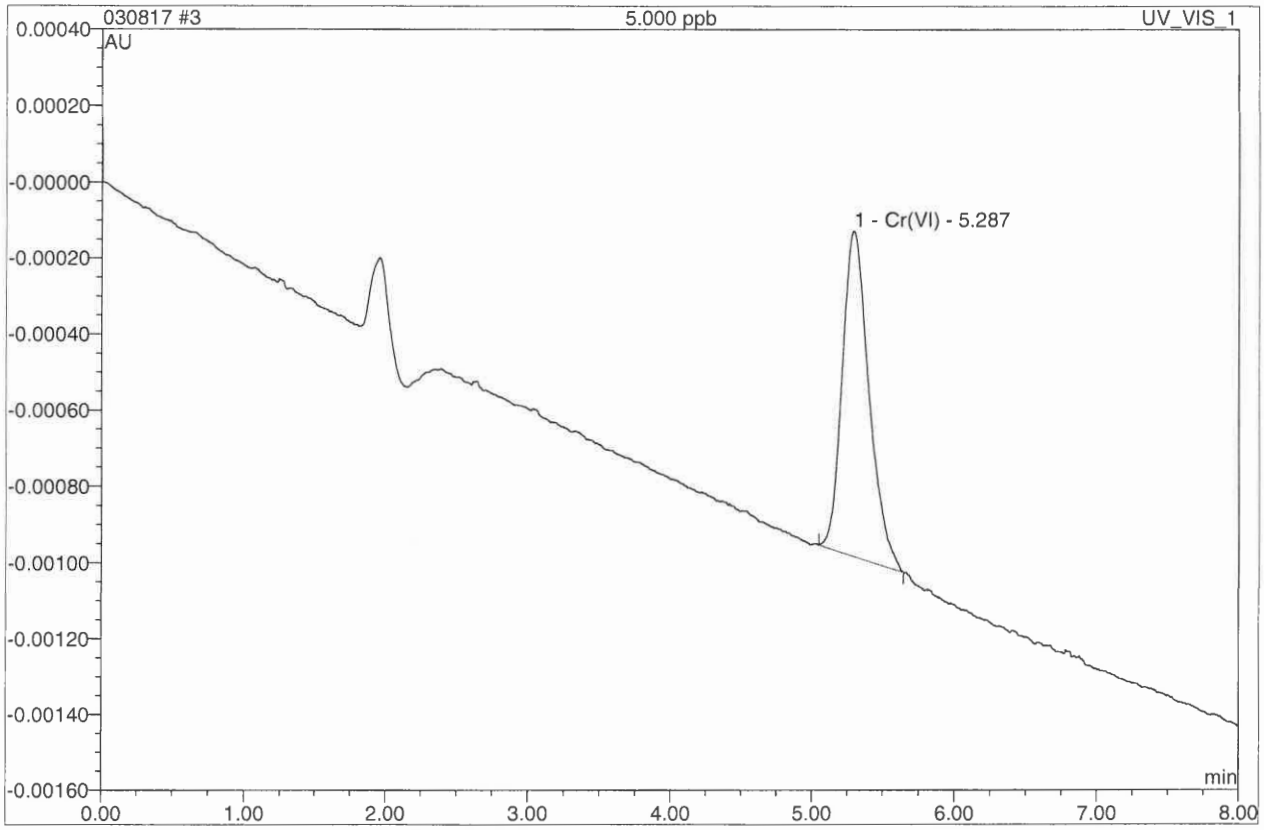


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.29	Cr(VI)	0.0008550	0.0001856	100.00	4.918	99.991
Total:			0.001	0.000	100.00	4.918	

3 5.000 ppb

7199 run by MK

Sample Name:	**5.000 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**3**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

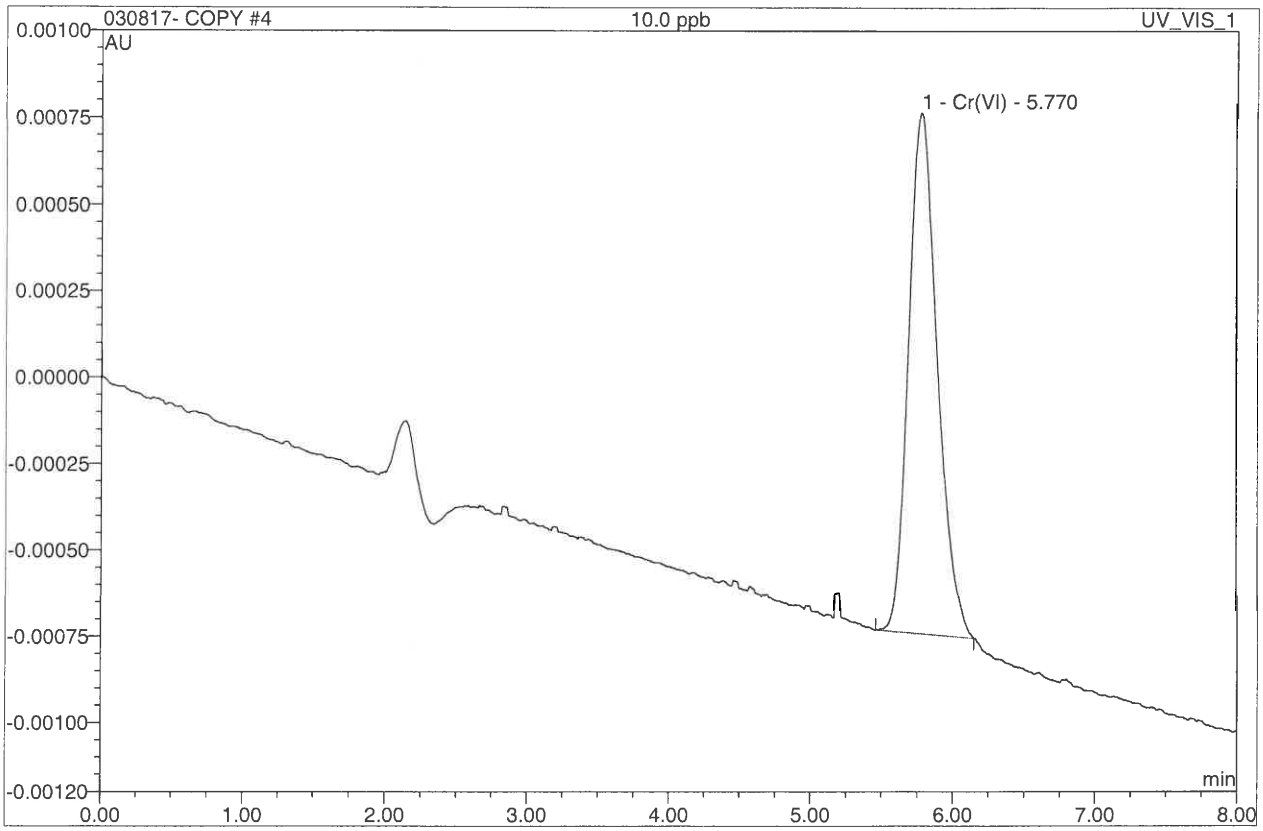


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.29	Cr(VI)	0.0008550	0.0001856	100.00	4.916	99.993
Total:			0.001	0.000	100.00	4.916	

4 10.0 ppb

7199 run by MK

Sample Name:	**10.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**4**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

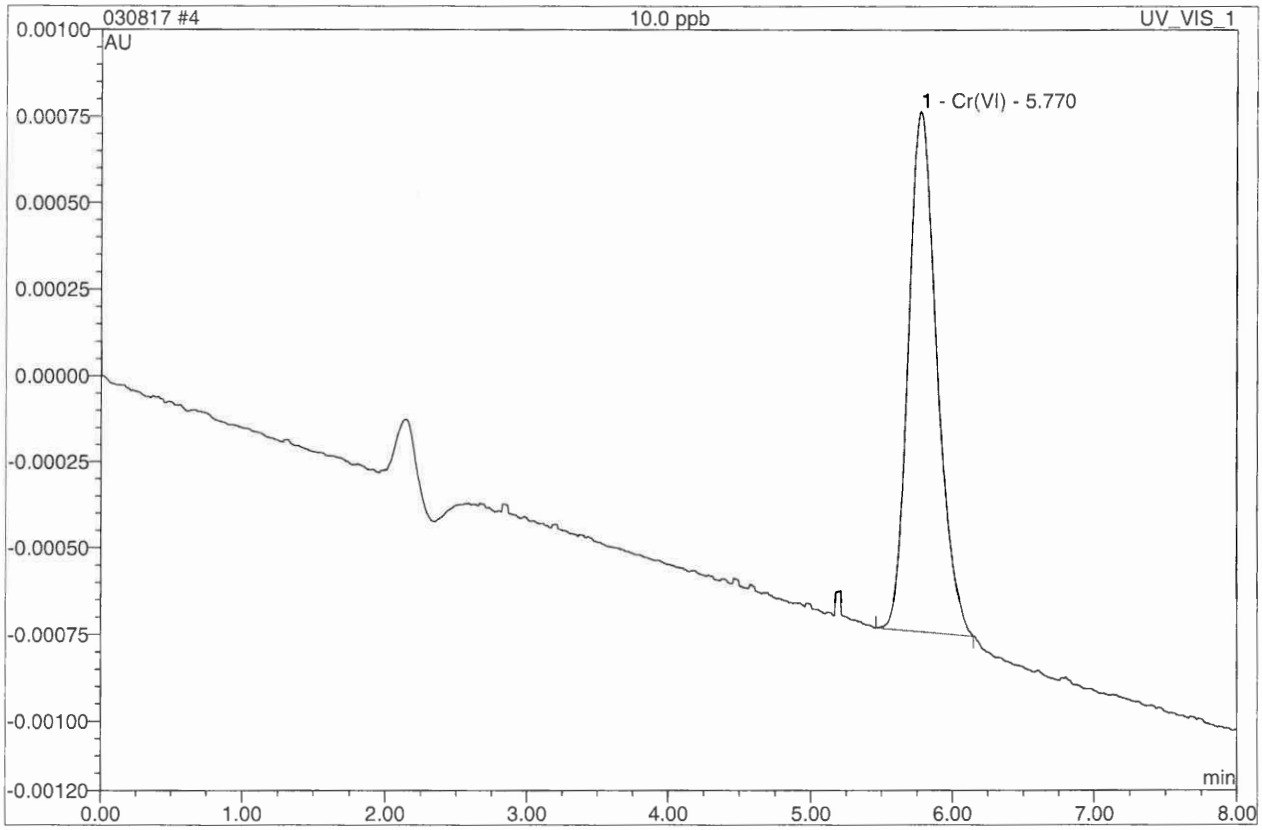


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.77	Cr(VI)	0.0015060	0.0003539	100.00	9.375	99.991
Total:			0.002	0.000	100.00	9.375	

4 10.0 ppb

7199 run by MK

Sample Name:	**10.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**4**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

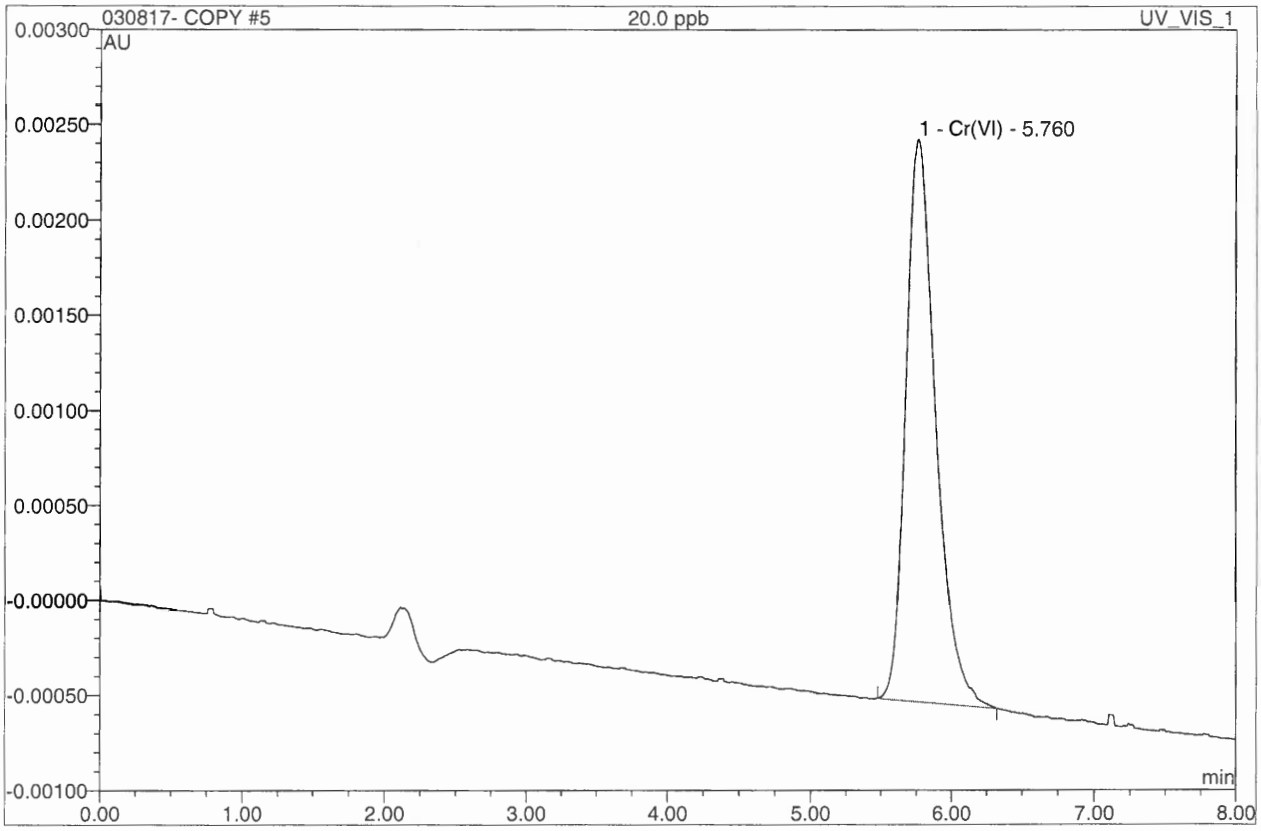


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.77	Cr(VI)	0.0015060	0.0003539	100.00	9.375	99.991
Total:			0.002	0.000	100.00	9.375	

5 20.0 ppb

7199 run by MK

Sample Name:	**20.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**5**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

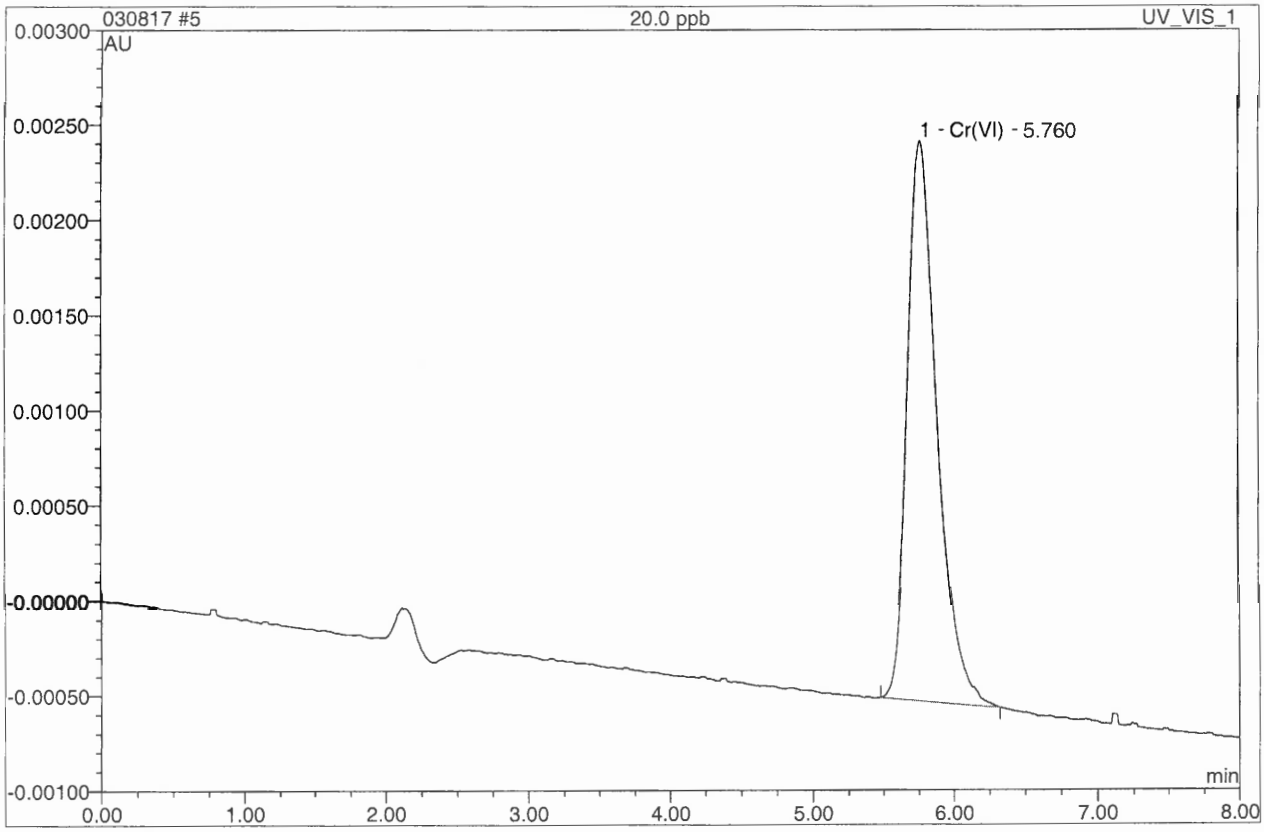


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.76	Cr(VI)	0.0029540	0.0007315	100.00	19.378	99.991
Total:			0.003	0.001	100.00	19.378	

5 20.0 ppb

7199 run by MK

Sample Name:	**20.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**5**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

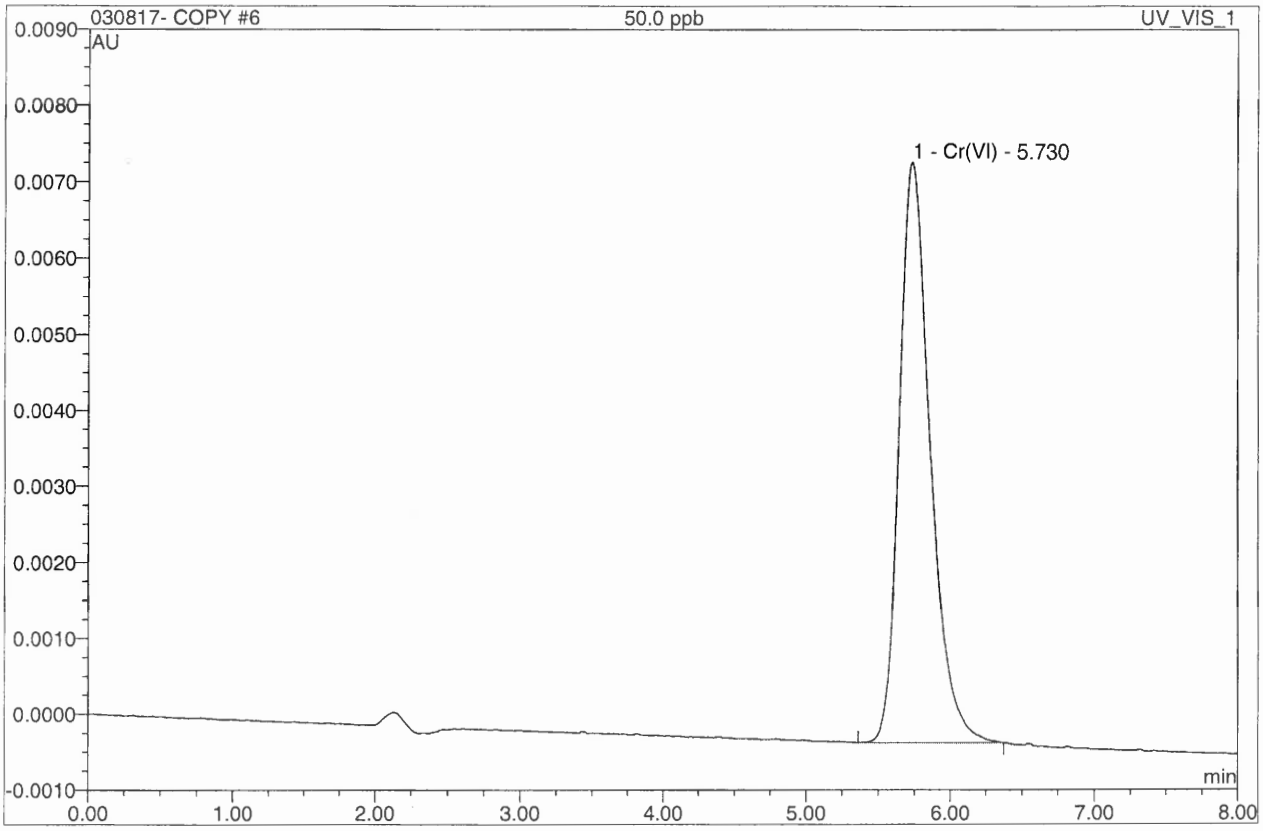


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.76	Cr(VI)	0.0029540	0.0007315	100.00	19.372	99.993
Total:			0.003	0.001	100.00	19.372	

6 50.0 ppb

7199 run by MK

Sample Name:	**50.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**6**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:46**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

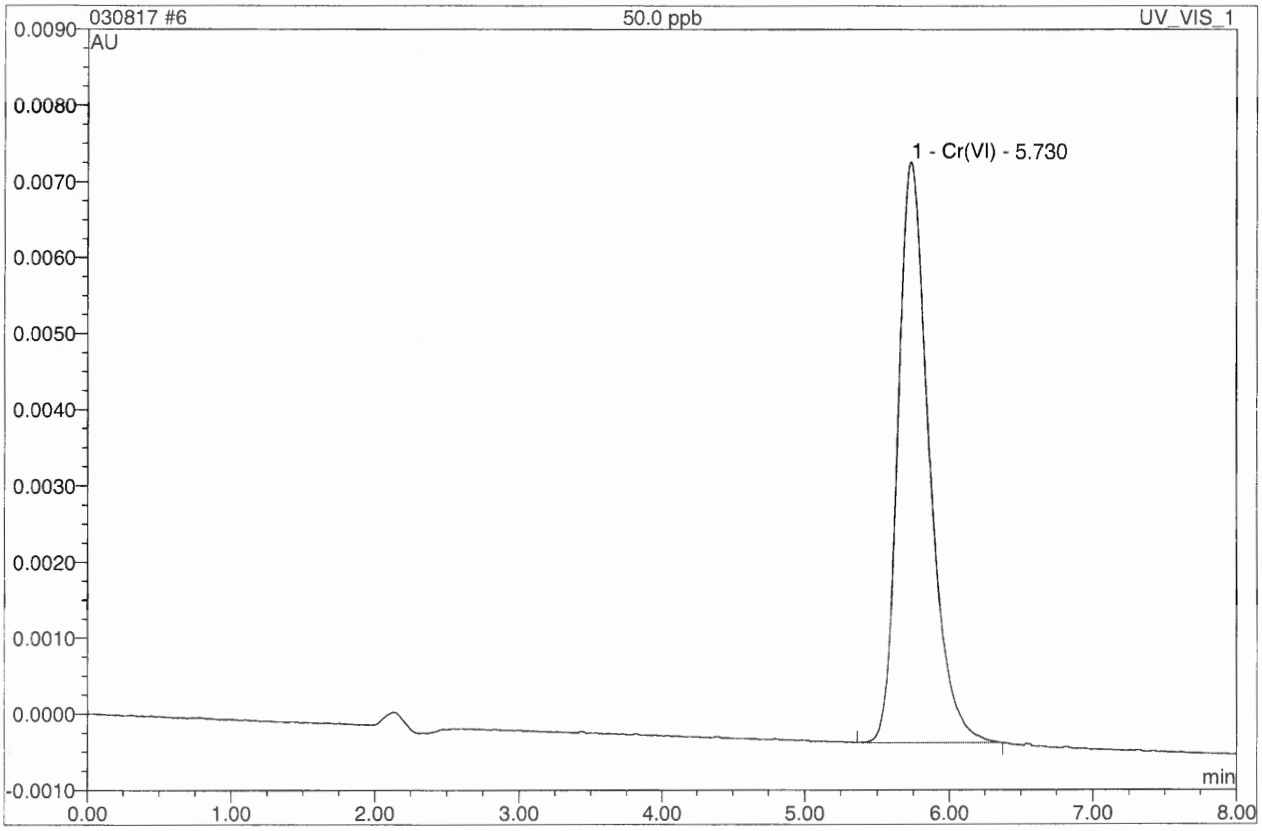


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.73	Cr(VI)	0.0076340	0.0019169	100.00	50.781	99.991
Total:			0.008	0.002	100.00	50.781	

6 50.0 ppb

7199 run by MK

Sample Name:	**50.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**6**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:46**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

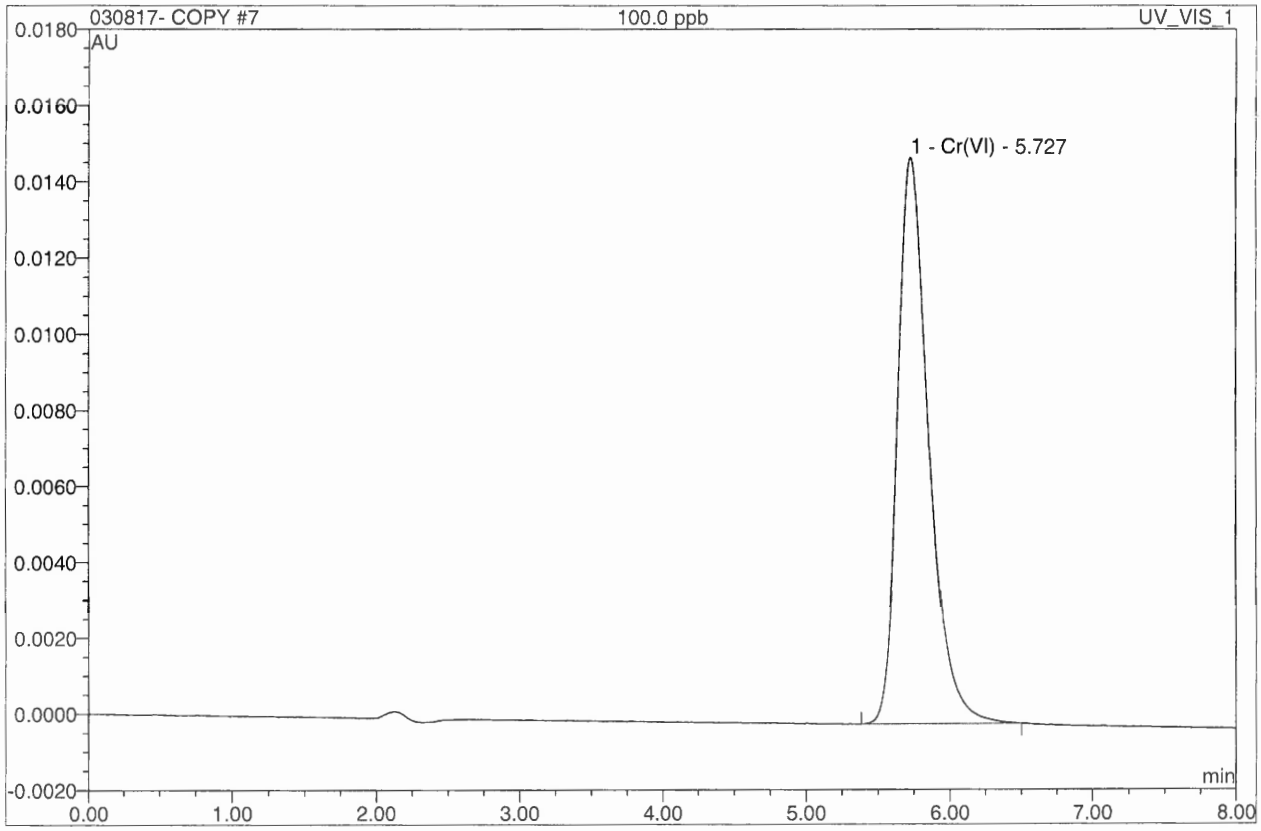


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.73	Cr(VI)	0.0076340	0.0019169	100.00	50.766	99.993
Total:			0.008	0.002	100.00	50.766	

7 100.0 ppb

7199 run by MK

Sample Name:	**100.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**7**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:57**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

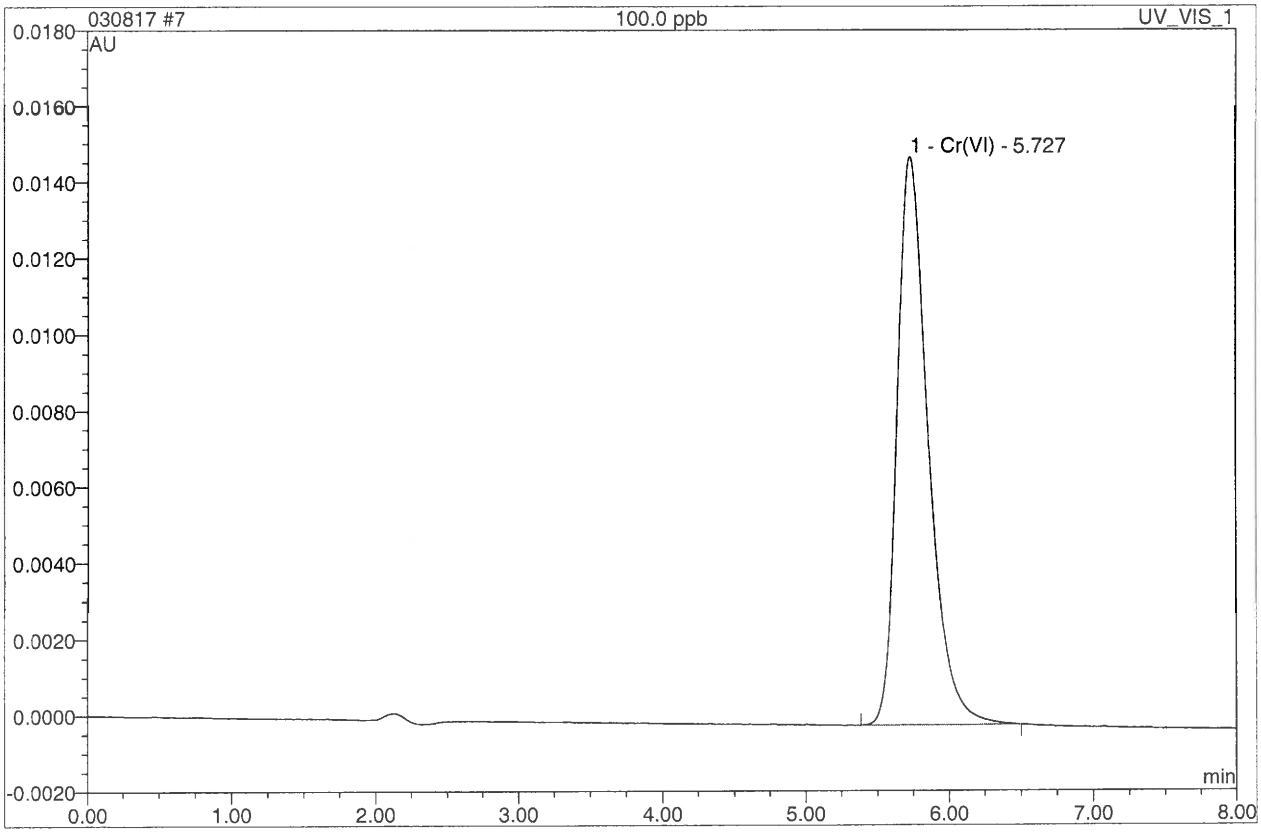


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.73	Cr(VI)	0.0149260	0.0037674	100.00	99.800	99.991
Total:			0.015	0.004	100.00	99.800	

7 100.0 ppb

7199 run by MK

Sample Name:	**100.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**7**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:57**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

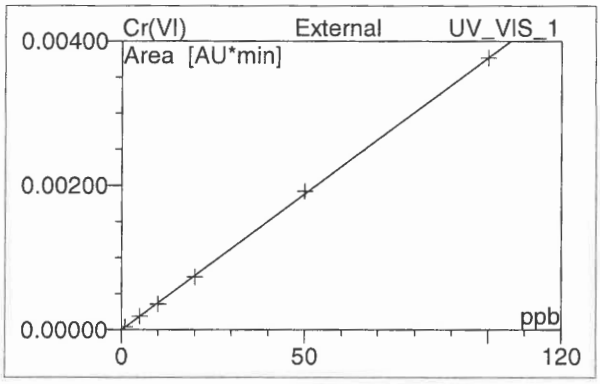


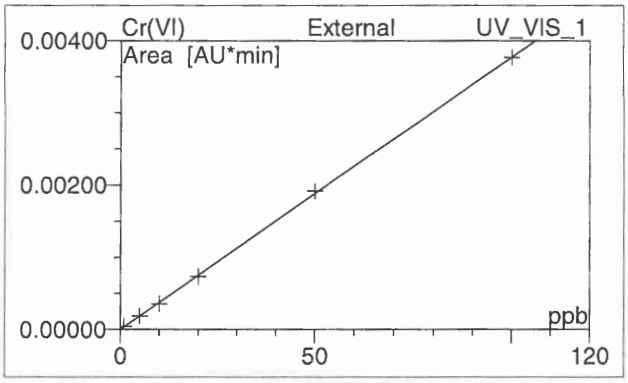
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.73	Cr(VI)	0.0149260	0.0037674	100.00	99.771	99.993
Total:			0.015	0.004	100.00	99.771	

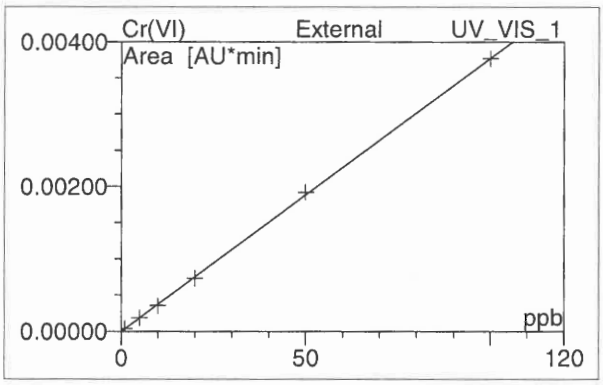
7 100.0 ppb

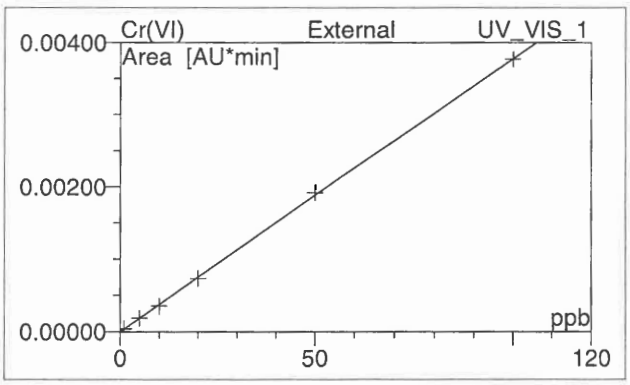
7199 run by MK

Sample Name:	**100.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**7**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Peak Cal STD:*	**0.000**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 13:57**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**







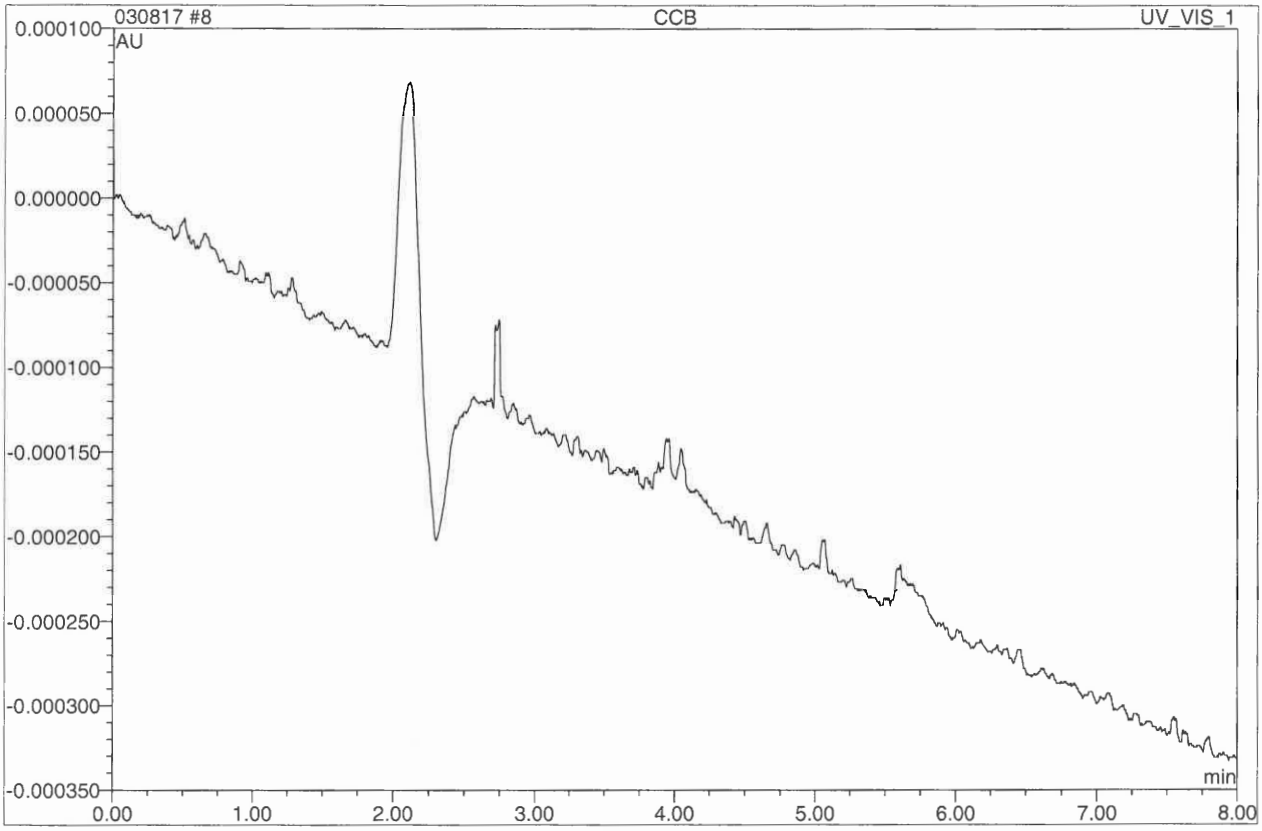


No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	Offset	Slope	Curve
1	5.73	Cr(VI)	Lin	6	99.9913	0.0000	0.0000	0.0000
Average:					99.9913	0.0000	0.0000	0.0000

8 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**8**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:07**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

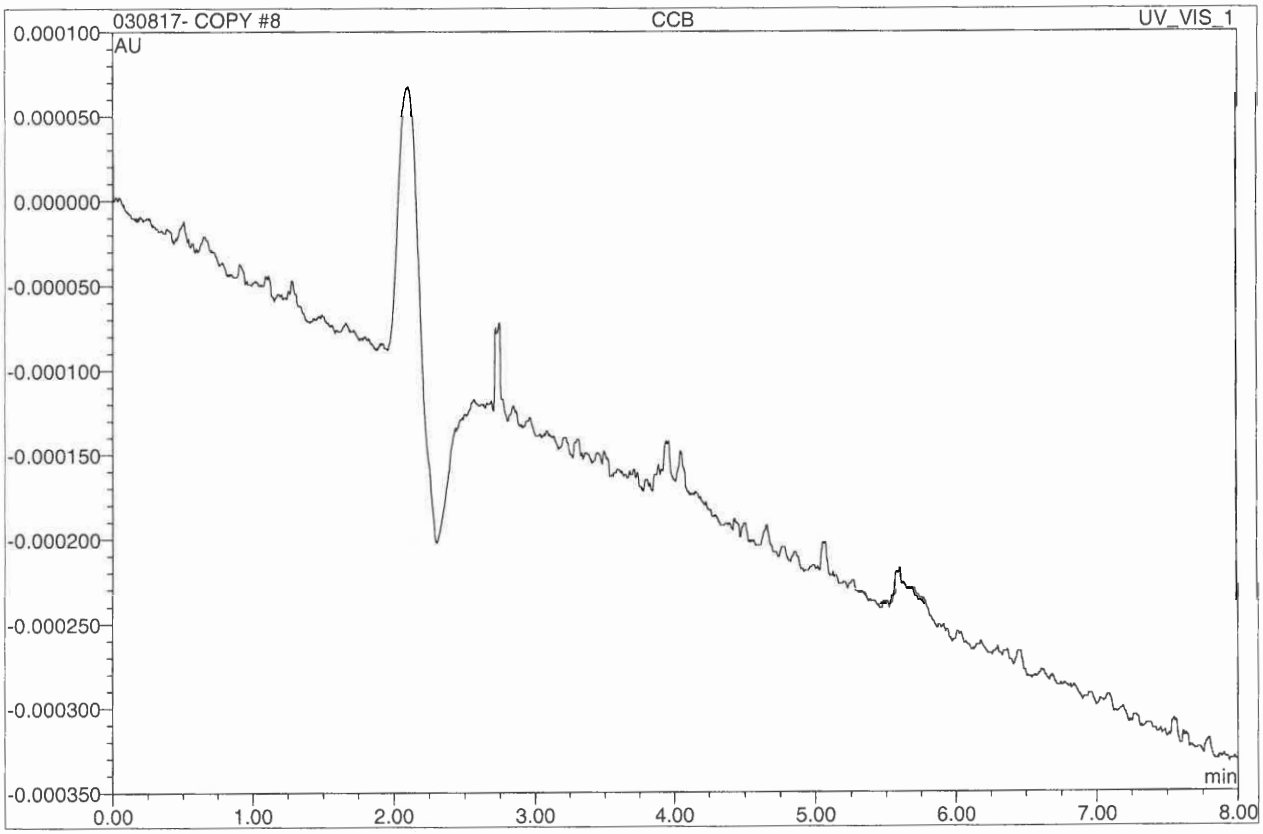


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

8 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**8**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:07**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86878

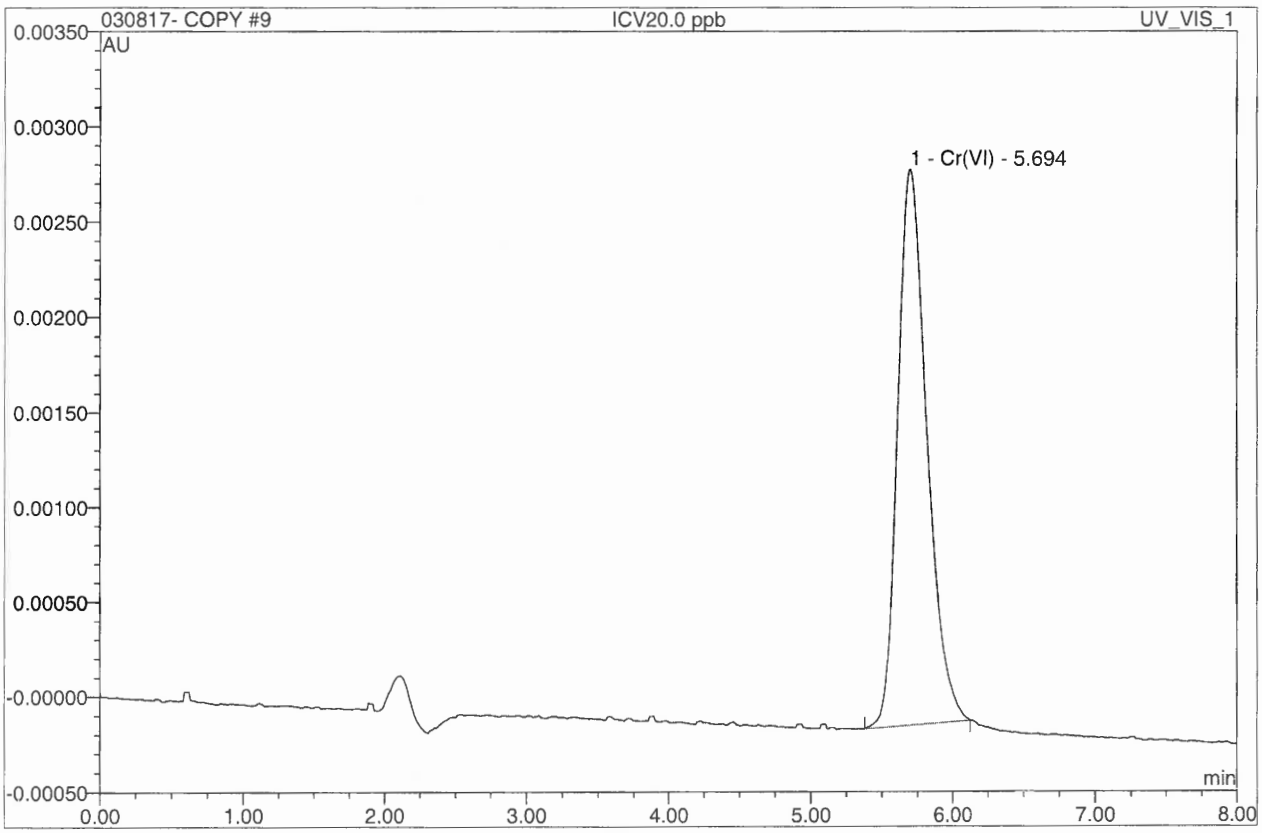
Chromium Hexavalent by 7199

SECOND SOURCE VERIFICATION (ICV)

9 ICV20.0 ppb

7199 run by MK

Sample Name:	**ICV20.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**9**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:18**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



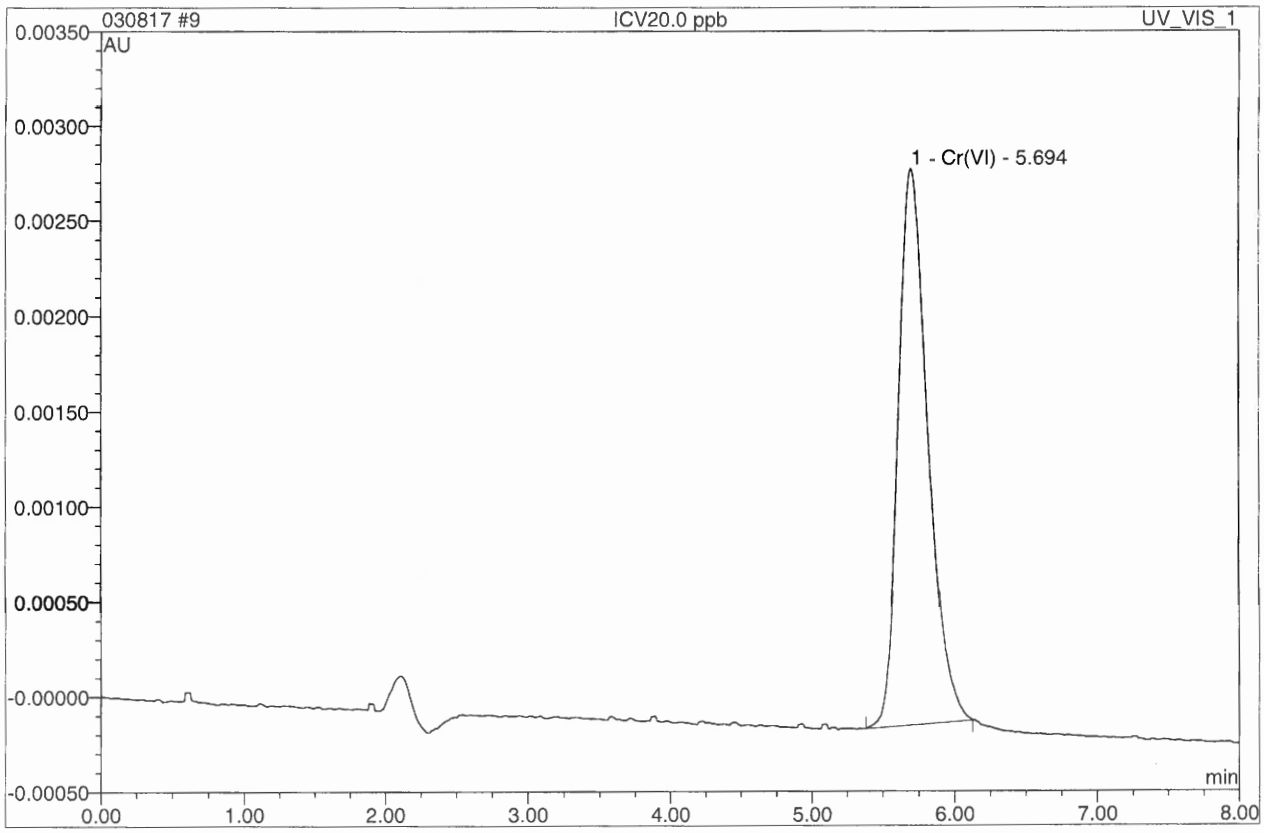
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.69	Cr(VI)	0.0029280	0.0007015	100.00	18.582	99.991
Total:			0.003	0.001	100.00	18.582	

$\frac{18.6}{20.0} = 93.0\%$

9 ICV20.0 ppb

7199 run by MK

Sample Name:	**ICV20.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**9**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 14:18**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.69	Cr(VI)	0.0029280	0.0007015	100.00	18.577	99.993
Total:			0.003	0.001	100.00	18.577	

AETL Job Number 86878

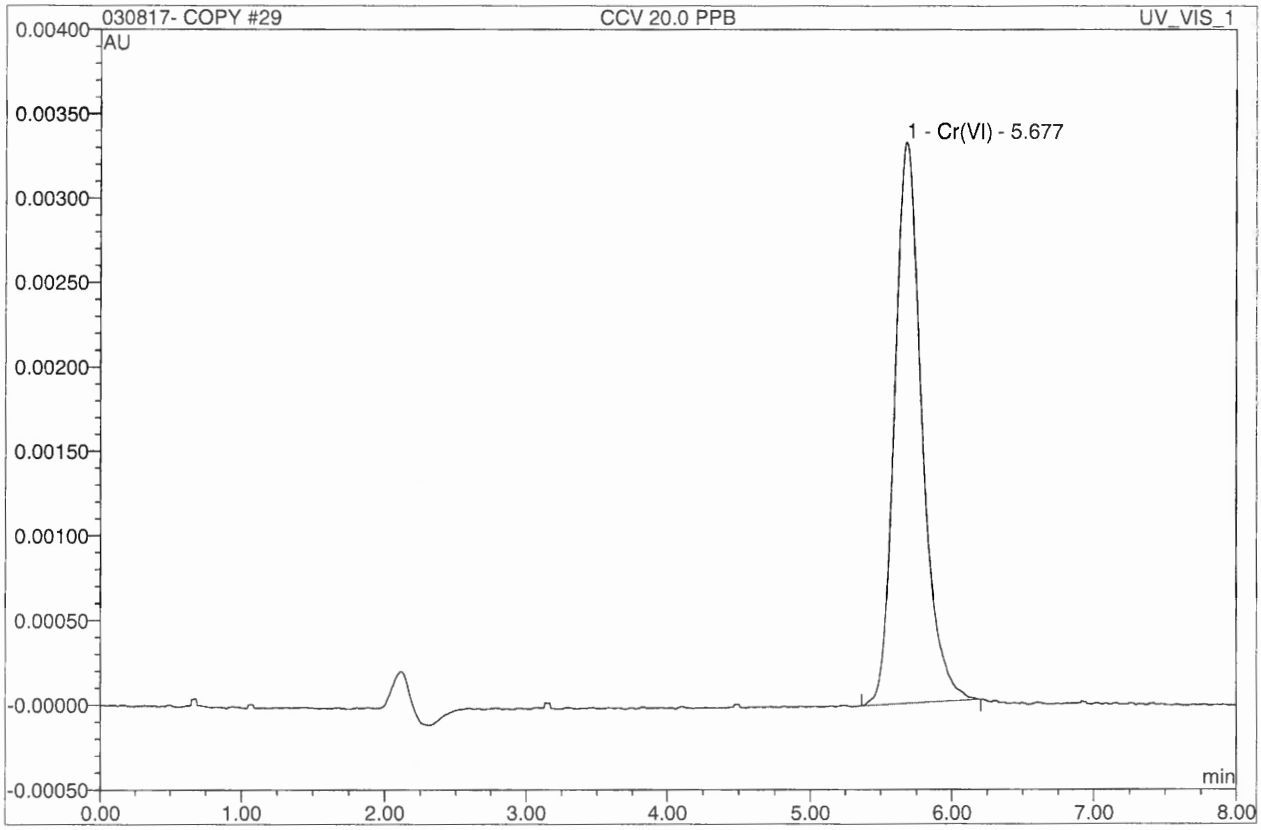
Chromium Hexavalent by 7199

DAILY CALIBRATION (CCV)

29 CCV 20.0 PPB

7199 run by MK

Sample Name:	**CCV 20.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**29**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.980**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:48**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



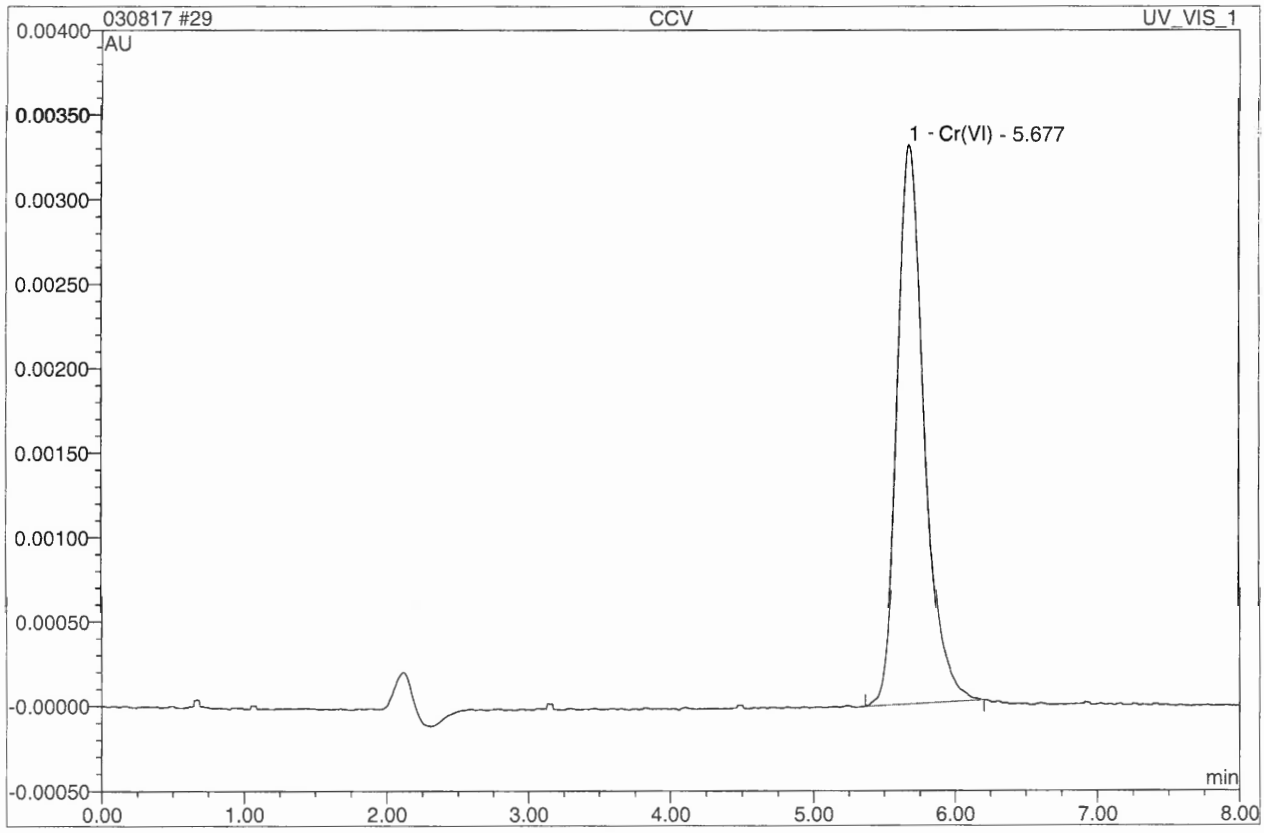
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.68	Cr(VI)	0.0033220	0.0007404	100.00	19.613	99.991
Total:			0.003	0.001	100.00	19.613	

$\frac{19.6}{20.0} = 98.0\%$

29 CCV

7199 run by MK

Sample Name:	**CCV**	*Injection Volume:*	**1000.0**
Vial Number:	**29**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.985**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:48**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

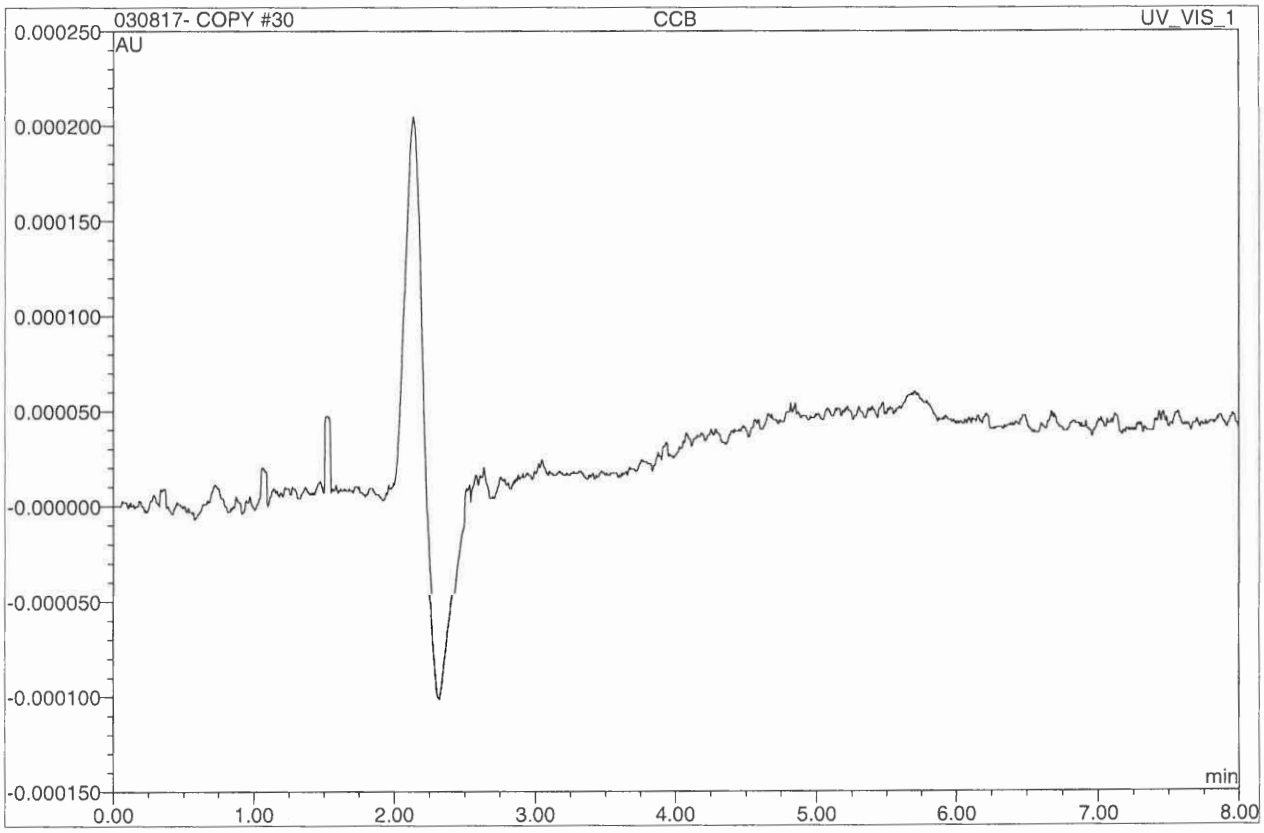


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.68	Cr(VI)	0.0033220	0.0007404	100.00	19.607	99.993
Total:			0.003	0.001	100.00	19.607	

30 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**30**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:58**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

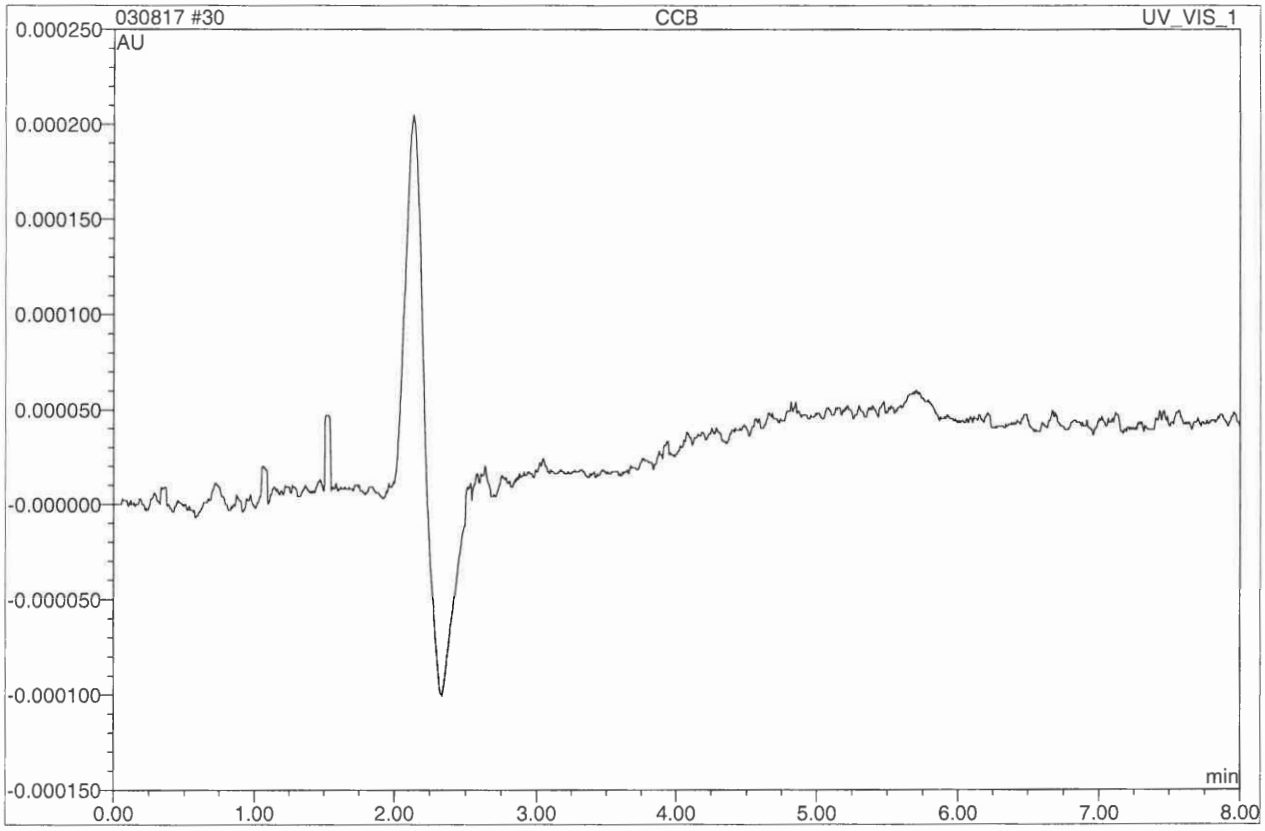


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

30 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**30**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 17:58**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

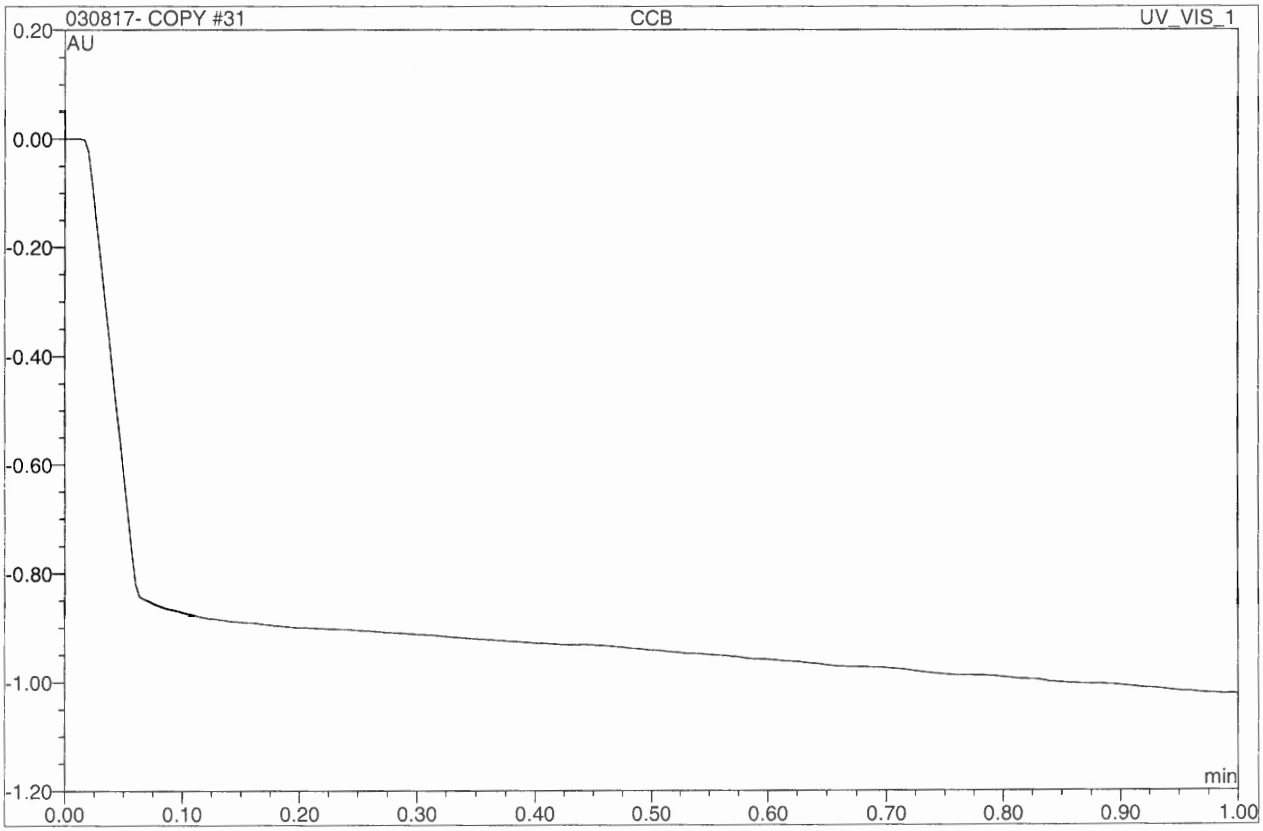


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

31 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**31**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Shutdown Program**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 18:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**1.00**	*Sample Amount:*	**1.0000**

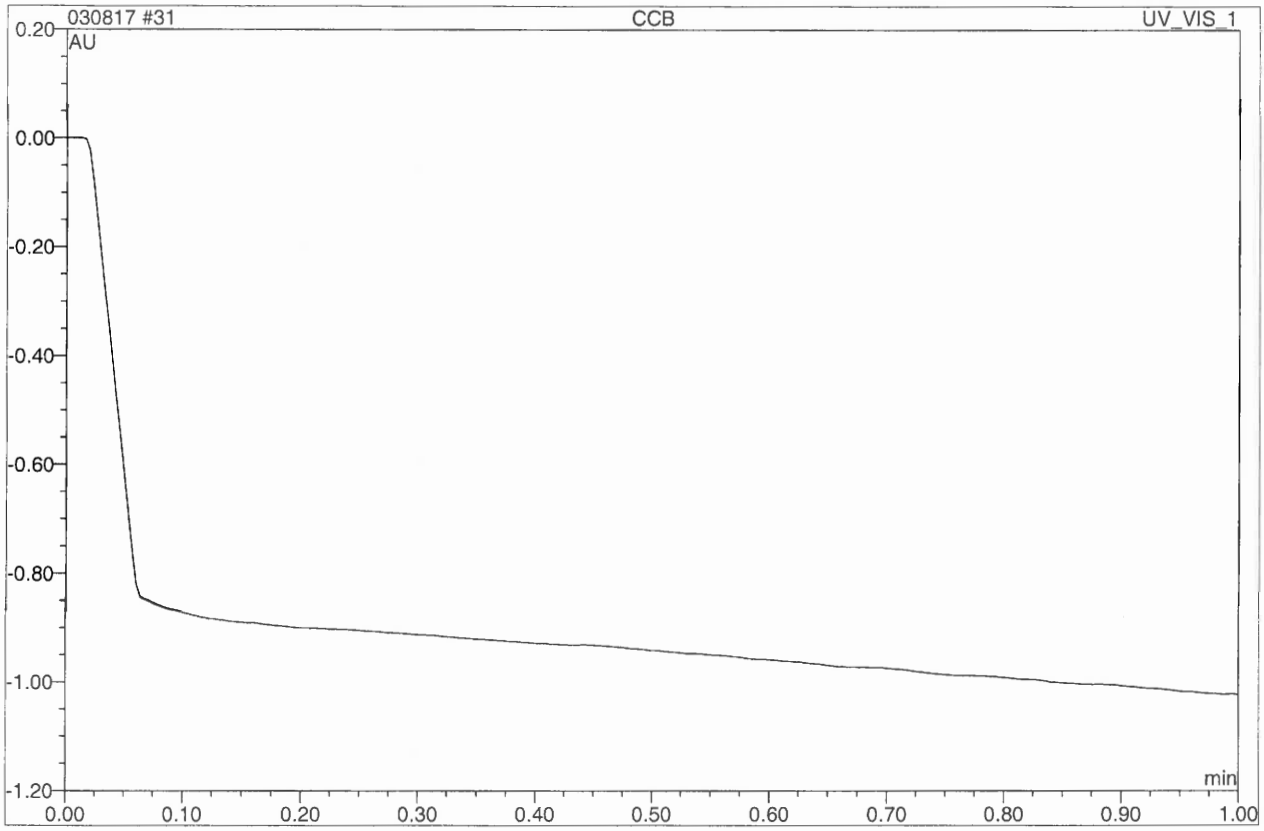


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

31 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**31**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Shutdown Program**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/8/2017 18:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**1.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86878

Chromium Hexavalent by 7199

ANALYTICAL LOGS

AETL Job Number 86878

Chromium Hexavalent by 7199

RUN LOG

Sequence: 030817- COPY
Operator: AMER ENVIRON TEST LA
Printed: 3/31/2017 12:40:14 PM

Title:
Datasource: DDZ91X11_local
Location: March 2017
Timebase: CrVI
#Samples: 31

Created: 3/9/2017 8:42:58 AM by AMER ENVIRON TEST LA
Last Update: 3/31/2017 12:40:09 PM by AMER ENVIRON TEST LA

No.	Name	Type	Pos.	Inj. Vol.	Program	Method
1	blank	Unknown	1	1000.0	Chromium (VI)	Cr(VI) High range calibration
2	1.000 ppb	Standard	2	1000.0	Chromium (VI)	Cr(VI) High range calibration
3	5.000 ppb	Standard	3	1000.0	Chromium (VI)	Cr(VI) High range calibration
4	10.0 ppb	Standard	4	1000.0	Chromium (VI)	Cr(VI) High range calibration
5	20.0 ppb	Standard	5	1000.0	Chromium (VI)	Cr(VI) High range calibration
6	50.0 ppb	Standard	6	1000.0	Chromium (VI)	Cr(VI) High range calibration
7	100.0 ppb	Standard	7	1000.0	Chromium (VI)	Cr(VI) High range calibration
8	CCB	Unknown	8	1000.0	Chromium (VI)	Cr(VI) High range calibration
9	ICV20.0 ppb	Unknown	9	1000.0	Chromium (VI)	Cr(VI) High range calibration
10	MB	Unknown	10	1000.0	Chromium (VI)	Cr(VI) High range calibration
11	LCS 50.0 PPB	Unknown	11	1000.0	Chromium (VI)	Cr(VI) High range calibration
12	LCS DUP 50.0 PPB	Unknown	12	1000.0	Chromium (VI)	Cr(VI) High range calibration
13	CCB	Unknown	13	1000.0	Chromium (VI)	Cr(VI) High range calibration
14	PT-7067-05 D=250	Unknown	14	1000.0	Chromium (VI)	Cr(VI) High range calibration
15	CCB	Unknown	15	1000.0	Chromium (VI)	Cr(VI) High range calibration
16	WS-7063-05 D=250	Unknown	16	1000.0	Chromium (VI)	Cr(VI) High range calibration
17	CCB	Unknown	17	1000.0	Chromium (VI)	Cr(VI) High range calibration
18	S-86878.01	Unknown	18	1000.0	Chromium (VI)	Cr(VI) High range calibration
19	S-86878.01 DUP	Unknown	19	1000.0	Chromium (VI)	Cr(VI) High range calibration
20	S-86878.01 MS 50.0 PPB	Unknown	20	1000.0	Chromium (VI)	Cr(VI) High range calibration
21	S-86878.01 MSD 50.0 PPB	Unknown	21	1000.0	Chromium (VI)	Cr(VI) High range calibration
22	CCB	Unknown	22	1000.0	Chromium (VI)	Cr(VI) High range calibration
23	S-86878.02	Unknown	23	1000.0	Chromium (VI)	Cr(VI) High range calibration
24	S-86878.03	Unknown	24	1000.0	Chromium (VI)	Cr(VI) High range calibration
25	S-86878.04	Unknown	25	1000.0	Chromium (VI)	Cr(VI) High range calibration
26	S-86878.05	Unknown	26	1000.0	Chromium (VI)	Cr(VI) High range calibration
27	S-86878.06	Unknown	27	1000.0	Chromium (VI)	Cr(VI) High range calibration
28	CCB	Unknown	28	1000.0	Chromium (VI)	Cr(VI) High range calibration
29	CCV 20.0 PPB	Unknown	29	1000.0	Chromium (VI)	Cr(VI) High range calibration
30	CCB	Unknown	30	1000.0	Chromium (VI)	Cr(VI) High range calibration
31	CCB	Unknown	31	1000.0	Shutdown Program	Cr(VI) High range calibration

Sequence: 030817- COPY
Operator: AMER ENVIRON TEST LA
Printed: 3/31/2017 12:40:14 PM

Title:
Datasource: DDZ91X11_local
Location: March 2017
Timebase: CrVI
#Samples: 31

Created: 3/9/2017 8:42:58 AM by AMER ENVIRON TEST LA
Last Update: 3/31/2017 12:40:09 PM by AMER ENVIRON TEST LA

No.	Name	Status	Inj. Date/Time	Weight	Dil. Factor	ISTD Amount	Sample ID	Replicate ID
1	blank	Finished	3/8/2017 12:54:06 PM	1.0000	1.0000	1.0000		01
2	1.000 ppb	Finished	3/8/2017 1:04:37 PM	1.0000	1.0000	1.0000		01
3	5.000 ppb	Finished	3/8/2017 1:15:07 PM	1.0000	1.0000	1.0000		01
4	10.0 ppb	Finished	3/8/2017 1:25:37 PM	1.0000	1.0000	1.0000		01
5	20.0 ppb	Finished	3/8/2017 1:36:07 PM	1.0000	1.0000	1.0000		01
6	50.0 ppb	Finished	3/8/2017 1:46:37 PM	1.0000	1.0000	1.0000		01
7	100.0 ppb	Finished	3/8/2017 1:57:07 PM	1.0000	1.0000	1.0000		01
8	CCB	Finished	3/8/2017 2:07:37 PM	1.0000	1.0000	1.0000		01
9	ICV20.0 ppb	Finished	3/8/2017 2:18:07 PM	1.0000	1.0000	1.0000		01
10	MB	Finished	3/8/2017 2:28:37 PM	1.0000	1.0000	1.0000		01
11	LCS 50.0 PPB	Finished	3/8/2017 2:39:08 PM	1.0000	1.0000	1.0000		01
12	LCS DUP 50.0 PPB	Finished	3/8/2017 2:49:38 PM	1.0000	1.0000	1.0000		01
13	CCB	Finished	3/8/2017 3:00:08 PM	1.0000	1.0000	1.0000		01
14	PT-7067-05 D=250	Finished	3/8/2017 3:10:38 PM	1.0000	1.0000	1.0000		01
15	CCB	Finished	3/8/2017 3:21:09 PM	1.0000	1.0000	1.0000		01
16	WS-7063-05 D=250	Finished	3/8/2017 3:31:38 PM	1.0000	1.0000	1.0000		01
17	CCB	Finished	3/8/2017 3:42:09 PM	1.0000	1.0000	1.0000		01
18	S-86878.01	Finished	3/8/2017 3:52:39 PM	1.0000	1.0000	1.0000		01
19	S-86878.01 DUP	Finished	3/8/2017 4:03:09 PM	1.0000	1.0000	1.0000		01
20	S-86878.01 MS 50.0 PPB	Finished	3/8/2017 4:13:39 PM	1.0000	1.0000	1.0000		01
21	S-86878.01 MSD 50.0 PPB	Finished	3/8/2017 4:24:09 PM	1.0000	1.0000	1.0000		01
22	CCB	Finished	3/8/2017 4:34:39 PM	1.0000	1.0000	1.0000		01
23	S-86878.02	Finished	3/8/2017 4:45:09 PM	1.0000	1.0000	1.0000		01
24	S-86878.03	Finished	3/8/2017 4:55:39 PM	1.0000	1.0000	1.0000		01
25	S-86878.04	Finished	3/8/2017 5:06:09 PM	1.0000	1.0000	1.0000		01
26	S-86878.05	Finished	3/8/2017 5:16:40 PM	1.0000	1.0000	1.0000		01
27	S-86878.06	Finished	3/8/2017 5:27:10 PM	1.0000	1.0000	1.0000		01
28	CCB	Finished	3/8/2017 5:37:40 PM	1.0000	1.0000	1.0000		01
29	CCV 20.0 PPB	Finished	3/8/2017 5:48:11 PM	1.0000	1.0000	1.0000		01
30	CCB	Finished	3/8/2017 5:58:41 PM	1.0000	1.0000	1.0000		01
31	CCB	Finished	3/8/2017 6:09:11 PM	1.0000	1.0000	1.0000		01

Sequence:	030817- COPY		
Operator:	AMER ENVIRON TEST LA		Printed: 3/31/2017 12:40:14 PM
Title:			
Datasource:	DDZ91X11_local		
Location:	March 2017		
Timebase:	CrVI	Created:	3/9/2017 8:42:58 AM by AMER ENVIRON TEST LA
#Samples:	31	Last Update:	3/31/2017 12:40:09 PM by AMER ENVIRON TEST LA

No.	Name	Comment
1	blank	7199 run by MK
2	1.000 ppb	7199 run by MK
3	5.000 ppb	7199 run by MK
4	10.0 ppb	7199 run by MK
5	20.0 ppb	7199 run by MK
6	50.0 ppb	7199 run by MK
7	100.0 ppb	7199 run by MK
8	CCB	7199 run by MK
9	ICV20.0 ppb	7199 run by MK
10	MB	7199 run by MK
11	LCS 50.0 PPB	7199 run by MK
12	LCS DUP 50.0 PPB	7199 run by MK
13	CCB	7199 run by MK
14	PT-7067-05 D=250	7199 run by MK
15	CCB	7199 run by MK
16	WS-7063-05 D=250	7199 run by MK
17	CCB	7199 run by MK
18	S-86878.01	7199 run by MK
19	S-86878.01 DUP	7199 run by MK
20	S-86878.01 MS 50.0 PPB	7199 run by MK
21	S-86878.01 MSD 50.0 PPB	7199 run by MK
22	CCB	7199 run by MK
23	S-86878.02	7199 run by MK
24	S-86878.03	7199 run by MK
25	S-86878.04	7199 run by MK
26	S-86878.05	7199 run by MK
27	S-86878.06	7199 run by MK
28	CCB	7199 run by MK
29	CCV 20.0 PPB	7199 run by MK
30	CCB	7199 run by MK
31	CCB	7199 run by MK

AETL Job Number 86878

Chromium Hexavalent by 7199

SAMPLE AND STANDARD PREPARATION LOG AND REFERENCES

Sample Digestion Log Book for Method 3060A

Sample ID	Digestion Method	Final PH	Wt. of Sample	Final Vol. Of digestion	Vol. of Spike	Spike ID	Date	Sign
MB	3060A	9-9.5		50 ml	~~3 ml of 1ppm/50 ml~~	PR-13-226 ~~ST-09-146~~	03/03/17	AZ
LCS					$\frac{12.5ml \times 1000 \mu g/L}{50}$			
LCS dup								
Sample 86878.01			2.5g		$= 250 \mu g/L$			
S-Dup 01			2.5g					
Spike 01					$\frac{10ml \times 250 \mu g/L}{50}$			
Sp Dup 01								
2) 86878.02					$= 50 \mu g/L$			
3) 86878.03								
4) 86878.04								
5) 86878.05								
6) 86878.06								
7)								
8) PT 7067.05								
9) PTd 7067.05								
10) WS 7063.05								
11) WSd 7063.05								
12)								
13)								
14)								
15)								
16)								
17)								
18)								
19)								
20)								

dust sieved

06/09/16 PR-13_329 Cr^{+6} Conc = 0.05 µg/L 06/09/16

SpCx

$$\frac{2.5\,ml \times 1.00\,\mu g/L}{50} = 0.05\,\mu g/L$$

06/09/16 PR-13_330 Cr^{+6} Conc = 0.02 µg/L 06/09/16

$$\frac{1\,ml \times 1.00\,\mu g/L}{50} = 0.02\,\mu g/L$$

06/09/16

PR-13_331 HACH 1000 mg/L Cr^{+6} 06/09/16

Std-13-3351 Conc: 10.0 mg/L Exp: Jul 20

$$\frac{10\,ml\ of\ 1000\,mg/L}{1000\,ml} = 10.0\,mg/L$$

06/09/16

PR-13_332 500 µg/L Cr^{+6} HACH 06/09/16

$$\frac{10\,ml\ of\ 10\,mg/L}{200\,ml} = 500\,\mu g/L$$

06/09/16

$$10\,ml \times 10\,mg/L \times \frac{1}{200\,ml} \times \frac{1000\,\mu g}{1\,mg} = 500\,\mu g/L$$

PR-13_333 100 µg/L Cr^{+6} HACH 06/09/16

$$\frac{10\,ml \times 500\,\mu g/L}{50} = 100\,\mu g/L$$

06/09/16

PR-13_334 50 µg/L Cr^{+6} HACH 06/09/16

$$\frac{5\,ml \times 500\,\mu g/L}{50} = 50\,\mu g/L$$

06/09/16 PR-13_335 20 µg/L Cr^{+6} HACH 06/09/16

$$\frac{10\,ml \times 100\,\mu g/L}{50} = 20\,\mu g/L$$

PR-13_336 10 µg/L HACH Cr^{+6} 06/09/16 PR-13

$$\frac{5\,ml \times 100\,\mu g/L}{50} = 10\,\mu g/L$$

PR-13

PR-13_337 5.00 µg/L HACH Cr^{+6} 06/09/16

$$\frac{5\,ml \times 50.0\,\mu g/L}{50} = 5.00\,\mu g/L$$

PR-13_338 1.00 µg/L HACH Cr^{+6} 06/09/16

PR-13

$$\frac{5\,ml \times 10.0\,\mu g/L}{50} = 1.00\,\mu g/L$$

PR-13_339 0.500 µg/L HACH Cr^{+6} 06/09/16

$$\frac{2.5\,ml \times 10\,\mu g/L}{50} = 0.500\,\mu g/L$$

PR-13

PR-13_340 0.200 µg/L HACH Cr^{+6} 06/09/16

$$\frac{10\,ml \times 1\,\mu g/L}{50} = 0.200\,\mu g/L$$

PR-

PR-13_341 0.100 µg/L HACH Cr^{+6} 06/09/16

$$\frac{5\,ml \times 1.00\,\mu g/L}{50} = 0.1\,\mu g/L$$

PR

PR-13_342 0.05 µg/L HACH Cr^{+6} 06/09/16

$$\frac{2.5\,ml \times 1.00\,\mu g/L}{50} = 0.05\,\mu g/L$$

$$\frac{10ml \times 1.00 \mu g/L}{50} = 0.02 \mu g/L$$

PR-13-344 HACH 1000 mg/L Cr^{+6} std (ST-13-387) 02/02/17

Exp date: Dec. 20

conc = 10.0 mg/L

$$\frac{\text{take } 10ml \text{ of } 1000 \text{ mg/L } Cr^{+6} \text{ std}}{100ml \text{ DIW}} = 10.0 mg/L$$

PR-13-345 conc = 500 µg/L HACH 02/02/17

$$\frac{10ml \text{ of } 10 \text{ mg/L}}{200ml} = 500 \mu g/L$$

$$10ml \times 10 mg/L \times \frac{1}{200ml} \times \frac{1000 \mu g}{1mg} = 500 \mu g/L$$

PR-13-346 conc = 100 µg/L HACH 02/02/17

$$\frac{10ml \times 500 \mu g/L}{50ml} = 100 \mu g/L$$

PR-13-347 conc = 50 µg/L HACH 02/02/17

$$\frac{5ml \times 500 \mu g/L}{50ml} = 50 \mu g/L$$

PR-13-348 conc = 20 µg/L HACH 02/02/17

$$\frac{10ml \times 100 \mu g/L}{50ml} = 20 \mu g/L$$

PR-13-349	10.0 µg/L HACH	02/02/17	
	$\frac{5ml \times 100 \mu g/L}{50 ml} = 10.0 \mu g/L$		
PR-13-350	5.00 µg/L HACH	02/02/17	
	$\frac{5ml \times 50 \mu g/L}{50} = 5.00 \mu g/L$		
PR-13-351	1.00 µg/L HACH	02/02/17	
	$\frac{5ml \times 10 \mu g/L}{50ml} = 1.00 \mu g/L$		

For soil Cal. points → added 1 ml of 10 ml/50 ml diluted Alkaline digestion sol to all the calibration points

For making soil sample LCS and Blank according to Method 3060A for soil samples take 2.5 gr of "Blank soil" added 10 ml Alkaline digestion Solution which is 20 gr NaOH and 30 gr Na_2CO_3 in to 1000 ml DIW then add 0.5 g $MgCl_2$ and digested for 60 min, 90-95°C then add 1 ml of 0.5 M K_2HPO_4 / 0.5 M KH_2PO_4 buffer and then run for 7199 Method

PR-17-35
PICCA
N
P
P
F
C
S

NO_3 =
NO_2 =
PO_4 =
Br =
F =

PR-17-35
2ml

PR-17-
CFS NO_3(
NO_2(
PO_4(
Br(s
F(s
SO_4(
Cl(

PR-17-3
2ml

6. AETL Package No. 86879

3/16/2017

File Name: DP86879.pdf

Level IV Report of SW7199 Data for Samples

Originally Reported on 3/16/17

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Cover Page

DATA PACKAGE
LEVEL IV
For Chromium Hexavalent by EPA 7199 Only

OF

AETL Job Number 86879
Dated 03/16/2017

FOR

Tetra Tech
5383 Hollister Ave, Ste 130
Santa Barbara, CA 9311

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number 86879

Chromium Hexavalent by EPA 7199 by IC

		Page Number
Original Report, COC, and Cooler Receipt Form	✓	1-57
Case Narrative	✓	58-60
Sample Results and Data	✓	61-101
QC Results and Data	✓	102-133
Initial Calibration (IC) Data and Graph	✓	134-151
Second Source Verification (ICV)	✓	152-154
Daily Calibration (CCV)	✓	155-161
Analytical Logs	✓	162-177

AETL Job Number 86879

Chromium Hexavalent by 7199

ORIGINAL REPORT, COC, AND COOLER RECEIPT FORM

American Environmental Testing Laboratory Inc.

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Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: Randy Westhaus

Number of Pages 39
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86879	03/03/2017	T/TSB

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1
Site: Village Park
15150 Illinois Ave.
Paramount, CA 90723

Enclosed please find results of analyses of 17 soil samples which were analyzed as specified on the attached chain of custody. If there are any questions, please do not hesitate to call.

Checked By: _____ Approved By: _____

Cyrus Razmara, Ph.D.
Laboratory Director

American Environmental Testing Laboratory Inc.
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CHAIN OF CUSTODY RECORD

100950

COMPANY: Tetra Tech inc.
PROJECT MANAGER: Randy Westhaus
COMPANY ADDRESS: 5383 Hollister Ave. Suite
PHONE:
FAX:
PROJECT NAME: Village Park
PROJECT #: 100-SBA-T36771.02
SITE NAME AND ADDRESS: Paramount, CA
PO #:

AETL JOB No. 86879

Page 1 of 2

ANALYSIS REQUESTED

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA 8020/7471A (Hg)	EPA 6010B	EPA 7199								TEST INSTRUCTIONS & COMMENTS
1	VPS-1-0	86879.01	3/2/17	0900	S	1	none	X	X	X								
2	VPS-1-1	86879.02		0905				X	X	X								
3	VPS-2-0	86879.03		0925				X	X	X								
4	VPS-2-1	86879.04		0930				X	X	X								
5	SOILDup1	86879.05		0935				X	X	X								
6	VPS-3-0	86879.06		0955				X	X	X								
7	VPS-3-1	86879.07		1000				X	X	X								
8	VPS-4-0	86879.08		1030				X	X	X								
9	VPS-4-1	86879.09		1035				X	X	X								
10	VPS-5-0	86879.10		1050				X	X	X								
11	VPS-5-1	86879.11		1100				X	X	X								
12	VPS-6-0	86879.12		1125				X	X	X								
13	VPS-6-1	86879.13		1130				X	X	X								
14	VPS-7-0	86879.14		1145				X	X	X								
15	VPS-7-1	86879.15		1155				X	X	X								

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	15	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y / N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: 3.
Signature:	Signature:	Signature: AETL
Printed Name: Steve Dodson	Printed Name:	Printed Name: Antin
Date: 3/3/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600
RECEIVED BY: AETL 1.	**RECEIVED BY:** 2.	**RECEIVED BY LABORATORY:** AETL 3.
Signature:	Signature:	Signature:
Printed Name: Antin	Printed Name:	Printed Name: Antin
Date: 03/03/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) level III

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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CHAIN OF CUSTODY RECORD

100946

AETL JOB No. 86879

COMPANY: Tetra Tech Inc.
PROJECT MANAGER: Randy Westhaus
COMPANY ADDRESS:
PHONE:
FAX:
PROJECT NAME: same as page 1
PROJECT #: 100-SBA-T36771.02
SITE NAME AND ADDRESS:
PO #:

ANALYSIS REQUESTED

	SAMPLE ID	LAB ID	DATE	TIME	MATRIX	CONTAINER NUMBER/SIZE	PRES.	EPA 6010/7471A (Hg)	EPA 6010B	EPA 7199	TEST INSTRUCTIONS & COMMENTS
1	VPS-8-0	86879.16	3/2/17	1215	S	1	none	X	X	X	
2	VPS-8-1	86879.17	↓	1220	↓	↓	↓	X	X	X	
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

TA

SAMPLE RECEIPT - TO BE FILLED BY LABORATORY

TOTAL NUMBER OF CONTAINERS	2	PROPERLY COOLED Y / N / NA	
CUSTODY SEALS Y / N / NA		SAMPLES INTACT Y/ N / NA	
RECEIVED IN GOOD COND. Y / N		SAMPLES ACCEPTED Y / N	

RELINQUISHED BY SAMPLER: 1.	RELINQUISHED BY: 2.	RELINQUISHED BY: AETL 3.
Signature:	Signature:	Signature:
Printed Name: Steve Sabin	Printed Name:	Printed Name: Austin
Date: 3/3/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600
RECEIVED BY: AETL 1.	RECEIVED BY: 2.	RECEIVED BY LABORATORY: AETL 3.
Signature:	Signature:	Signature:
Printed Name: Austin	Printed Name:	Printed Name: Austin
Date: 03/03/17 Time: 1200	Date: Time:	Date: 03/03/17 Time: 1600

TURN AROUND TIME

☒ NORMAL ☐ RUSH ☐ SAME DAY ☐ NEXT DAY ☐ 2 DAYS ☐ 3 DAYS

DATA DELIVERABLE REQUIRED

☐ HARD COPY
☒ PDF
☐ GEOTRACKER (GLOBAL ID)
☒ OTHER (PLEASE SPECIFY) level III

DISTRIBUTION: WHITE - Laboratory, CANARY - Laboratory, PINK - Project/Account Manager, YELLOW - Sampler/Originator

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COOLER RECEIPT FORM

Client Name: Tetra Tech
Project Name:
AETL Job Number: 86879
Date Received: 03/03/17 Received by: Andrea
Carrier: ☒ AETL Courier ☐ Client ☐ GSO ☐ FedEx ☐ UPS
☐ Others:

Samples were received in: ☒ Cooler (/) ☐ Other (Specify):
Inside temperature of shipping container No 1: 3.2°C, No 2: _____, No 3: _____
Type of sample containers: ☐ VOA, ☐ Glass bottles, ☒ Wide mouth jars, ☐ HDPE bottles, ☒ Metal sleeves, ☐ Others (Specify): _____
How are samples preserved: ☐ None, ☒ Ice, ☒ Blue Ice, ☐ Dry Ice
☒ None, _ HNO_3, _ NaOH, _ ZnOAc, _ HCl, _ $Na_2S_2O_3$, _ MeOH
_ Other (Specify):

	Yes	No, explain below	Name, if client was notified.
1. Are the COCs Correct?	✓		
2. Are the Sample labels legible?	✓		
3. Do samples match the COC?	✓		
4. Are the required analyses clear?	✓		
5. Is there enough samples for required analysis?	✓		
6. Are samples sealed with evidence tape?		✓	
7. Are sample containers in good condition?	✓		
8. Are samples preserved?	✓		
9. Are samples preserved properly for the intended analysis?	✓		
10. Are the VOAs free of headspace?	N/A		
11. Are the jars free of headspace?	✓		

Explain all "No" answers for above questions:

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Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attention: Randy Westhaus

Project ID: 100-SBA-T36771-02
Date Received 03/03/2017
Date Reported 03/16/2017

Job Number	Order Date	Client
86879	03/03/2017	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

AETL received 17 samples with the following specification on 03/03/2017.

Lab ID	Sample ID	Sample Date	Matrix	Quantity Of Containers
86879.01	VPS-1-0	03/02/2017	Soil	1
86879.02	VPS-1-1	03/02/2017	Soil	1
86879.03	VPS-2-0	03/02/2017	Soil	1
86879.04	VPS-2-1	03/02/2017	Soil	1
86879.05	Solid DUP 1	03/02/2017	Soil	1
86879.06	VPS-3-0	03/02/2017	Soil	1
86879.07	VPS-3-1	03/02/2017	Soil	1
86879.08	VPS-4-0	03/02/2017	Soil	1
86879.09	VPS-4-1	03/02/2017	Soil	1
86879.10	VPS-5-0	03/02/2017	Soil	1
86879.11	VPS-5-1	03/02/2017	Soil	1
86879.12	VPS-6-0	03/02/2017	Soil	1
86879.13	VPS-6-1	03/02/2017	Soil	1
86879.14	VPS-7-0	03/02/2017	Soil	1
86879.15	VPS-7-1	03/02/2017	Soil	1
86879.16	VPS-8-0	03/02/2017	Soil	1
86879.17	VPS-8-1	03/02/2017	Soil	1

Method ^ Submethod	Req Date	Priority	TAT	Units
(6010BSCAN) ^ MN	03/10/2017	2	Normal	mg/Kg
(6010BSCAN) ^ SN-TI	03/10/2017	2	Normal	mg/Kg
(6020) ^ CAM-16-MG	03/10/2017	2	Normal	mg/Kg
(7199) ^ LOWMDL	03/10/2017	2	Normal	mg/Kg
7471A ^ LL-MG/KG	03/10/2017	2	Normal	mg/Kg

Continued

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Ordered By

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5383 Hollister Avenue Suite 130
Santa Barbara, CA 93111-

Project ID: 100-SBA-T36771-02
Date Received 03/03/2017
Date Reported 03/16/2017

Telephone: (805) 681-3100
Attention: Randy Westhaus

Job Number	Order Date	Client
86879	03/03/2017	T/TSB

CERTIFICATE OF ANALYSIS
CASE NARRATIVE

The samples were analyzed as specified on the enclosed chain of custody. Analytical non-conformances have been noted on the report.

Unless otherwise noted, all results of soil and solid samples are based on wet weight.

Checked By: _____ Approved By: _____

Cyrus Razmara, Ph.D.
Laboratory Director

TABLE

Summary of Soil Analytical Results for Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

Village Park 15150 Illinois Ave. Paramount, CA 90723

Mercury in Solid or Semisolid Waste, Cold-Vapor Technique. Method: 7471A

Sample ID	STLC Limit mg/L	TCLP Limit mg/L	TTLC Limit mg/Kg	Units	SOLID DUP 1	VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Sample Date					3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number					86879	86879	86879	86879	86879	86879	86879	86879	86879
Mercury	0.2	0.2	20	mg/Kg	**0.064**	**0.063**	**0.067**	**0.088**	**0.076**	**0.035**	**0.155**	**0.080**	**0.056**

1) "ND<X" INDICATES CONSTITUENT(S) NOT DETECTED AT OR ABOVE METHOD DETECTION LIMIT.
2) "J" INDICATES ANALYTE WAS DETECTED. HOWEVER, ANALYTE CONCENTRATION IS AN ESTIMATED VALUE WHICH IS BETWEEN THE METHOD DETECTION LIMIT (MDL) AND THE PRACTICAL QUANTITATION LIMIT(PQL).
3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: SO_7471A.xls

TABLE
Summary of Soil Analytical Results for Mercury in Solid or Semisolid Waste, Cold-Vapor Technique
Village Park 15150 Illinois Ave. Paramount, CA 90723

Mercury in Solid or Semisolid Waste, Cold-Vapor Techniqu

Sample ID	STLC Limit mg/L	VPS-5-0	VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0	VPS-7-1	VPS-8-0	VPS-8-1
Sample Date		3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number		86879	86879	86879	86879	86879	86879	86879	86879
Mercury	0.2	**0.062**	**0.068**	**0.094**	**0.091**	**0.068**	**0.062**	**0.058**	**0.093**

File: SO_7471A.xls

600000

TABLE
Summary of Soil Analytical Results for Tin and Titanium by ICP
Village Park 15150 Illinois Ave. Paramount, CA 90723

Tin and Titanium by ICP. Method: (6010BSCAN)

Sample ID	Units	SOLID DUP 1	VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1	VPS-5-0	VPS-5-1	VPS-6-0
Sample Date		3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number		86879	86879	86879	86879	86879	86879	86879	86879	86879	86879	86879	86879
Tin	mg/Kg	**3.72J**	**4.06J**	**4.05J**	**3.64J**	**3.77J**	**2.60J**	**3.35J**	**2.50J**	**2.65J**	**3.96J**	**3.50J**	**3.48J**
Titanium	mg/Kg	**574**	**497**	**623**	**641**	**554**	**520**	**550**	**366**	**434**	**683**	**757**	**452**

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3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: SO_6010BSCAN_1.xls

TABLE
Summary of Soil Analytical Results for Tin and Titanium by ICP
Village Park 15150 Illinois Ave. Paramount, CA 90723

Tin and Titanium by ICP. Method: (6010BSCAN)

Sample ID	Units	VPS-6-1	VPS-7-0	VPS-7-1	VPS-8-0	VPS-8-1
Sample Date		3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number		86879	86879	86879	86879	86879
Tin	mg/Kg	**3.44J**	**2.89J**	**3.07J**	**4.21J**	**3.75J**
Titanium	mg/Kg	**521**	**377**	**395**	**599**	**602**

File: SO_6010BSCAN_1.xls

TABLE
Summary of Soil Analytical Results for Manganese by ICP
Village Park 15150 Illinois Ave. Paramount, CA 90723

Manganese by ICP. Method: (6010BSCAN)

Sample ID	Units	SOLID DUP 1	VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1	VPS-5-0	VPS-5-1	VPS-6-0
Sample Date		3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number		86879	86879	86879	86879	86879	86879	86879	86879	86879	86879	86879	86879
Manganese	mg/Kg	**221**	**223**	**215**	**223**	**227**	**155**	**162**	**172**	**192**	**273**	**262**	**178**

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2) "J" INDICATES ANALYTE WAS DETECTED. HOWEVER, ANALYTE CONCENTRATION IS AN ESTIMATED VALUE WHICH IS BETWEEN THE METHOD DETECTION LIMIT (MDL) AND THE PRACTICAL QUANTITATION LIMIT(PQL).
3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: SO_6010BSCAN.xls

TABLE
Summary of Soil Analytical Results for Manganese by ICP
Village Park 15150 Illinois Ave. Paramount, CA 90723

Manganese by ICP. Method: (6010BSCAN)

Sample ID	Units	VPS-6-1	VPS-7-0	VPS-7-1	VPS-8-0	VPS-8-1
Sample Date		3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number		86879	86879	86879	86879	86879
Manganese	mg/Kg	**247**	**182**	**204**	**227**	**225**

File: SO_6010BSCAN.xls

TABLE
Summary of Soil Analytical Results for Chromium Hexavalent by Ion Chromatography
Village Park 15150 Illinois Ave. Paramount, CA 90723

Chromium Hexavalent by Ion Chromatography. Method: (7199)

Sample ID	STLC Limit mg/L	TCLP Limit mg/L	TTLC Limit mg/Kg	Units	SOLID DUP 1	VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Sample Date					3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number					86879	86879	86879	86879	86879	86879	86879	86879	86879
Chromium (VI)	5.0	5.0	500	mg/Kg	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05

1) "ND<X" INDICATES CONSTITUENT(S) NOT DETECTED AT OR ABOVE METHOD DETECTION LIMIT.
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3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: SO_7199.xls

TABLE
Summary of Soil Analytical Results for Chromium Hexavalent by Ion Chromatography
Village Park 15150 Illinois Ave. Paramount, CA 90723

Chromium Hexavalent by Ion Chromatography. Method: (71

Sample ID	STLC Limit mg/L	VPS-5-0	VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0	VPS-7-1	VPS-8-0	VPS-8-1
Sample Date		3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number		86879	86879	86879	86879	86879	86879	86879	86879
Chromium (VI)	5.0	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND<0.05

File: SO_7199.xls

TABLE
Summary of Soil Analytical Results for Title 22 Metals by ICP/MS
Village Park 15150 Illinois Ave. Paramount, CA 90723

Title 22 Metals by ICP/MS. Method: (6020)

Sample ID	STLC Limit mg/L	TCLP Limit mg/L	TTLC Limit mg/Kg	Units	SOLID DUP 1	VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Sample Date					3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number					86879	86879	86879	86879	86879	86879	86879	86879	86879
Antimony	15		500	mg/Kg	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Arsenic	5.0	5.0	500	mg/Kg	**3.42J**	**3.19J**	**3.15J**	**3.63J**	**3.79J**	**2.59J**	**3.03J**	**2.39J**	**2.83J**
Barium	100	100	10000	mg/Kg	**111**	**105**	**99.4**	**112**	**122**	**58.1**	**67.5**	**78.9**	**97.5**
Beryllium	0.75		75	mg/Kg	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Cadmium	1.0	1.0	100	mg/Kg	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Chromium	5.0	5.0	2500	mg/Kg	**22.3**	**20.2**	**21.7**	**20.5**	**22.9**	**12.3**	**12.8**	**16.0**	**18.2**
Cobalt	80		8000	mg/Kg	**6.85**	**6.35**	**6.54**	**6.73**	**6.84**	**4.06J**	**4.54J**	**4.60J**	**5.23**
Copper	25		2500	mg/Kg	**31.2**	**25.7**	**26.2**	**30.1**	**31.6**	**12.8**	**14.3**	**19.1**	**22.0**
Lead	5.0	5.0	1000	mg/Kg	**96.0**	**46.0**	**53.1**	**115**	**101**	**16.4**	**19.7**	**31.9**	**39.7**
Molybdenum	350		3500	mg/Kg	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Nickel	20		2000	mg/Kg	**28.0**	**25.2**	**27.0**	**27.2**	**28.5**	**17.8**	**18.9**	**20.1**	**21.9**
Selenium	1.0	1.0	100	mg/Kg	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Silver	5.0	5.0	500	mg/Kg	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Thallium	7.0		700	mg/Kg	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Vanadium	24		2400	mg/Kg	**32.5**	**26.4**	**30.1**	**30.1**	**32.5**	**20.3**	**22.3**	**22.1**	**26.0**
Zinc	250		5000	mg/Kg	**116**	**129**	**124**	**115**	**120**	**53.0**	**56.0**	**90.9**	**101**

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3) "D" INDICATES THE SAMPLE WAS DILUTED TO BRING THE ANALYTE CONCENTRATION WITHIN CALIBRATION RANGE.

File: SO_6020.xls

TABLE
Summary of Soil Analytical Results for Title 22 Metals by ICP/MS
Village Park 15150 Illinois Ave. Paramount, CA 90723

Title 22 Metals by ICP/MS. Method: (6020)

Sample ID	STLC Limit mg/L	VPS-5-0	VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0	VPS-7-1	VPS-8-0	VPS-8-1
Sample Date		3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017	3/2/2017
Laboratory Job Number		86879	86879	86879	86879	86879	86879	86879	86879
Antimony	15	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Arsenic	5.0	**3.34J**	**3.44J**	**2.66J**	**3.30J**	**2.23J**	**2.25J**	**3.14J**	**3.32J**
Barium	100	**128**	**128**	**116**	**122**	**108**	**98.4**	**100**	**95.0**
Beryllium	0.75	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Cadmium	1.0	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Chromium	5.0	**23.8**	**26.2**	**23.4**	**27.7**	**20.5**	**20.8**	**21.8**	**21.2**
Cobalt	80	**8.02**	**7.98**	**7.02**	**8.45**	**5.68**	**5.74**	**6.95**	**6.84**
Copper	25	**29.1**	**29.2**	**37.2**	**43.2**	**26.3**	**25.2**	**25.0**	**24.3**
Lead	5.0	**52.2**	**53.0**	**41.5**	**52.0**	**31.7**	**30.2**	**41.0**	**41.6**
Molybdenum	350	ND<2.50	ND<2.50	ND<2.50	**2.51J**	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Nickel	20	**32.8**	**36.5**	**34.6**	**41.0**	**26.0**	**25.6**	**30.9**	**29.4**
Selenium	1.0	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Silver	5.0	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50	ND<2.50
Thallium	7.0	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00	ND<1.00
Vanadium	24	**34.8**	**39.1**	**25.9**	**31.4**	**23.8**	**25.7**	**31.6**	**31.5**
Zinc	250	**123**	**113**	**154**	**152**	**119**	**102**	**109**	**96.1**

File: SO_6020.xls

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ANALYTICAL RESULTS

Ordered By

Tetra Tech, Inc.
5383 Hollister Avenue
Suite 130
Santa Barbara, CA 93111-

Telephone: (805)681-3100
Attn: Randy Westhaus
Page: 2

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			03/07/2017				
Preparation Method			3050B				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Antimony	0.25	0.50	ND				
Arsenic	0.10	0.50	ND				
Barium	0.25	0.50	ND				
Beryllium	0.10	0.25	ND				
Cadmium	0.10	0.25	ND				
Chromium	0.25	0.50	ND				
Cobalt	0.25	0.50	ND				
Copper	0.25	0.50	ND				
Lead	0.25	0.50	ND				
Molybdenum	0.25	0.50	ND				
Nickel	0.25	0.50	ND				
Selenium	0.25	0.50	ND				
Silver	0.25	0.50	ND				
Thallium	0.10	0.25	ND				
Vanadium	0.25	0.50	ND				
Zinc	0.25	0.50	ND				

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Village Park
15150 Illinois Ave.
Paramount, CA 90723

Page: 3

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3

Our Lab I.D.			**86879.01**	**86879.02**	**86879.03**	**86879.04**	**86879.05**
Client Sample I.D.			VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1	Solid DUP 1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Antimony	2.50	5	ND	ND	ND	ND	ND
Arsenic	1.00	5	3.19J	3.15J	3.63J	3.79J	3.42J
Barium	2.50	5	105	99.4	112	122	111
Beryllium	1.00	2.50	ND	ND	ND	ND	ND
Cadmium	1.00	2.50	ND	ND	ND	ND	ND
Chromium	2.50	5	20.2	21.7	20.5	22.9	22.3
Cobalt	2.50	5	6.35	6.54	6.73	6.84	6.85
Copper	2.50	5	25.7	26.2	30.1	31.6	31.2
Lead	2.50	5	46.0	53.1	115	101	96.0
Molybdenum	2.50	5	ND	ND	ND	ND	ND
Nickel	2.50	5	25.2	27.0	27.2	28.5	28.0
Selenium	2.50	5	ND	ND	ND	ND	ND
Silver	2.50	5	ND	ND	ND	ND	ND
Thallium	1.00	2.50	ND	ND	ND	ND	ND
Vanadium	2.50	5	26.4	30.1	30.1	32.5	32.5
Zinc	2.50	5	129	124	115	120	116

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Page: 4

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3

Our Lab I.D.			**86879.06**	**86879.07**	**86879.08**	**86879.09**	**86879.10**
Client Sample I.D.			VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1	VPS-5-0
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Antimony	2.50	5	ND	ND	ND	ND	ND
Arsenic	1.00	5	2.59J	3.03J	2.39J	2.83J	3.34J
Barium	2.50	5	58.1	67.5	78.9	97.5	128
Beryllium	1.00	2.50	ND	ND	ND	ND	ND
Cadmium	1.00	2.50	ND	ND	ND	ND	ND
Chromium	2.50	5	12.3	12.8	16.0	18.2	23.8
Cobalt	2.50	5	4.06J	4.54J	4.60J	5.23	8.02
Copper	2.50	5	12.8	14.3	19.1	22.0	29.1
Lead	2.50	5	16.4	19.7	31.9	39.7	52.2
Molybdenum	2.50	5	ND	ND	ND	ND	ND
Nickel	2.50	5	17.8	18.9	20.1	21.9	32.8
Selenium	2.50	5	ND	ND	ND	ND	ND
Silver	2.50	5	ND	ND	ND	ND	ND
Thallium	1.00	2.50	ND	ND	ND	ND	ND
Vanadium	2.50	5	20.3	22.3	22.1	26.0	34.8
Zinc	2.50	5	53.0	56.0	90.9	101	123

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15150 Illinois Ave.
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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4

Our Lab I.D.			Method Blank				
Client Sample I.D.							
Date Sampled							
Date Prepared			03/07/2017				
Preparation Method			3050B				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Antimony	0.25	0.50	ND				
Arsenic	0.10	0.50	ND				
Barium	0.25	0.50	ND				
Beryllium	0.10	0.25	ND				
Cadmium	0.10	0.25	ND				
Chromium	0.25	0.50	ND				
Cobalt	0.25	0.50	ND				
Copper	0.25	0.50	ND				
Lead	0.25	0.50	ND				
Molybdenum	0.25	0.50	ND				
Nickel	0.25	0.50	ND				
Selenium	0.25	0.50	ND				
Silver	0.25	0.50	ND				
Thallium	0.10	0.25	ND				
Vanadium	0.25	0.50	ND				
Zinc	0.25	0.50	ND				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4

Our Lab I.D.			**86879.11**	**86879.12**	**86879.13**	**86879.14**	**86879.15**
Client Sample I.D.			VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0	VPS-7-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			10	10	10	10	10
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Antimony	2.50	5	ND	ND	ND	ND	ND
Arsenic	1.00	5	3.44J	2.66J	3.30J	2.23J	2.25J
Barium	2.50	5	128	116	122	108	98.4
Beryllium	1.00	2.50	ND	ND	ND	ND	ND
Cadmium	1.00	2.50	ND	ND	ND	ND	ND
Chromium	2.50	5	26.2	23.4	27.7	20.5	20.8
Cobalt	2.50	5	7.98	7.02	8.45	5.68	5.74
Copper	2.50	5	29.2	37.2	43.2	26.3	25.2
Lead	2.50	5	53.0	41.5	52.0	31.7	30.2
Molybdenum	2.50	5	ND	ND	2.51J	ND	ND
Nickel	2.50	5	36.5	34.6	41.0	26.0	25.6
Selenium	2.50	5	ND	ND	ND	ND	ND
Silver	2.50	5	ND	ND	ND	ND	ND
Thallium	1.00	2.50	ND	ND	ND	ND	ND
Vanadium	2.50	5	39.1	25.9	31.4	23.8	25.7
Zinc	2.50	5	113	154	152	119	102

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4

Our Lab I.D.			**86879.16**	**86879.17**			
Client Sample I.D.			VPS-8-0	VPS-8-1			
Date Sampled			03/02/2017	03/02/2017			
Date Prepared			03/07/2017	03/07/2017			
Preparation Method			3050B	3050B			
Date Analyzed			03/08/2017	03/08/2017			
Matrix			Soil	Soil			
Units			mg/Kg	mg/Kg			
Dilution Factor			10	10			
Analytes	**MDL**	**PQL**	**Results**	**Results**			
Antimony	2.50	5	ND	ND			
Arsenic	1.00	5	3.14J	3.32J			
Barium	2.50	5	100	95.0			
Beryllium	1.00	2.50	ND	ND			
Cadmium	1.00	2.50	ND	ND			
Chromium	2.50	5	21.8	21.2			
Cobalt	2.50	5	6.95	6.84			
Copper	2.50	5	25.0	24.3			
Lead	2.50	5	41.0	41.6			
Molybdenum	2.50	5	ND	ND			
Nickel	2.50	5	30.9	29.4			
Selenium	2.50	5	ND	ND			
Silver	2.50	5	ND	ND			
Thallium	1.00	2.50	ND	ND			
Vanadium	2.50	5	31.6	31.5			
Zinc	2.50	5	109	96.1			

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C3

Our Lab I.D.			Method Blank	**86879.01**	**86879.02**	**86879.03**	**86879.04**
Client Sample I.D.				VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Manganese	1.0	5.0	ND	223	215	223	227

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C3

Our Lab I.D.			**86879.05**	**86879.06**	**86879.07**	**86879.08**	**86879.09**
Client Sample I.D.			Solid DUP 1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Manganese	1.0	5.0	221	155	162	172	192

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C3

Our Lab I.D.			**86879.10**				
Client Sample I.D.			VPS-5-0				
Date Sampled			03/02/2017				
Date Prepared			03/07/2017				
Preparation Method			3050B				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Manganese	1.0	5.0	273				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C4

Our Lab I.D.			Method Blank	**86879.11**	**86879.12**	**86879.13**	**86879.14**
Client Sample I.D.				VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Manganese	1.0	5.0	ND	262	178	247	182

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C4

Our Lab I.D.			**86879.15**	**86879.16**	**86879.17**		
Client Sample I.D.			VPS-7-1	VPS-8-0	VPS-8-1		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/07/2017	03/07/2017	03/07/2017		
Preparation Method			3050B	3050B	3050B		
Date Analyzed			03/08/2017	03/08/2017	03/08/2017		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Manganese	1.0	5.0	204	227	225		

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C5

Our Lab I.D.			Method Blank	**86879.01**	**86879.02**	**86879.03**	**86879.04**
Client Sample I.D.				VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Tin	2.50	5.00	ND	4.06J	4.05J	3.64J	3.77J
Titanium	1.00	2.50	ND	497	623	641	554

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C5

Our Lab I.D.			**86879.05**	**86879.06**	**86879.07**	**86879.08**	**86879.09**
Client Sample I.D.			Solid DUP 1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Tin	2.50	5.00	3.72J	2.60J	3.35J	2.50J	2.65J
Titanium	1.00	2.50	574	520	550	366	434

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C5

Our Lab I.D.			**86879.10**				
Client Sample I.D.			VPS-5-0				
Date Sampled			03/02/2017				
Date Prepared			03/07/2017				
Preparation Method			3050B				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Tin	2.50	5.00	3.96J				
Titanium	1.00	2.50	683				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C6

Our Lab I.D.			Method Blank	**86879.11**	**86879.12**	**86879.13**	**86879.14**
Client Sample I.D.				VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Preparation Method			3050B	3050B	3050B	3050B	3050B
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Tin	2.50	5.00	ND	3.50J	3.48J	3.44J	2.89J
Titanium	1.00	2.50	ND	757	452	521	377

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C6

Our Lab I.D.			**86879.15**	**86879.16**	**86879.17**		
Client Sample I.D.			VPS-7-1	VPS-8-0	VPS-8-1		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/07/2017	03/07/2017	03/07/2017		
Preparation Method			3050B	3050B	3050B		
Date Analyzed			03/08/2017	03/08/2017	03/08/2017		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Tin	2.50	5.00	3.07J	4.21J	3.75J		
Titanium	1.00	2.50	395	599	602		

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-1

Our Lab I.D.			Method Blank	**86879.01**	**86879.02**	**86879.03**	**86879.04**
Client Sample I.D.				VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7471A	7471A	7471A	7471A	7471A
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Mercury	0.003	0.006	ND	0.063	0.067	0.088	0.076

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-1

Our Lab I.D.			**86879.05**	**86879.06**	**86879.07**	**86879.08**	**86879.09**
Client Sample I.D.			Solid DUP 1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7471A	7471A	7471A	7471A	7471A
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Mercury	0.003	0.006	0.064	0.035	0.155	0.080	0.056

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-1

Our Lab I.D.			**86879.10**				
Client Sample I.D.			VPS-5-0				
Date Sampled			03/02/2017				
Date Prepared			03/08/2017				
Preparation Method			7471A				
Date Analyzed			03/08/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Mercury	0.003	0.006	0.062				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-2

Our Lab I.D.			Method Blank	**86879.11**	**86879.12**	**86879.13**	**86879.14**
Client Sample I.D.				VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Preparation Method			7471A	7471A	7471A	7471A	7471A
Date Analyzed			03/08/2017	03/08/2017	03/08/2017	03/08/2017	03/08/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Mercury	0.003	0.006	ND	0.068	0.094	0.091	0.068

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-2

Our Lab I.D.			**86879.15**	**86879.16**	**86879.17**		
Client Sample I.D.			VPS-7-1	VPS-8-0	VPS-8-1		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/08/2017	03/08/2017	03/08/2017		
Preparation Method			7471A	7471A	7471A		
Date Analyzed			03/08/2017	03/08/2017	03/08/2017		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Mercury	0.003	0.006	0.062	0.058	0.093		

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-1

Our Lab I.D.			Method Blank	**86879.01**	**86879.02**	**86879.03**	**86879.04**
Client Sample I.D.				VPS-1-0	VPS-1-1	VPS-2-0	VPS-2-1
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/06/2017	03/06/2017	03/06/2017	03/06/2017	03/06/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	ND	ND	ND	ND

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-1

Our Lab I.D.			**86879.05**	**86879.06**	**86879.07**	**86879.08**	**86879.09**
Client Sample I.D.			Solid DUP 1	VPS-3-0	VPS-3-1	VPS-4-0	VPS-4-1
Date Sampled			03/02/2017	03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/06/2017	03/06/2017	03/06/2017	03/06/2017	03/06/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	ND	ND	ND	ND

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Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-1

Our Lab I.D.			**86879.10**				
Client Sample I.D.			VPS-5-0				
Date Sampled			03/02/2017				
Date Prepared			03/06/2017				
Preparation Method			3060A				
Date Analyzed			03/07/2017				
Matrix			Soil				
Units			mg/Kg				
Dilution Factor			1				
Analytes	**MDL**	**PQL**	**Results**				
Chromium (VI)	0.05	0.10	ND				

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-2

Our Lab I.D.			Method Blank	**86879.11**	**86879.12**	**86879.13**	**86879.14**
Client Sample I.D.				VPS-5-1	VPS-6-0	VPS-6-1	VPS-7-0
Date Sampled				03/02/2017	03/02/2017	03/02/2017	03/02/2017
Date Prepared			03/06/2017	03/06/2017	03/06/2017	03/06/2017	03/06/2017
Preparation Method			3060A	3060A	3060A	3060A	3060A
Date Analyzed			03/07/2017	03/07/2017	03/07/2017	03/07/2017	03/07/2017
Matrix			Soil	Soil	Soil	Soil	Soil
Units			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor			1	1	1	1	1
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**	**Results**	**Results**
Chromium (VI)	0.05	0.10	ND	ND	ND	ND	ND

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-2

Our Lab I.D.			**86879.15**	**86879.16**	**86879.17**		
Client Sample I.D.			VPS-7-1	VPS-8-0	VPS-8-1		
Date Sampled			03/02/2017	03/02/2017	03/02/2017		
Date Prepared			03/06/2017	03/06/2017	03/06/2017		
Preparation Method			3060A	3060A	3060A		
Date Analyzed			03/07/2017	03/07/2017	03/07/2017		
Matrix			Soil	Soil	Soil		
Units			mg/Kg	mg/Kg	mg/Kg		
Dilution Factor			1	1	1		
Analytes	**MDL**	**PQL**	**Results**	**Results**	**Results**		
Chromium (VI)	0.05	0.10	ND	ND	ND		

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Manganese	223	50.0	277	108	50.0	277	108	<1	75-125	<15

QC Batch No: 0307172C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Manganese	50.0	50.0	100	50.0	50.0	100	<1	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Manganese by ICP

QC Batch No: 0307172C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Manganese	262	50.0	295 M	66.0	50.0	299 M	74.0	11.4	75-125	<15

QC Batch No: 0307172C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Manganese	50.0	49.1	98.2	50.0	49.3	98.6	<1	75-125	<15	

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Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C5; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; LCS Prepared: 03/07/2017; LCS Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Tin	50.0	53.5	107	50.0	57.5	115	7.2	75-125	<15	
Titanium	50.0	49.5	99.0	50.0	49.2	98.4	<1	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6010BSCAN), Tin and Titanium by ICP

QC Batch No: 0307172C6; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; LCS Prepared: 03/07/2017; LCS Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Tin	50.0	50.0	100	50.0	50.5	101	<1	75-125	<15	
Titanium	50.0	47.9	95.8	50.0	48.7	97.4	1.7	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Antimony	0.00	10.0	8.51	85.1	10.0	8.53	85.3	<1	75-125	<15
Arsenic	3.19	10.0	12.9	97.1	10.0	13.1	99.1	2.04	75-125	<15
Barium	105	10.0	117	119	10.0	115	99.0	18.3	75-125	<15
Beryllium	0.00	10.0	10.6	106	10.0	10.2	102	3.85	75-125	<15
Cadmium	0.00	10.0	9.43	94.3	10.0	9.27	92.7	1.71	75-125	<15
Chromium	20.2	10.0	30.8	106	10.0	31.1	109	2.79	75-125	<15
Cobalt	6.35	10.0	17.0	106	10.0	17.1	107	<1	75-125	<15
Copper	25.7	10.0	33.4	77.0	10.0	33.7	80.0	3.82	75-125	<15
Lead	46.0	10.0	56.6	106	10.0	56.5	105	<1	75-125	<15
Molybdenum	0.00	10.0	11.1	111	10.0	11.2	112	<1	75-125	<15
Nickel	25.2	10.0	27.7 M	25.0	10.0	36.4	112	127.0	75-125	<15
Selenium	0.00	10.0	10.1	101	10.0	10.3	103	1.96	75-125	<15
Silver	0.00	10.0	8.42	84.2	10.0	8.56	85.6	1.65	75-125	<15
Thallium	0.00	10.0	10.3	103	10.0	10.4	104	<1	75-125	<15
Vanadium	26.4	10.0	38.0	116	10.0	38.6	122	5.04	75-125	<15
Zinc	129	10.0	135 M	60.0	10.0	137	80.0	28.6	75-125	<15

QC Batch No: 0307171C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Antimony	1.00	1.02	102	1.00	1.01	101	<1	75-125	<15	
Arsenic	1.00	1.00	99.9	1.00	1.01	101	1.10	75-125	<15	
Barium	1.00	1.01	101	1.00	1.02	102	<1	75-125	<15	
Beryllium	1.00	1.08	108	1.00	1.10	110	1.83	75-125	<15	
Cadmium	1.00	1.04	104	1.00	1.02	102	1.94	75-125	<15	
Chromium	1.00	1.08	108	1.00	1.06	106	1.87	75-125	<15	
Cobalt	1.00	1.06	106	1.00	1.07	107	<1	75-125	<15	
Copper	1.00	1.07	107	1.00	1.05	105	1.89	75-125	<15	
Lead	1.00	1.05	105	1.00	1.04	104	<1	75-125	<15	

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QUALITY CONTROL RESULTS

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C3; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Molybdenum	1.00	1.03	103	1.00	1.05	105	1.92	75-125	<15	
Nickel	1.00	1.05	105	1.00	1.05	105	<1	75-125	<15	
Selenium	1.00	0.960	96.0	1.00	1.03	103	7.04	75-125	<15	
Silver	1.00	1.05	105	1.00	1.06	106	<1	75-125	<15	
Thallium	1.00	1.05	105	1.00	1.04	104	<1	75-125	<15	
Vanadium	1.00	1.08	108	1.00	1.09	109	<1	75-125	<15	
Zinc	1.00	1.04	104	1.00	1.01	101	2.93	75-125	<15	

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QUALITY CONTROL RESULTS

Ordered By

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Page: **34**

Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Antimony	0.00	10.0	8.47	84.7	10.0	8.49	84.9	<1	75-125	<15
Arsenic	3.44	10.0	13.0	95.6	10.0	13.1	96.6	1.04	75-125	<15
Barium	128	10.0	148 M	200	10.0	148 M	200	<1	75-125	<15
Beryllium	0.00	10.0	10.3	103	10.0	10.2	102	<1	75-125	<15
Cadmium	0.00	10.0	9.88	98.8	10.0	9.93	99.3	<1	75-125	<15
Chromium	26.2	10.0	39.6 M	134	10.0	40.3 M	141	5.09	75-125	<15
Cobalt	7.98	10.0	19.7	117	10.0	19.8	118	<1	75-125	<15
Copper	29.2	10.0	39.3	101	10.0	39.4	102	<1	75-125	<15
Lead	53.0	10.0	68.2 M	152	10.0	68.7 M	157	3.24	75-125	<15
Molybdenum	0.00	10.0	12.4	124	10.0	12.6 M	126	1.60	75-125	<15
Nickel	36.5	10.0	36.1 M	-3.9	10.0	51.1 M	146	211.0	75-125	<15
Selenium	0.00	10.0	10.2	102	10.0	10.2	102	<1	75-125	<15
Silver	0.00	10.0	8.96	89.6	10.0	8.92	89.2	<1	75-125	<15
Thallium	0.00	10.0	10.7	107	10.0	10.6	106	<1	75-125	<15
Vanadium	39.1	10.0	17.9 M	-212.0	10.0	18.2 M	-209.0	1.43	75-125	<15
Zinc	113	10.0	129 M	156	10.0	128 M	146	6.62	75-125	<15

QC Batch No: 0307171C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Antimony	1.00	0.800	80.1	1.00	0.800	80.3	<1	75-125	<15	
Arsenic	1.00	0.960	95.8	1.00	0.960	95.8	<1	75-125	<15	
Barium	1.00	1.00	99.7	1.00	0.980	98.4	1.31	75-125	<15	
Beryllium	1.00	1.18	118	1.00	1.18	118	<1	75-125	<15	
Cadmium	1.00	0.840	83.7	1.00	0.840	84.2	<1	75-125	<15	
Chromium	1.00	1.16	116	1.00	1.17	117	<1	75-125	<15	
Cobalt	1.00	1.09	109	1.00	1.10	110	<1	75-125	<15	
Copper	1.00	1.00	100	1.00	1.00	100	<1	75-125	<15	
Lead	1.00	1.01	101	1.00	1.01	101	<1	75-125	<15	

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QUALITY CONTROL RESULTS

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (6020), Title 22 Metals by ICP/MS

QC Batch No: 0307171C4; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/07/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Molybdenum	1.00	1.02	102	1.00	1.03	103	<1	75-125	<15	
Nickel	1.00	1.02	102	1.00	1.00	100	1.98	75-125	<15	
Selenium	1.00	1.12	112	1.00	0.940	94.3	17.2	75-125	<15	
Silver	1.00	0.860	85.9	1.00	0.890	88.7	3.21	75-125	<15	
Thallium	1.00	1.03	103	1.00	1.04	104	<1	75-125	<15	
Vanadium	1.00	1.16	116	1.00	1.16	116	<1	75-125	<15	
Zinc	1.00	0.920	92.0	1.00	0.930	92.5	<1	75-125	<15	

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Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-1; LCS: Clean Sand; LCS Prepared: 03/06/2017; LCS Analyzed: 03/07/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	0.942	94.2	1.00	0.932	93.2	1.1	80-120	<20	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: (7199), Chromium Hexavalent by Ion Chromatography

QC Batch No: HC030717-2; LCS: Clean Sand; LCS Prepared: 03/06/2017; LCS Analyzed: 03/07/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Chromium (VI)	1.00	0.914	91.4	1.00	0.930	93.0	1.7	80-120	<20	

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Site

Village Park
15150 Illinois Ave.
Paramount, CA 90723

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-1; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Mercury	0.0630	0.0300	0.104M	136	0.0300	0.102M	129	5.3	75-125	<15

QC Batch No: 030817-1; Dup or Spiked Sample: 86879.01; LCS: Clean Sand; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Mercury	0.0300	0.0309	103	0.0300	0.0303	101	2.0	75-125	<15	

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Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

AETL Job Number	Submitted	Client
86879	03/03/2017	T/TSB

Method: 7471A, Mercury in Solid or Semisolid Waste, Cold-Vapor Technique

QC Batch No: 030817-2; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	Sample Result	MS Concen	MS Recov	MS % REC	MS DUP Concen	MS DUP Recov	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit
Mercury	0.0680	0.0300	0.100	108	0.0300	0.0983	101	6.7	75-125	<15

QC Batch No: 030817-2; Dup or Spiked Sample: 86879.11; LCS: Clean Sand; QC Prepared: 03/08/2017; QC Analyzed: 03/08/2017; Units: mg/Kg

Analytes	LCS Concen	LCS Recov	LCS % REC	LCS DUP Concen	LCS DUP Recov	LCS DUP % REC	LCS RPD % REC	LCS/LCSD % Limit	LCS RPD % Limit	
Mercury	0.0300	0.0309	103	0.0300	0.0309	103	<1	75-125	<15	

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Data Qualifiers and Descriptors

Data Qualifier:

#:	Recovery is not within acceptable control limits.
*:	In the QC section, sample results have been taken directly from the ICP reading. No preparation factor has been applied.
B:	Analyte was present in the Method Blank.
D:	Result is from a diluted analysis.
E:	Result is beyond calibration limits and is estimated.
H:	Analysis was performed over the allowed holding time due to circumstances which were beyond laboratory control.
J:	Analyte was detected . However, the analyte concentration is an estimated value, which is between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL).
M:	Matrix spike recovery is outside control limits due to matrix interference. Laboratory Control Sample recovery was acceptable.
MCL:	Maximum Contaminant Level
NS:	No Standard Available
S6:	Surrogate recovery is outside control limits due to matrix interference.
S8:	The analysis of the sample required a dilution such that the surrogate concentration was diluted below the method acceptance criteria.
X:	Results represent LCS and LCSD data.

Definition:

%Limi:	Percent acceptable limits.
%REC:	Percent recovery.
Con.L:	Acceptable Control Limits
Conce:	Added concentration to the sample.
LCS:	Laboratory Control Sample
MDL:	Method Detection Limit is a statistically derived number which is specific for each instrument, each method, and each compound. It indicates a distinctively detectable quantity with 99% probability.

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Data Qualifiers and Descriptors

MS:	Matrix Spike
MS DU:	Matrix Spike Duplicate
ND:	Analyte was not detected in the sample at or above MDL.
PQL:	Practical Quantitation Limit or ML (Minimum Level as per RWQCB) is the minimum concentration that can be quantified with more than 99% confidence. Taking into account all aspects of the entire analytical instrumentation and practice.
Recov:	Recovered concentration in the sample.
RPD:	Relative Percent Difference

AETL Job Number 86879

Chromium Hexavalent by 7199

CASE NARRATIVE

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Case Narrative

AETL Job Number 86879

Project ID: 100-SBA-T36771-02

Project Name: Village Park S1

EPA 7199

Chromium Hexavalent by IC

A total of 17 soil samples were received on 03/03/2017 for the analysis of Chromium Hexavalent by EPA 7199.

Holding Time:

The holding time of these samples were 28 day. Samples were tested within holding time.

Instrument Performance and Calibration:

Multi-calibration points were generated to establish initial calibration (ICAL) which was found to be acceptable.

ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) was carried on at a frequency required by the project. All project calibration requirements were satisfied.

Method Blank:

Method blanks were analyzed at the frequency required by the project. All results were compliant to the project requirements.

Laboratory Control Sample:

Two sets of LCS/LCSD were analyzed in this batch of samples.

Percent recoveries for QC Batch No HC030717-1 and HC030717-2 were within project requirement.

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Matrix QC Sample:

Sample 86879.01 and 86879.11 were spiked for MS/MSD QC samples in QC Batch No: HC030717-1 and HC030717-2. Percent recoveries for MS/MSD for QC Batch No HC030717-1 and HC030717-2 were not within QC limits, due to matrix interference.

Sample Duplicate:

Result of sample and sample duplicate were within QC limits of RPD < 20%.

Surrogate:

No surrogate was used in this analysis.

Sample Analysis:

Samples were analyzed according to prescribed analytical procedures.

All project requirements were met; otherwise anomalies were discussed within associated QC parameters.

AETL Job Number 86879

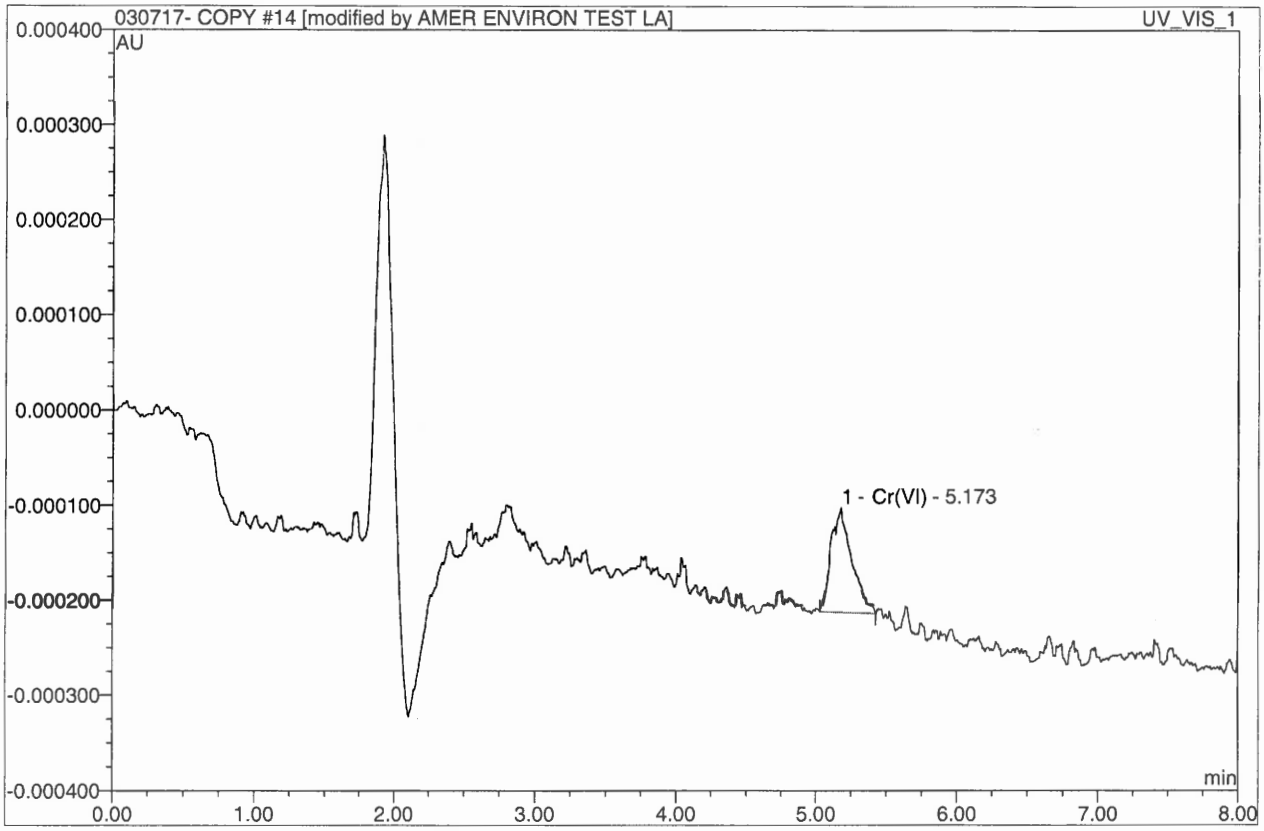
Chromium Hexavalent by 7199

SAMPLE RESULTS AND DATA

14 S-86879.01

7199 run by MK

Sample Name:	**S-86879.01**	*Injection Volume:*	**1000.0**
Vial Number:	**14**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:44**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.17	Cr(VI)	0.0001090	0.0000188	100.00	0.501	99.988
Total:			0.000	0.000	100.00	0.501	

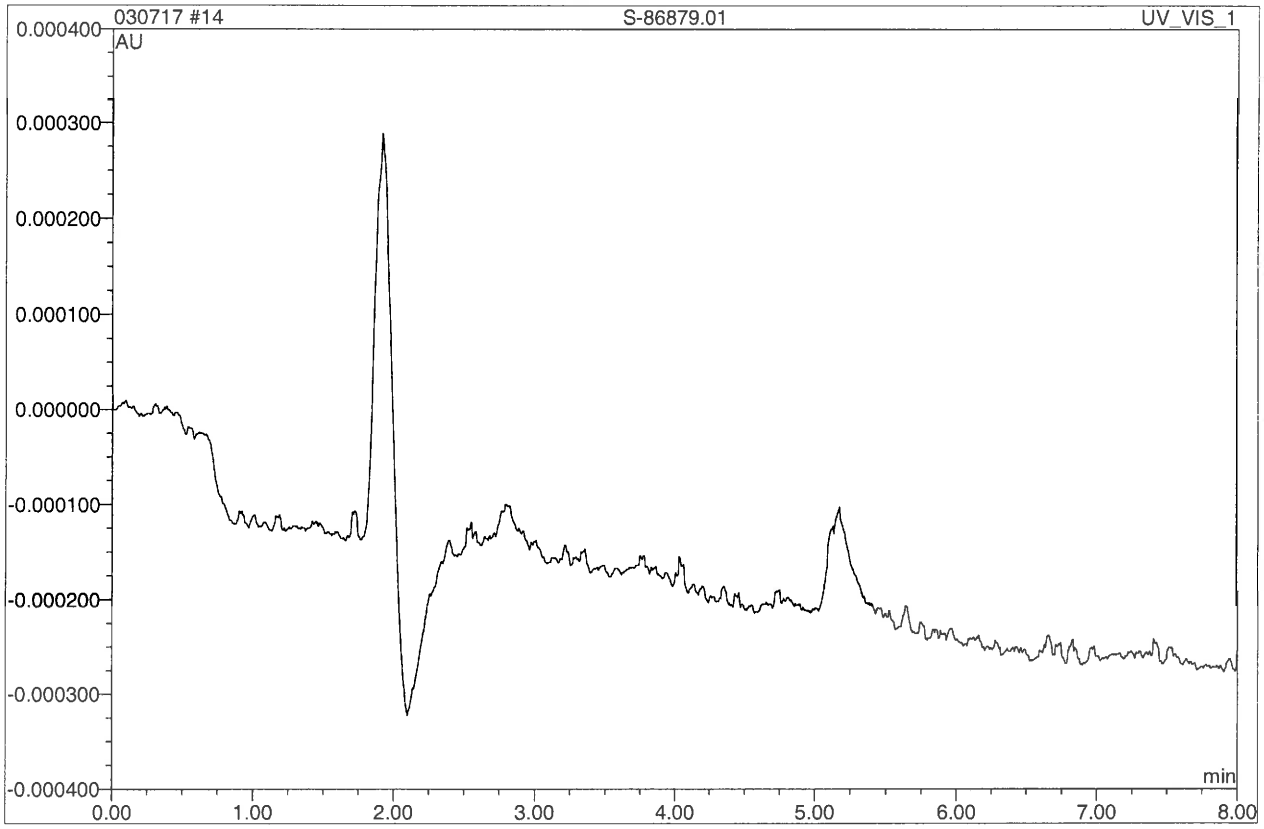
$$\frac{0.501\ \mu g}{L} \times \frac{1L}{1000ml} \times \frac{1000g}{1Kg} \times \frac{\overset{\text{prep}}{50ml}}{2.5g} \times \frac{1mg}{1000\mu g} \times \frac{\overset{\text{dilution}}{50ml}}{10ml} = 0.0501\ mg/kg$$

ND ✓

14 S-86879.01

7199 run by MK

Sample Name:	**S-86879.01**	*Injection Volume:*	**1000.0**
Vial Number:	**14**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:44**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

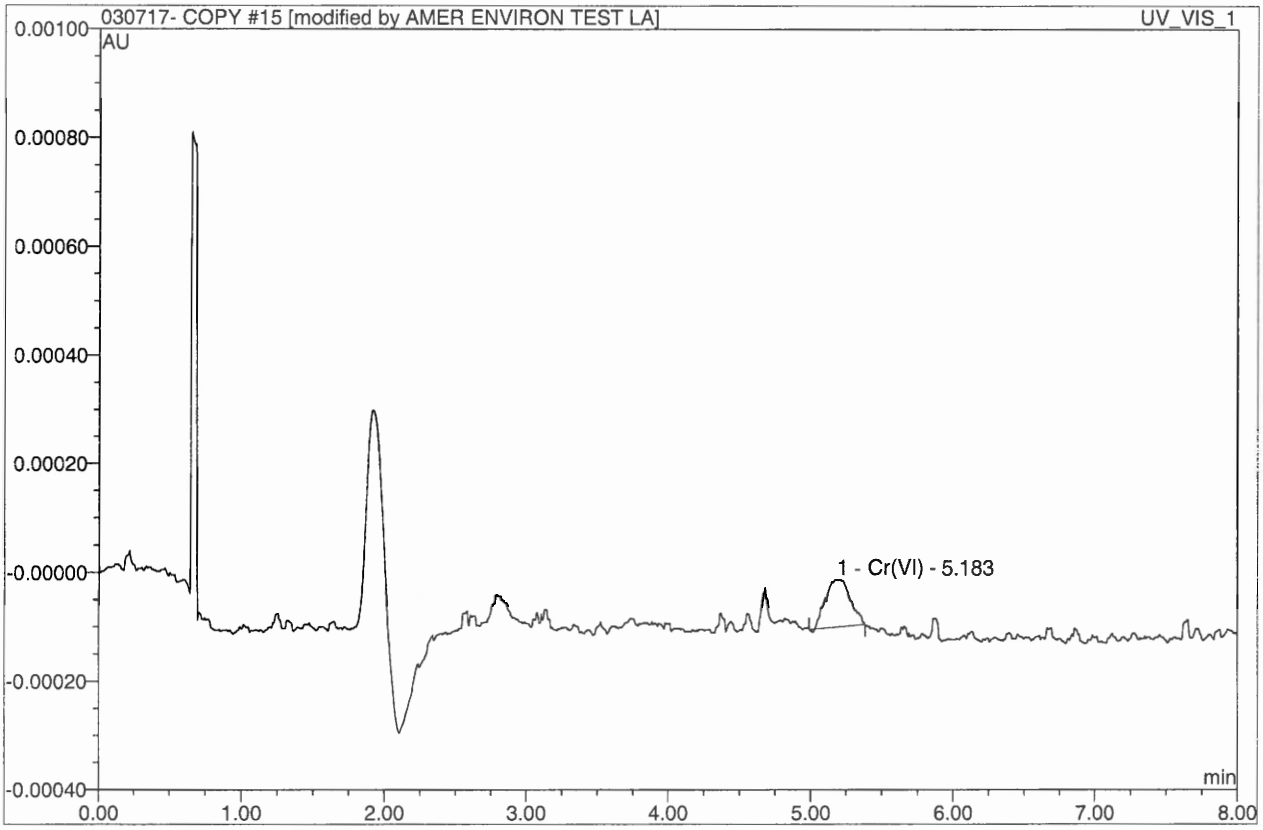


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

15 S-86879.01 DUP

7199 run by MK

Sample Name:	**S-86879.01 DUP**	*Injection Volume:*	**1000.0**
Vial Number:	**15**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:54**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.18	Cr(VI)	0.0000870	0.0000174	100.00	0.465	99.988
Total:			0.000	0.000	100.00	0.465	

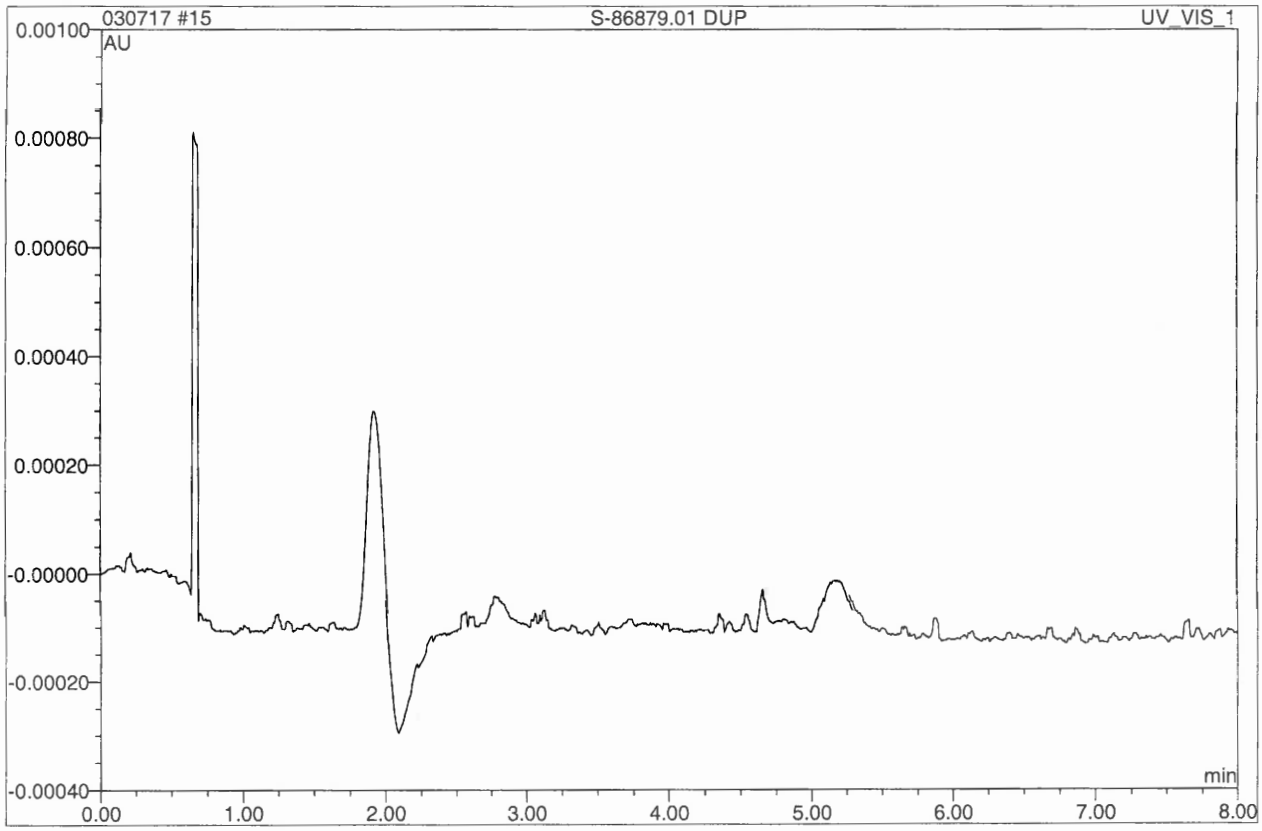
ND ✓

0.465 X 0.1 = 0.0465

15 S-86879.01 DUP

7199 run by MK

Sample Name:	**S-86879.01 DUP**	*Injection Volume:*	**1000.0**
Vial Number:	**15**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:54**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

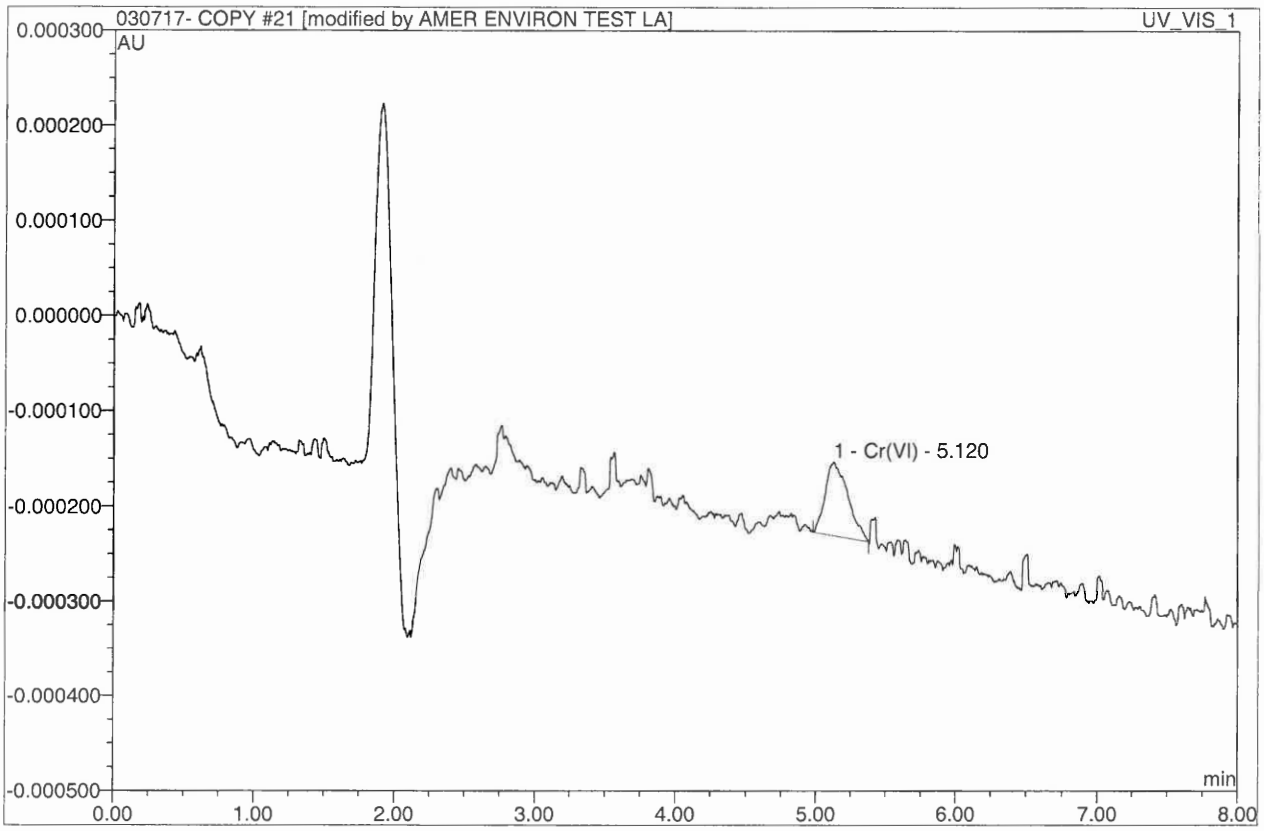


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

21 S-86879.02

7199 run by MK

Sample Name:	**S-86879.02**	*Injection Volume:*	**1000.0**
Vial Number:	**21**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 12:57**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



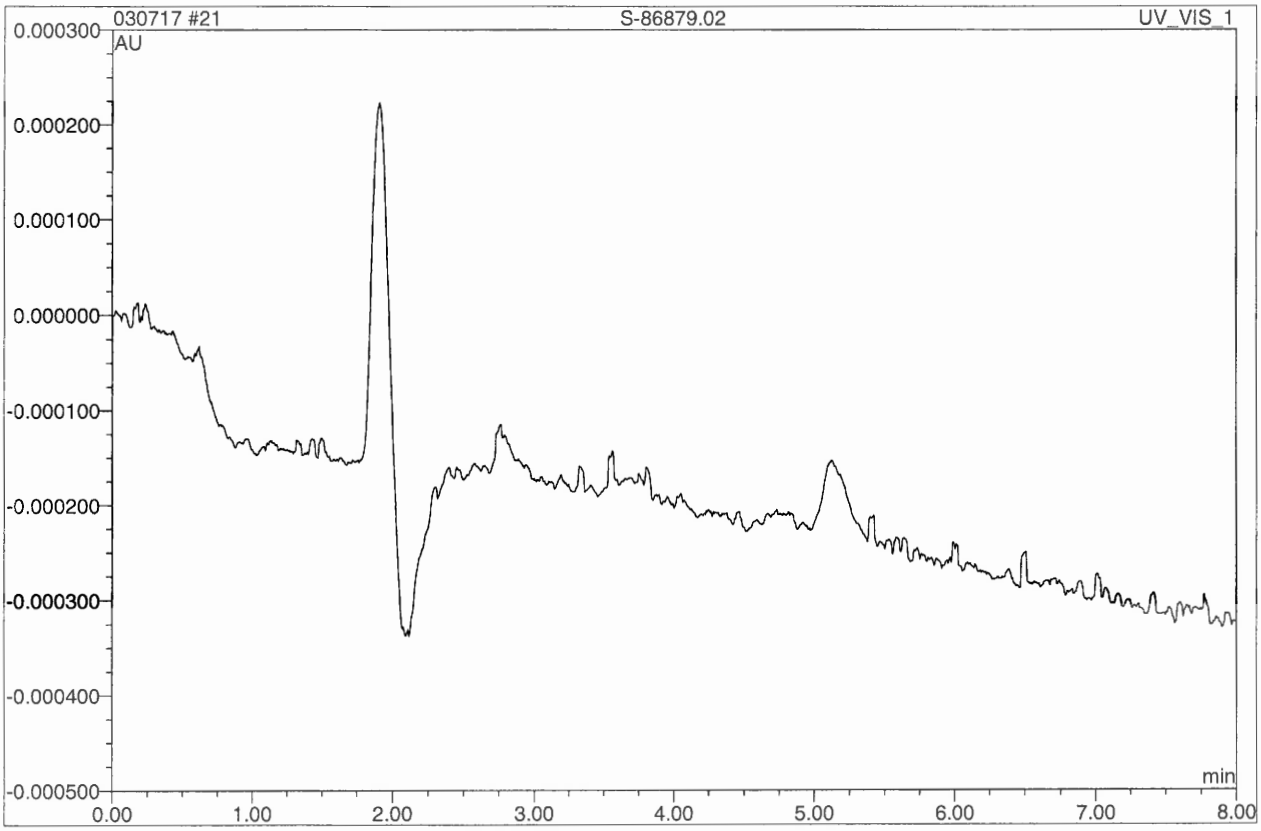
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.12	Cr(VI)	0.0000770	0.0000148	100.00	0.395	99.988
Total:			0.000	0.000	100.00	0.395	

0.395 X 0.1 = 0.0395 ⇒ ND ✓

21 S-86879.02

7199 run by MK

Sample Name:	**S-86879.02**	*Injection Volume:*	**1000.0**
Vial Number:	**21**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 12:57**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

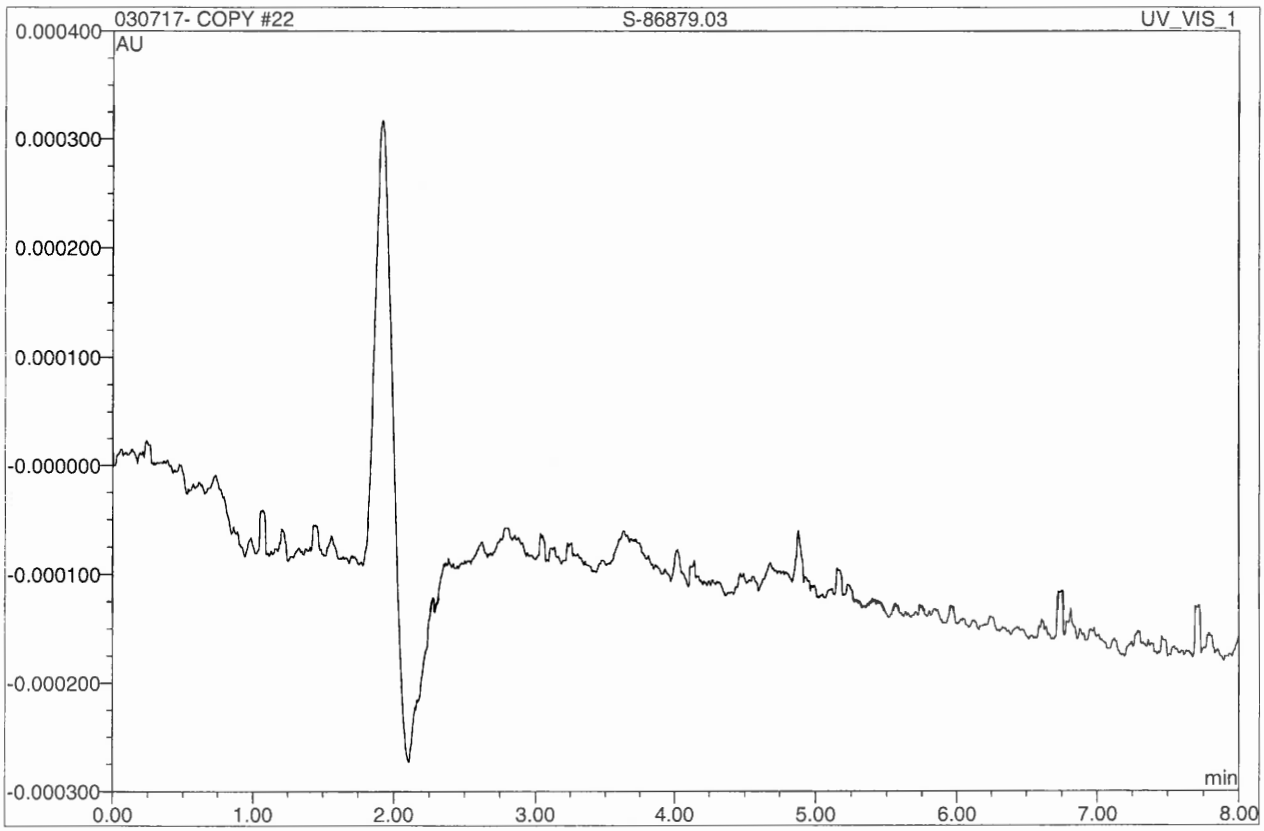


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

22 S-86879.03

7199 run by MK

Sample Name:	**S-86879.03**	*Injection Volume:*	**1000.0**
Vial Number:	**22**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:08**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



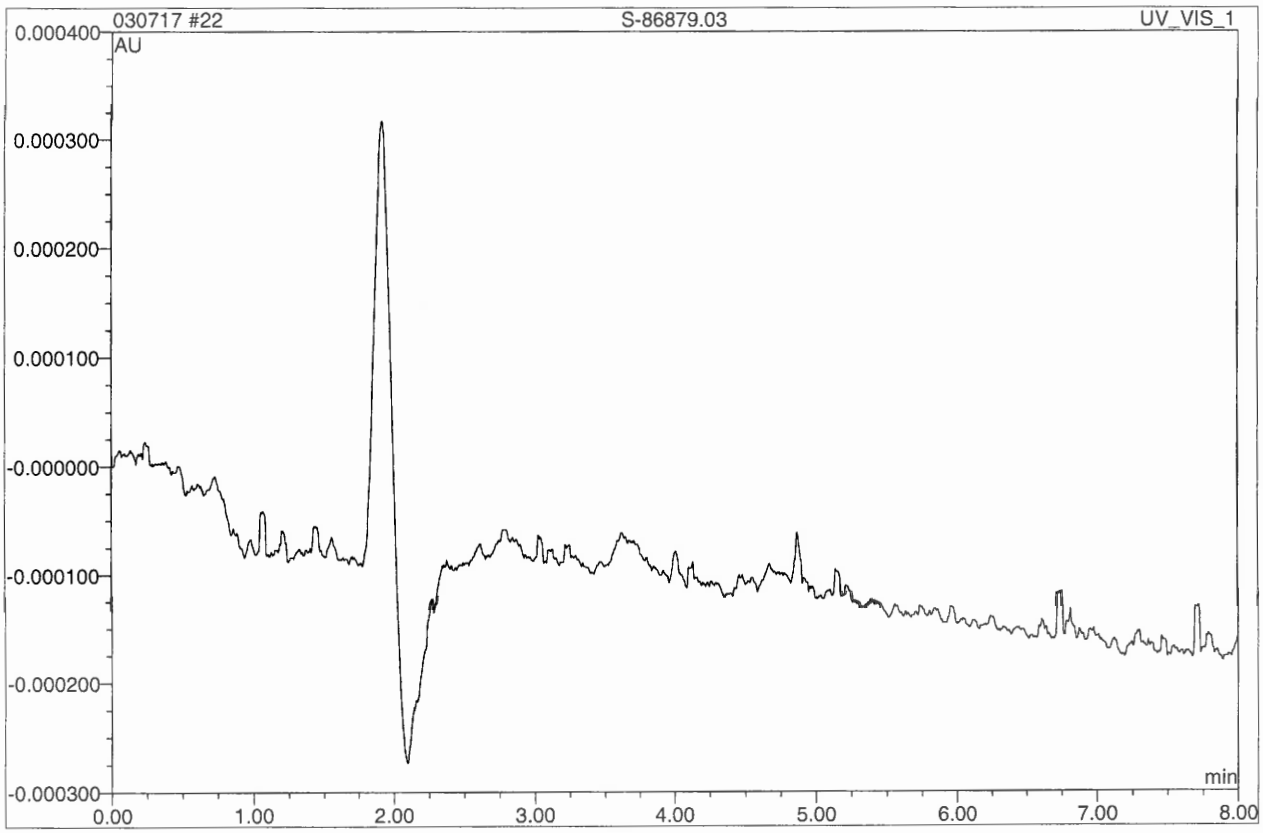
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

ND ✓

22 S-86879.03

7199 run by MK

Sample Name:	**S-86879.03**	*Injection Volume:*	**1000.0**
Vial Number:	**22**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:08**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

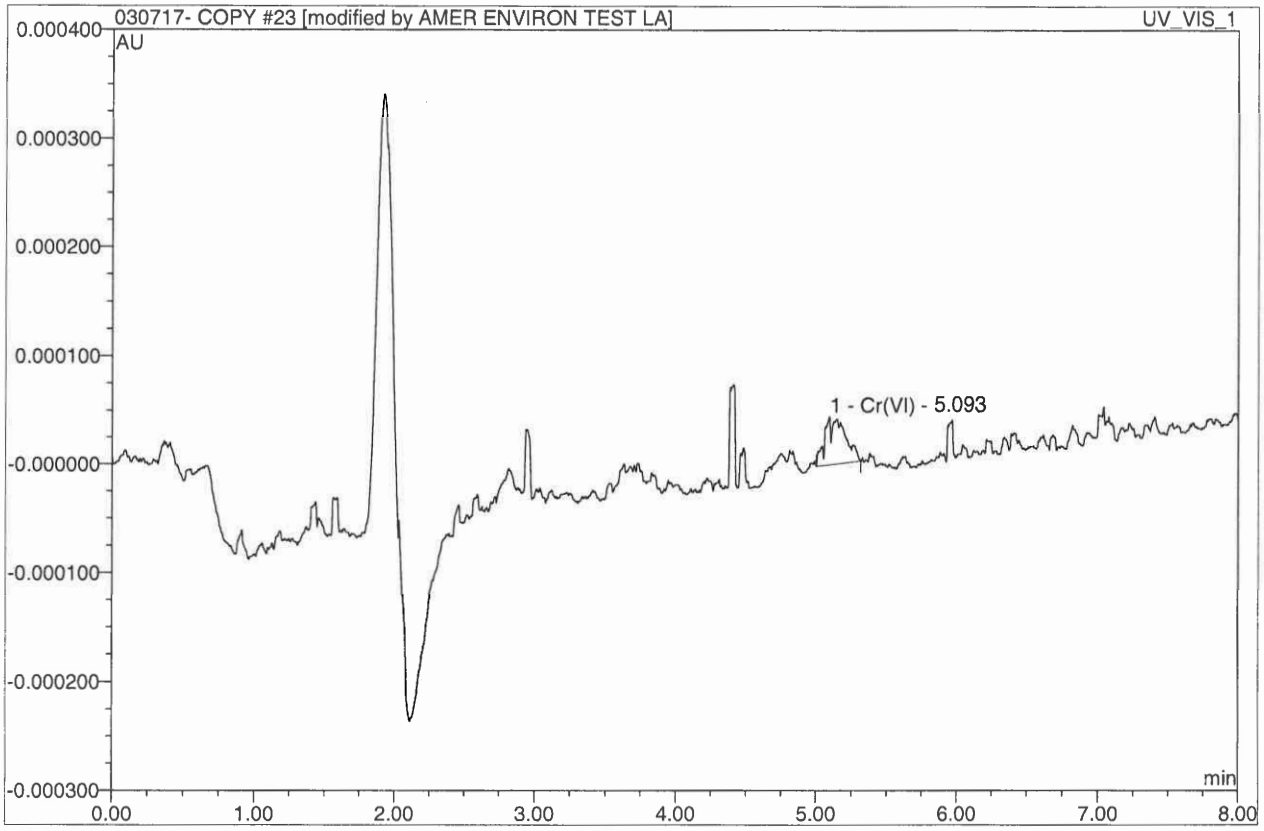


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

23 S-86879.04

7199 run by MK

Sample Name:	**S-86879.04**	*Injection Volume:*	**1000.0**
Vial Number:	**23**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:18**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.09	Cr(VI)	0.0000450	0.0000074	100.00	0.196	99.988
Total:			0.000	0.000	100.00	0.196	

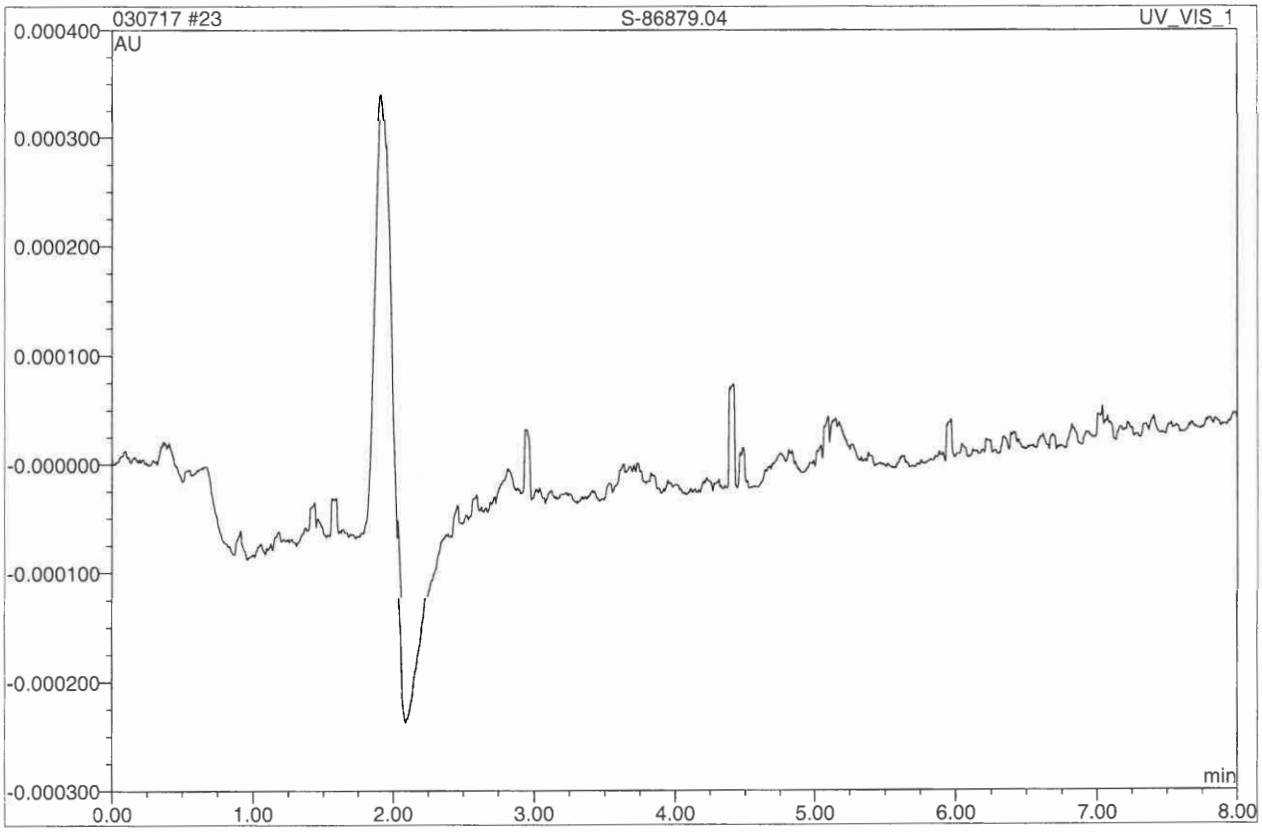
0.196 x 0.1 = 0.0196

ND ✓

23 S-86879.04

7199 run by MK

Sample Name:	**S-86879.04**	*Injection Volume:*	**1000.0**
Vial Number:	**23**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:18**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

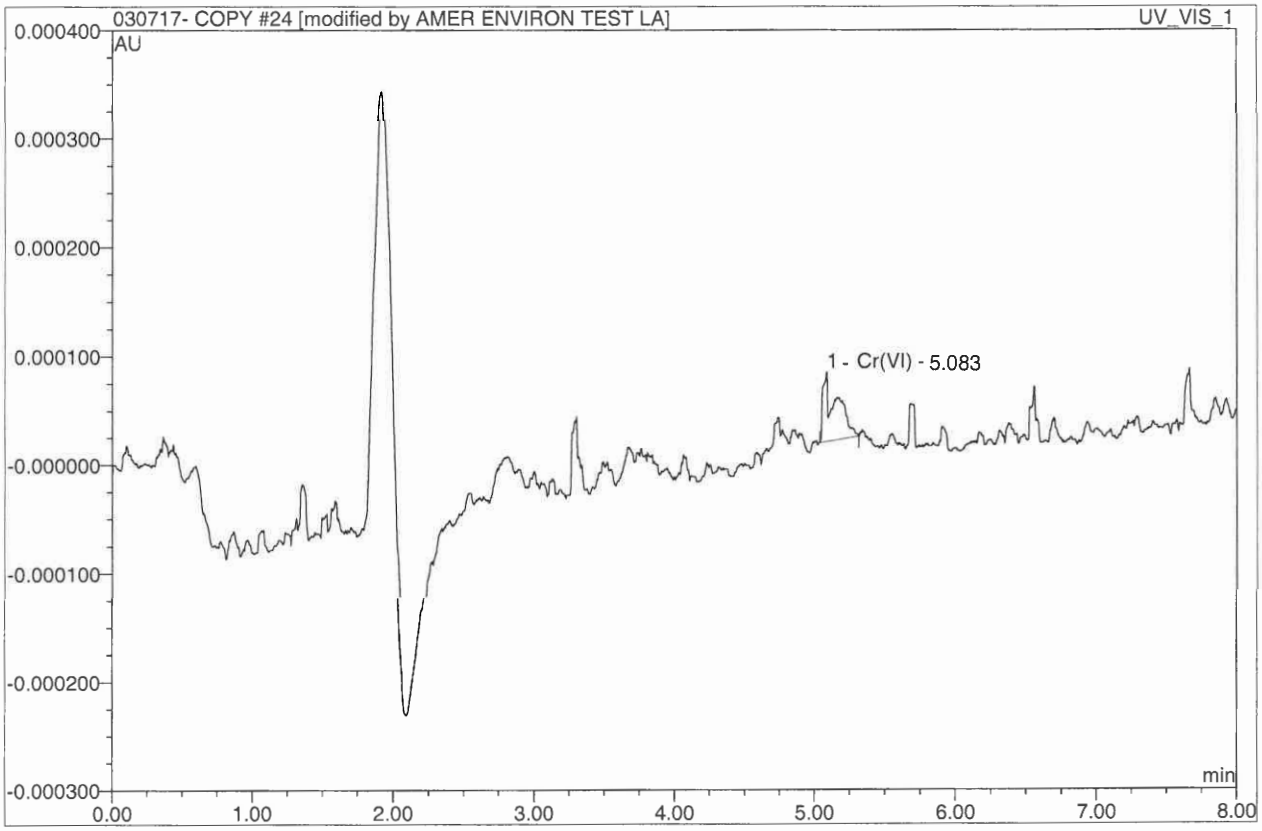


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

24 S-86879.05

7199 run by MK

Sample Name:	**S-86879.05**	*Injection Volume:*	**1000.0**
Vial Number:	**24**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:29**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.08	Cr(VI)	0.0000640	0.0000074	100.00	0.197	99.988
Total:			0.000	0.000	100.00	0.197	

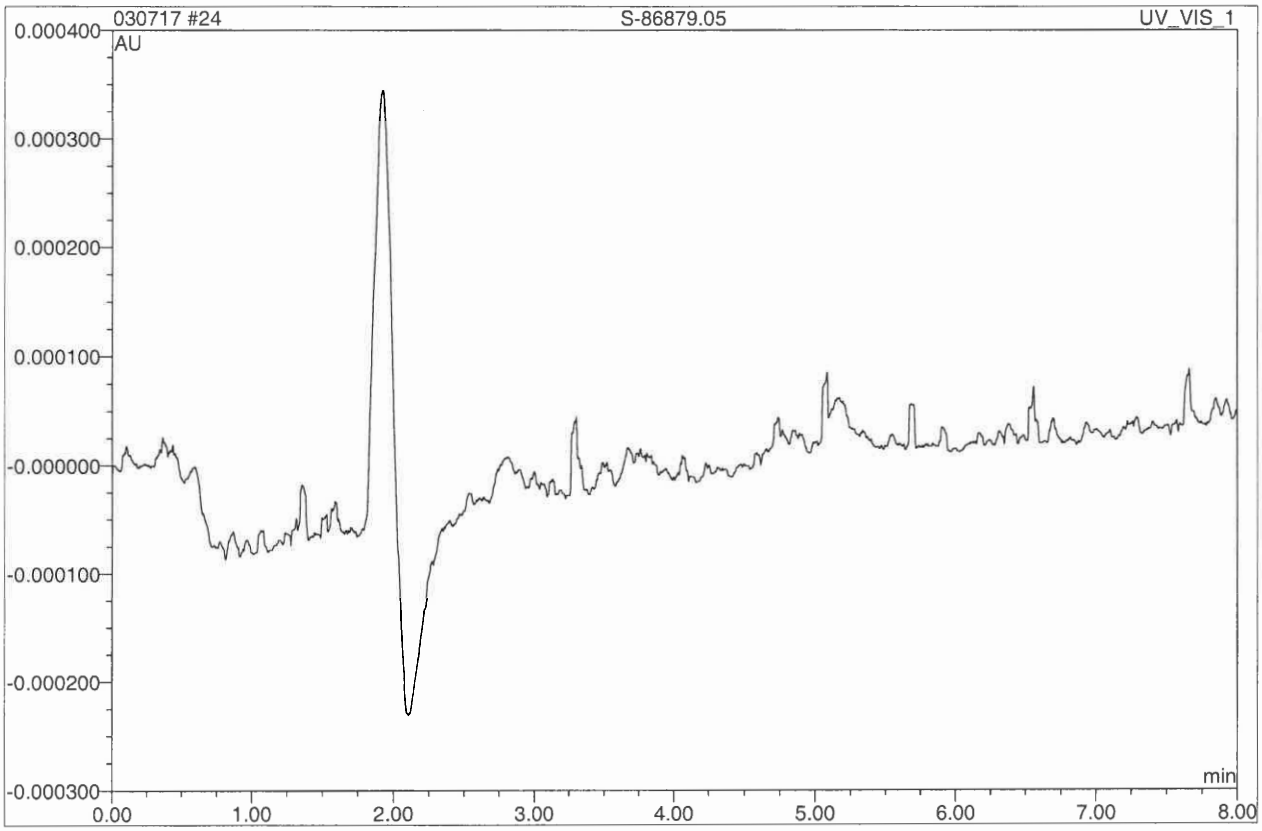
ND ✓

0.197 x 0.1 = 0.0197

24 S-86879.05

7199 run by MK

Sample Name:	**S-86879.05**	*Injection Volume:*	**1000.0**
Vial Number:	**24**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:29**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

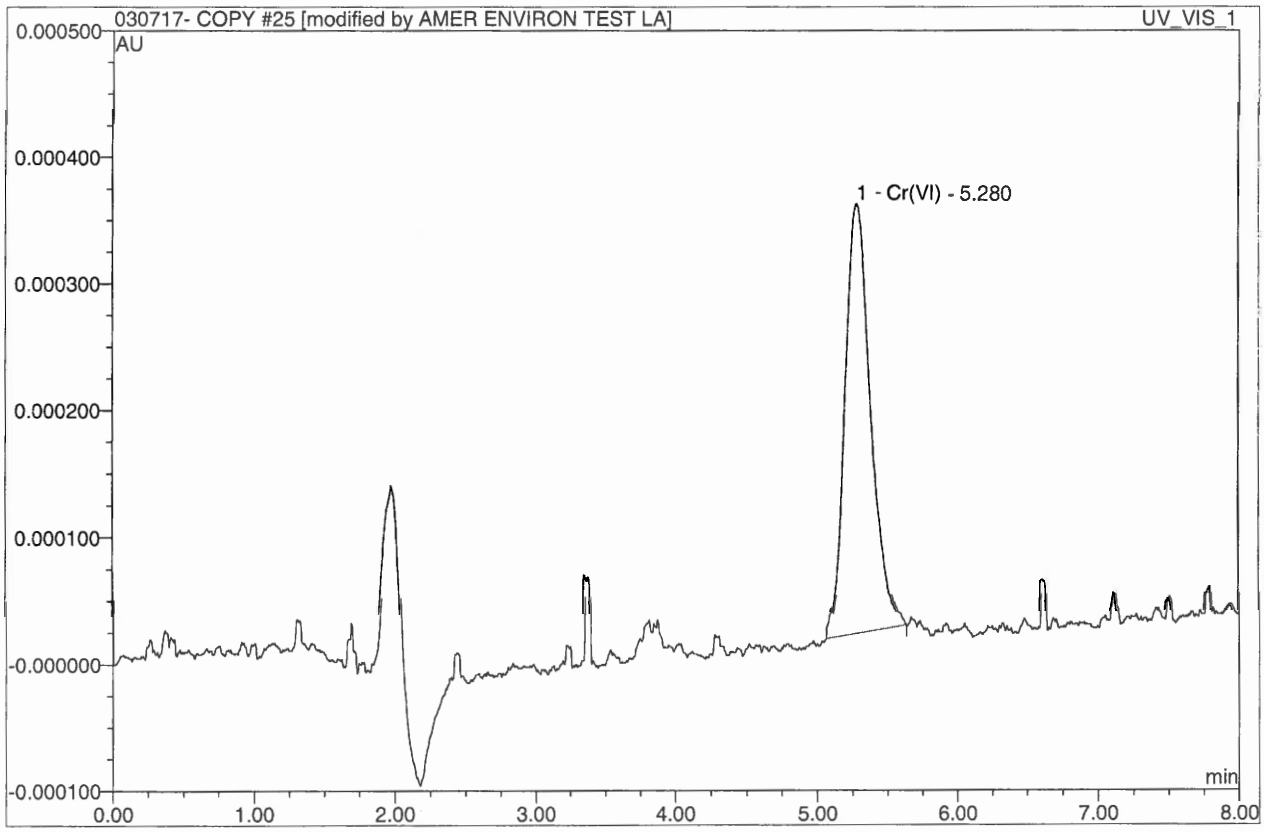


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

25 S-86879.06

7199 run by MK

Sample Name:	**S-86879.06**	*Injection Volume:*	**1000.0**
Vial Number:	**25**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:44**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.28	Cr(VI)	0.0003400	0.0000720	100.00	1.921	99.988
Total:			0.000	0.000	100.00	1.921	

ND ✓

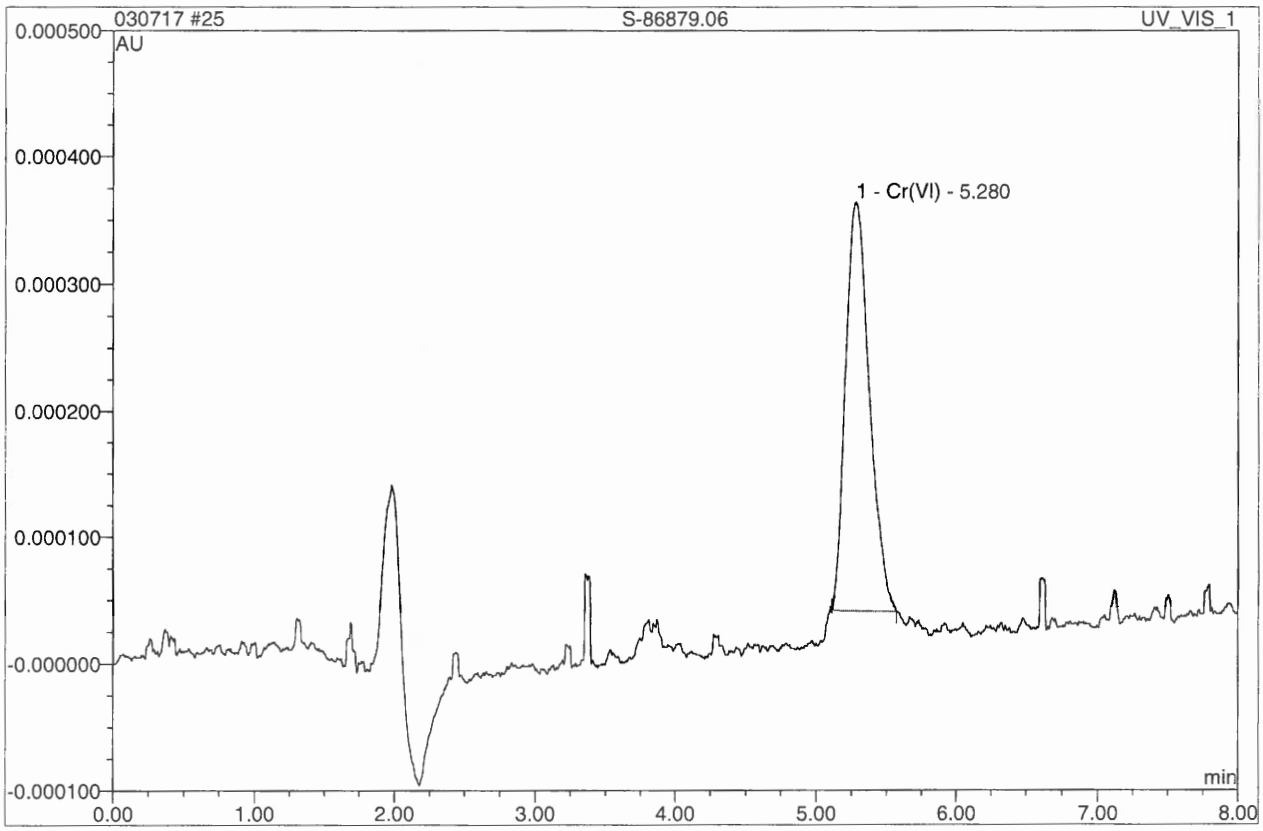
1.92x0.1 = 0.192

dark digested possibly false positive

25 S-86879.06

7199 run by MK

Sample Name:	**S-86879.06**	*Injection Volume:*	**1000.0**
Vial Number:	**25**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.975**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:44**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

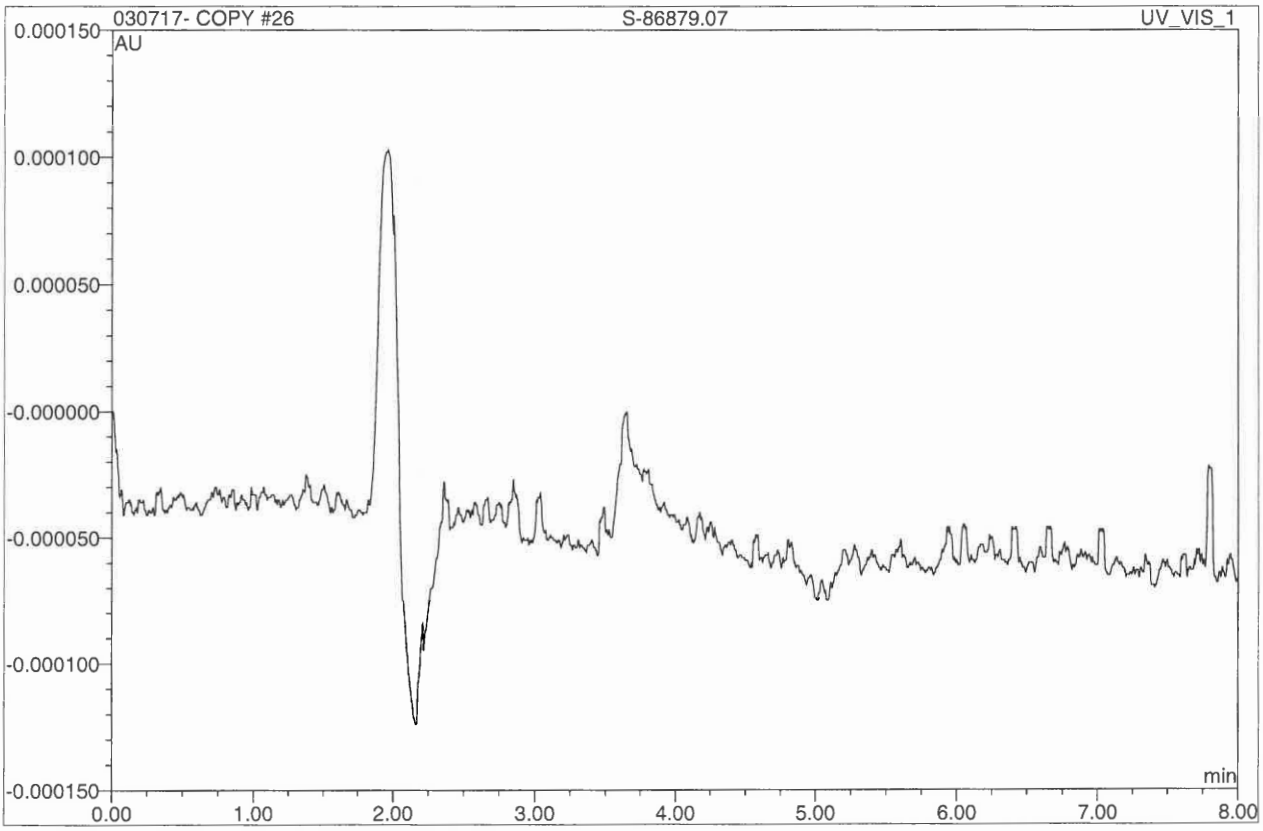


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.28	Cr(VI)	0.0003220	0.0000632	100.00	1.686	99.988
Total:			0.000	0.000	100.00	1.686	

26 S-86879.07

7199 run by MK

Sample Name:	**S-86879.07**	*Injection Volume:*	**1000.0**
Vial Number:	**26**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



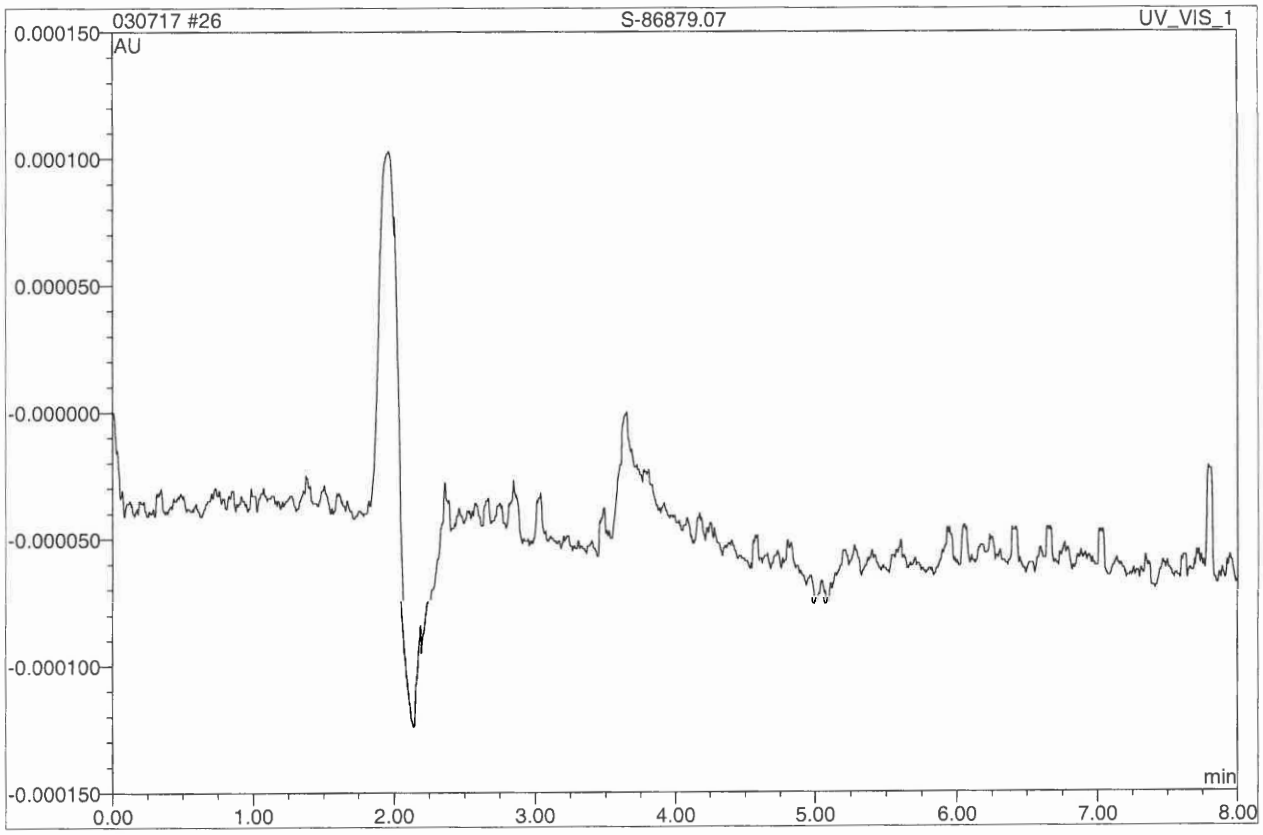
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

ND ✓

26 S-86879.07

7199 run by MK

Sample Name:	**S-86879.07**	*Injection Volume:*	**1000.0**
Vial Number:	**26**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 13:55**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

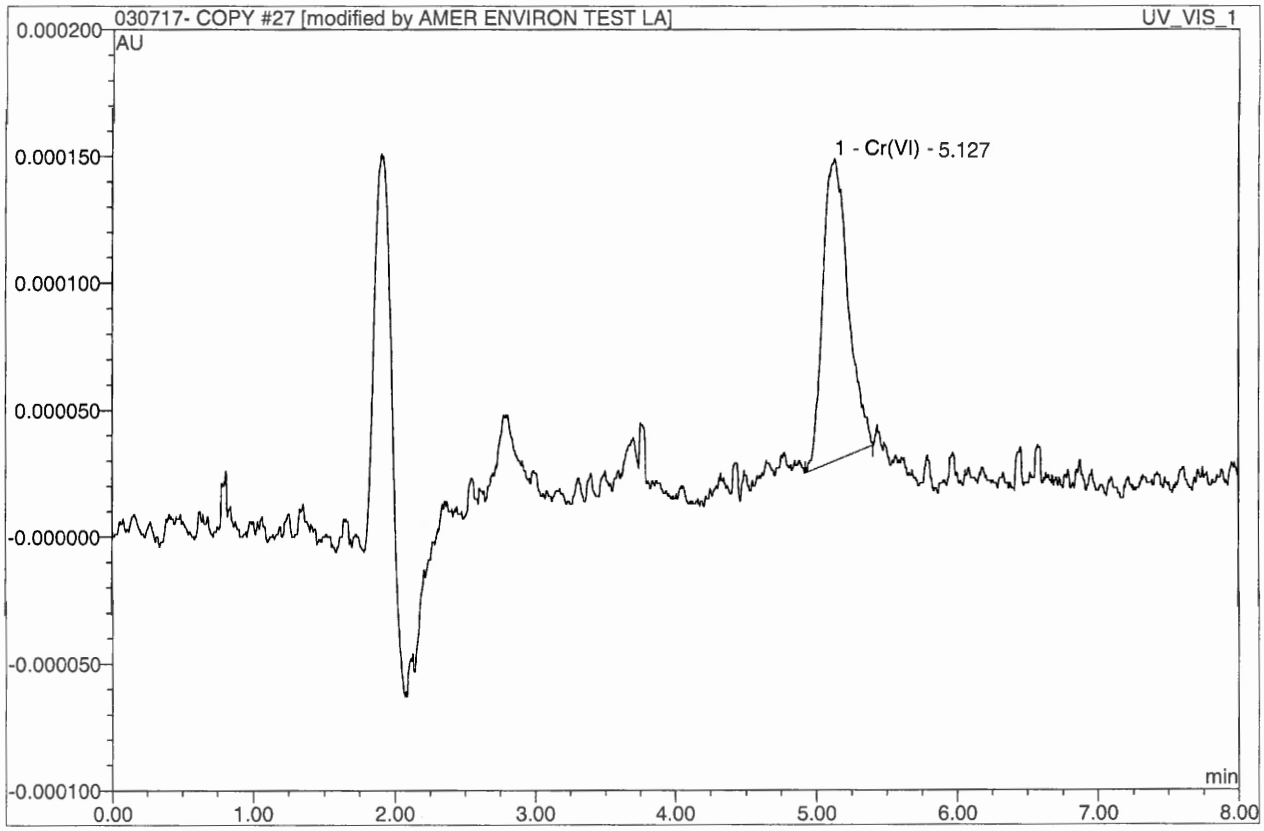


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

27 S-86879.08

7199 run by MK

Sample Name:	**S-86879.08**	*Injection Volume:*	**1000.0**
Vial Number:	**27**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:05**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.13	Cr(VI)	0.0001200	0.0000250	100.00	0.668	99.988
Total:			0.000	0.000	100.00	0.668	

ND ✓

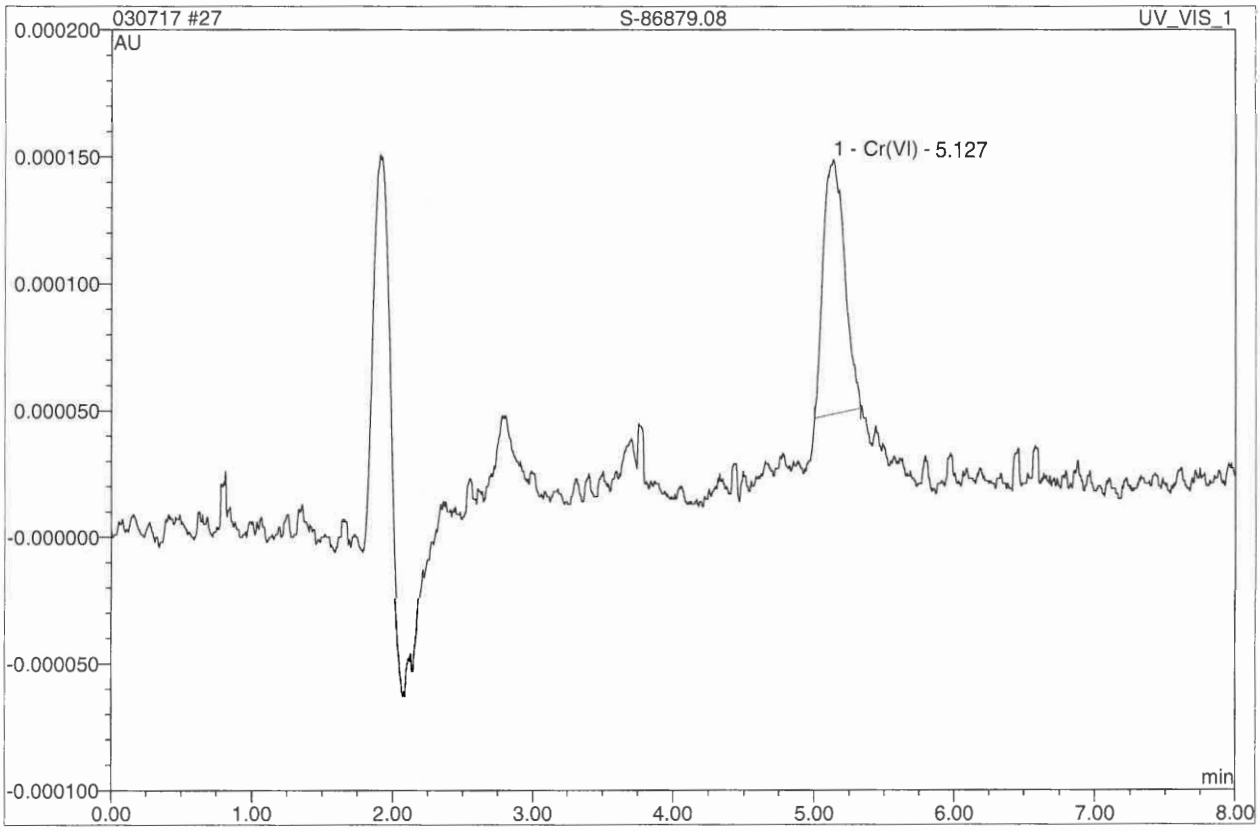
0.668 X 0.1 = 0.066 mg/kg

dark digested possibly false positive

27 S-86879.08

7199 run by MK

Sample Name:	**S-86879.08**	*Injection Volume:*	**1000.0**
Vial Number:	**27**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.975**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:05**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

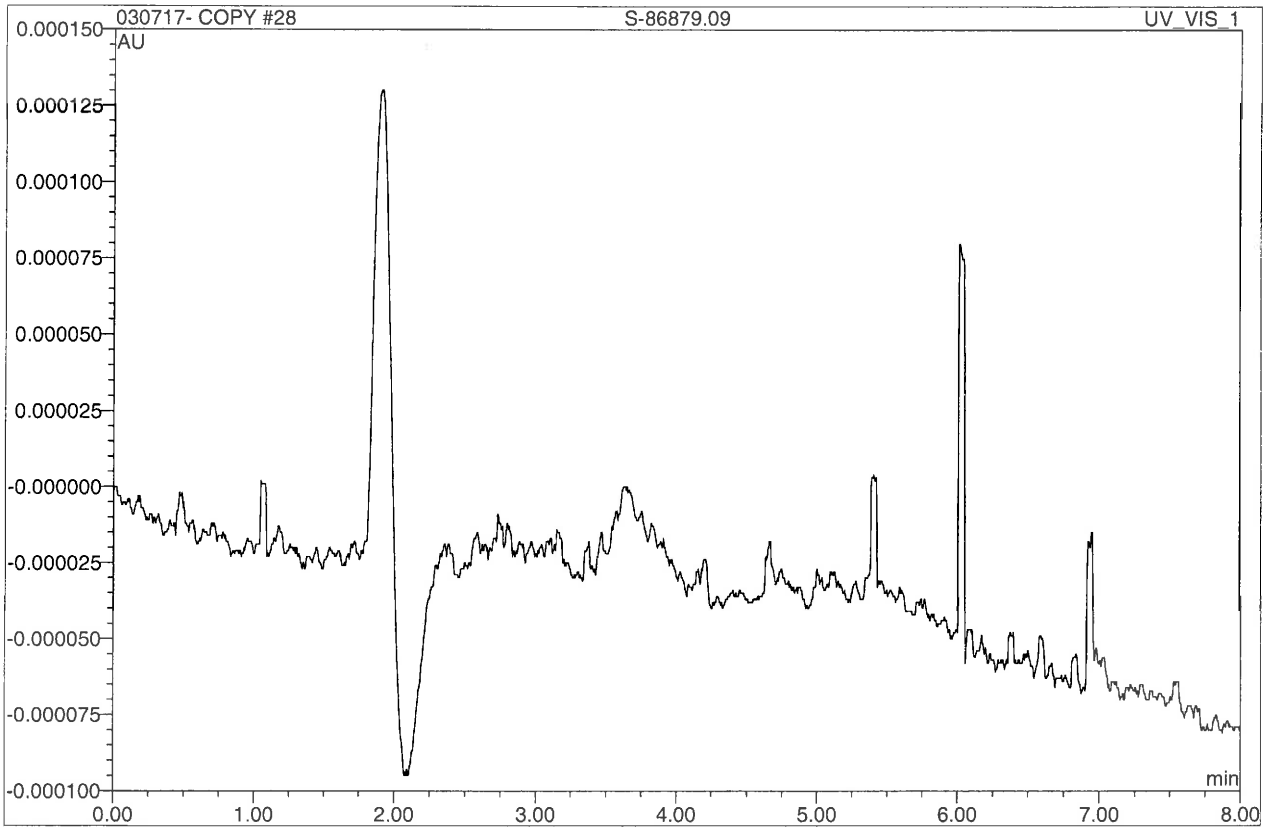


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.13	Cr(VI)	0.0001010	0.0000177	100.00	0.473	99.988
Total:			0.000	0.000	100.00	0.473	

28 S-86879.09

7199 run by MK

Sample Name:	**S-86879.09**	*Injection Volume:*	**1000.0**
Vial Number:	**28**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



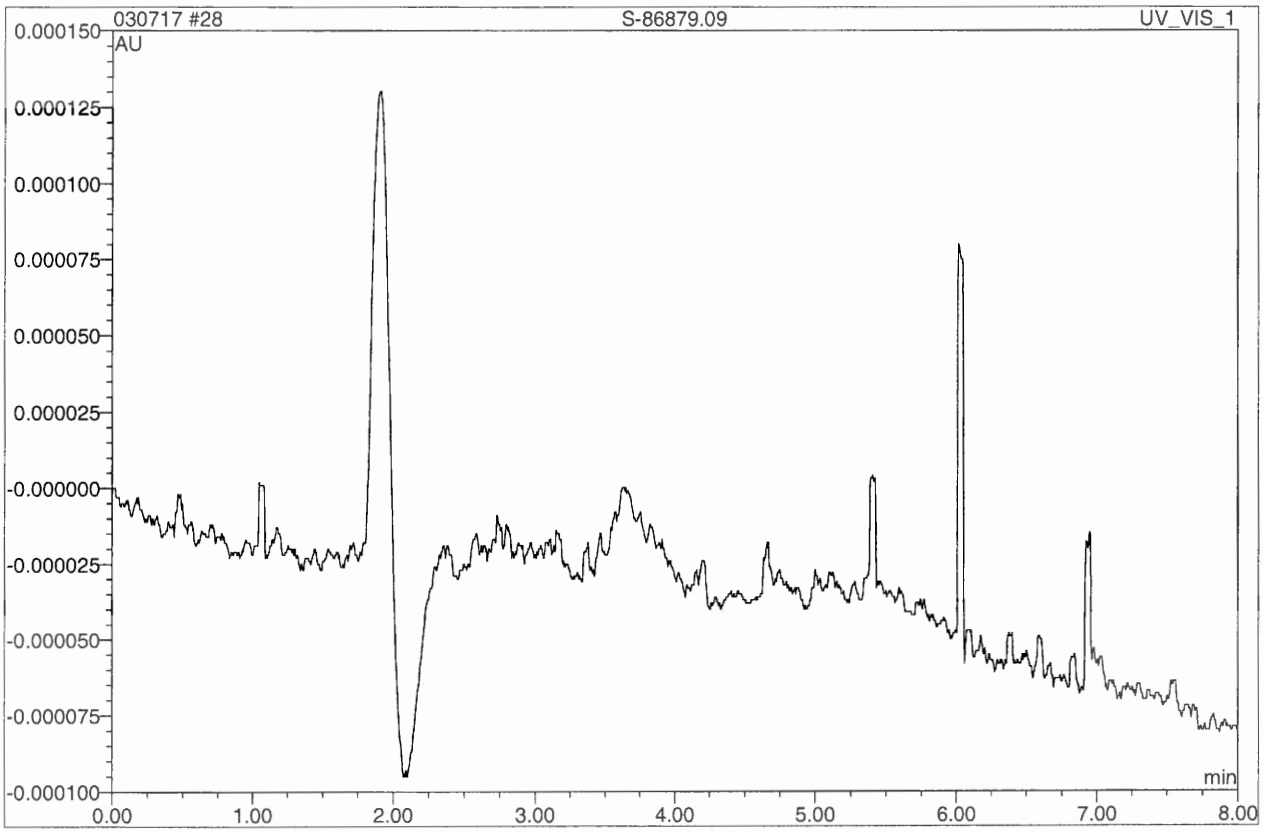
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

ND ✓

28 S-86879.09

7199 run by MK

Sample Name:	**S-86879.09**	*Injection Volume:*	**1000.0**
Vial Number:	**28**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:16**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

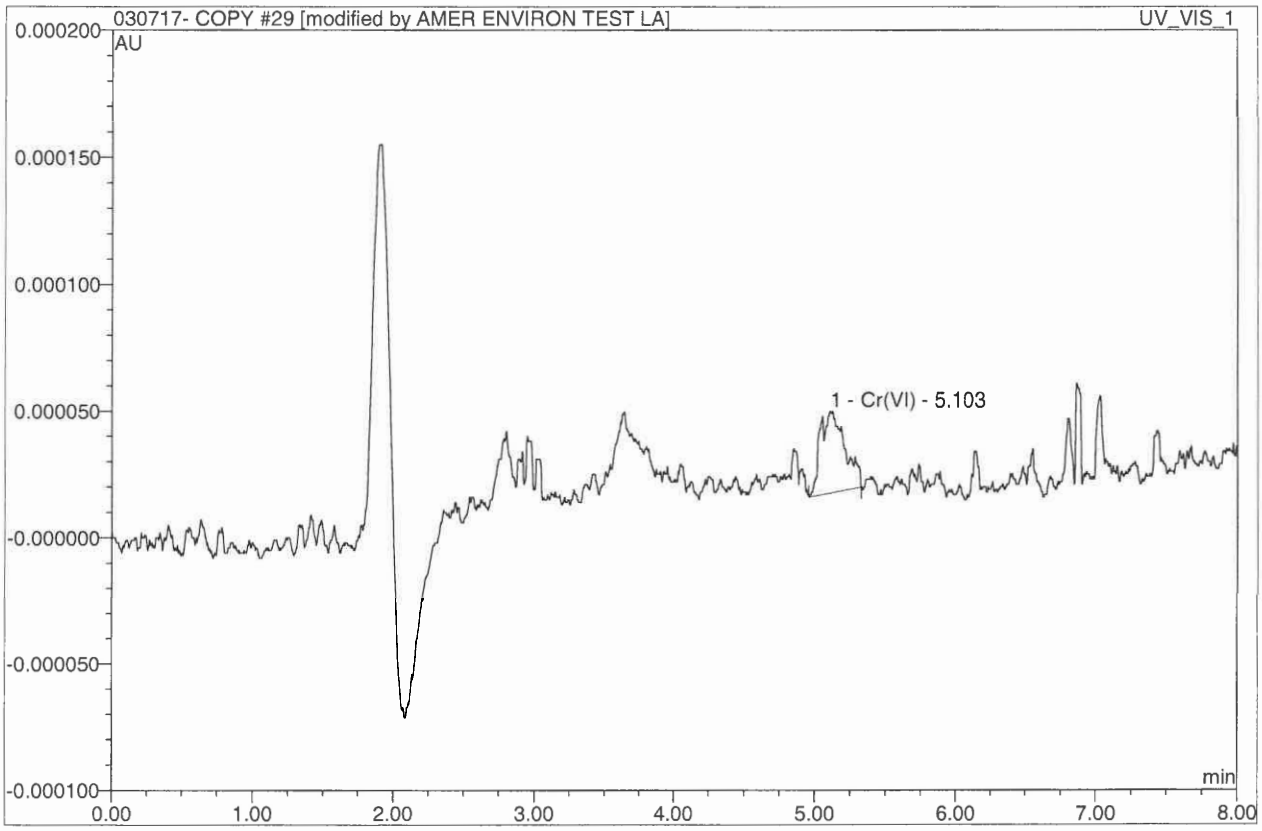


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

29 S-86879.10

7199 run by MK

Sample Name:	**S-86879.10**	*Injection Volume:*	**1000.0**
Vial Number:	**29**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:26**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



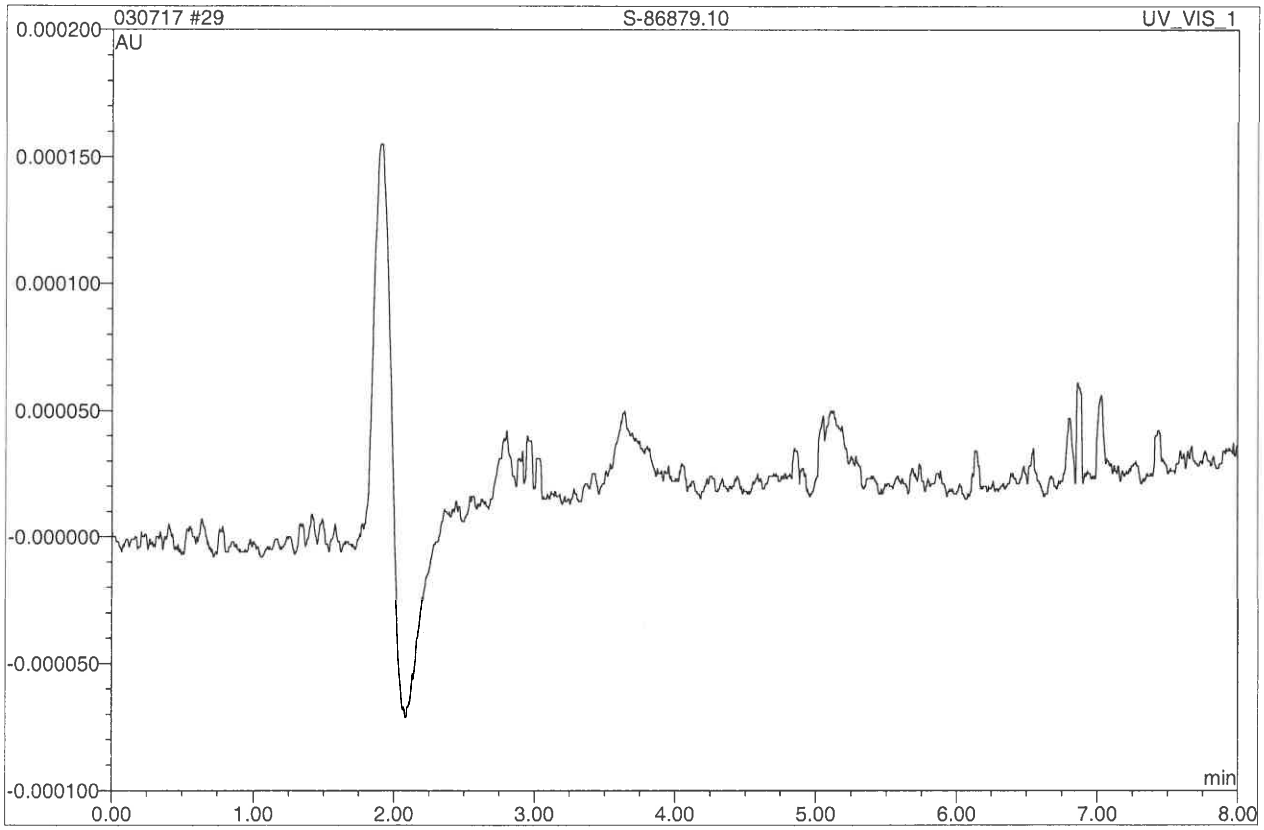
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.10	Cr(VI)	0.0000330	0.0000065	100.00	0.173	99.988
Total:			0.000	0.000	100.00	0.173	

ND

29 S-86879.10

7199 run by MK

Sample Name:	**S-86879.10**	*Injection Volume:*	**1000.0**
Vial Number:	**29**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:26**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

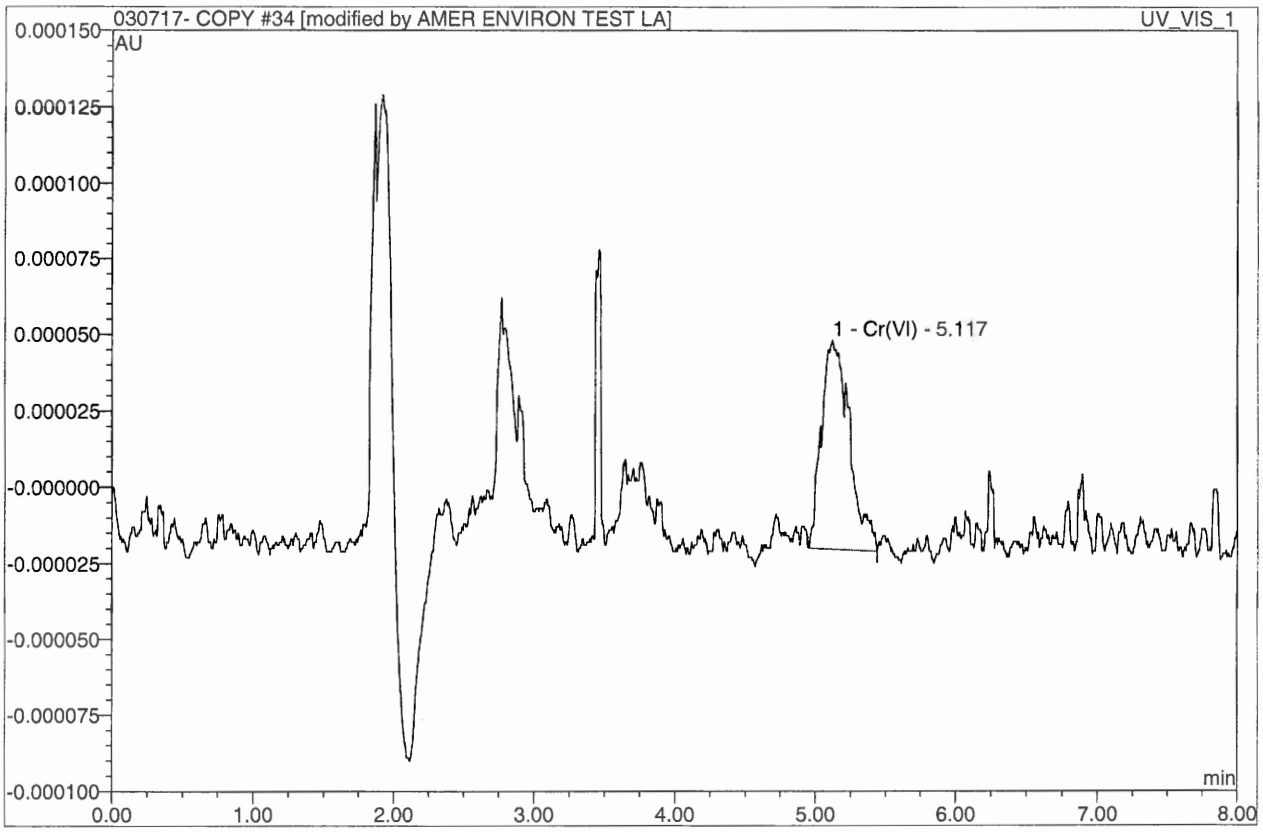


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

34 S-86879.11

7199 run by MK

Sample Name:	**S-86879.11**	*Injection Volume:*	**1000.0**
Vial Number:	**34**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:19**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.12	Cr(VI)	0.0000680	0.0000158	100.00	0.420	99.988
Total:			0.000	0.000	100.00	0.420	

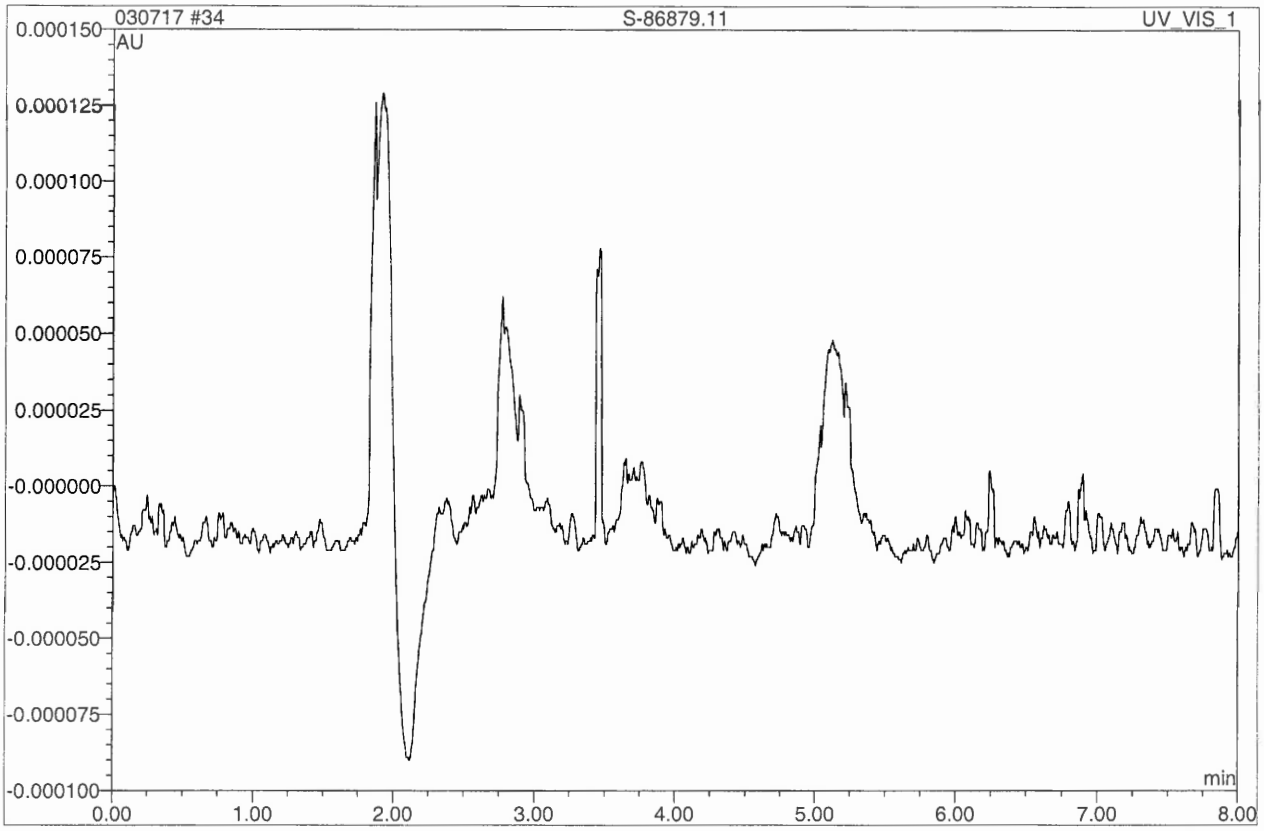
ND ✓

0.420 x 0.1 = 0.042 mg/kg

34 S-86879.11

7199 run by MK

Sample Name:	**S-86879.11**	*Injection Volume:*	**1000.0**
Vial Number:	**34**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:19**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

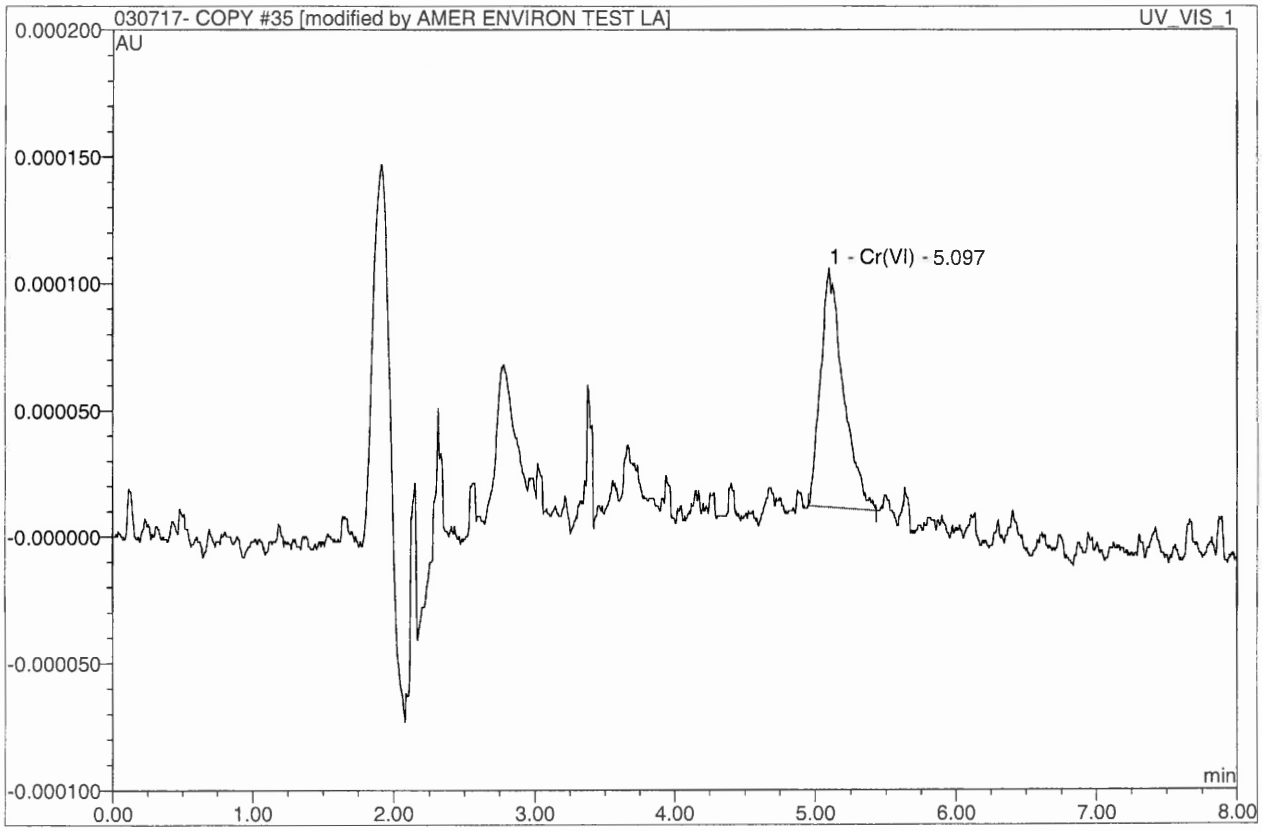


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

35 S-86879.11 DUP

7199 run by MK

Sample Name:	**S-86879.11 DUP**	*Injection Volume:*	**1000.0**
Vial Number:	**35**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:29**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.10	Cr(VI)	0.0000940	0.0000176	100.00	0.470	99.988
Total:			0.000	0.000	100.00	0.470	

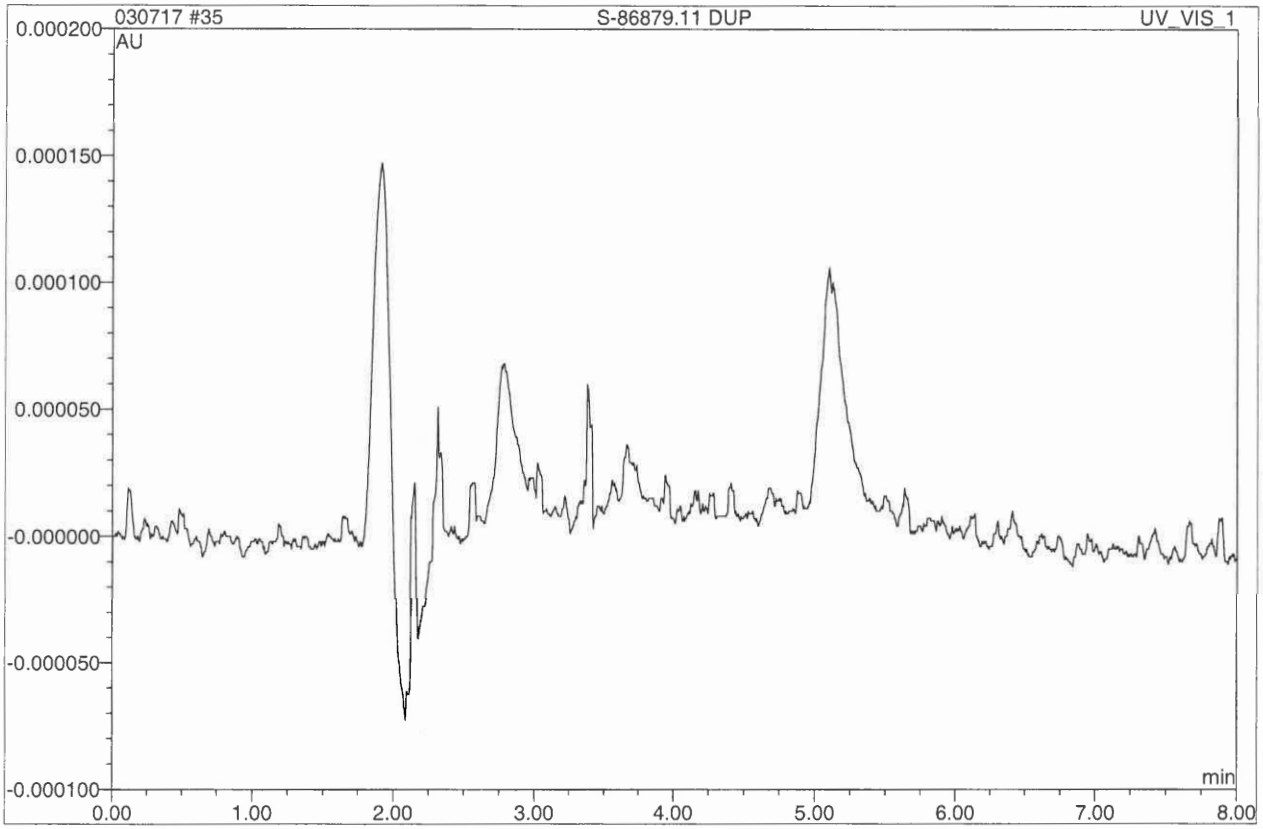
ND ✓

0.470 X 0.1 = 0.0470

35 S-86879.11 DUP

7199 run by MK

Sample Name:	**S-86879.11 DUP**	*Injection Volume:*	**1000.0**
Vial Number:	**35**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:29**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

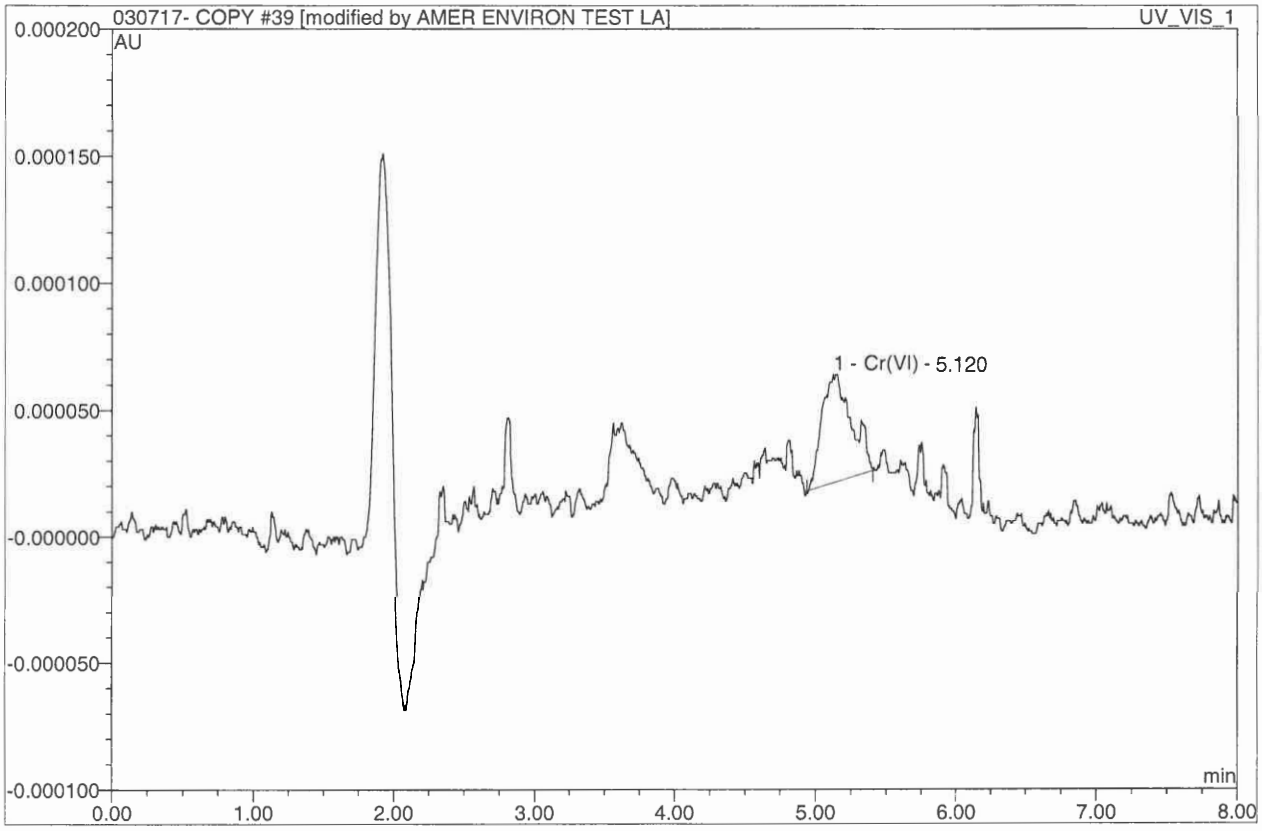


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

39 S-86879.12

7199 run by MK

Sample Name:	**S-86879.12**	*Injection Volume:*	**1000.0**
Vial Number:	**39**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:11**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.12	Cr(VI)	0.0000430	0.0000103	100.00	0.274	99.988
Total:			0.000	0.000	100.00	0.274	

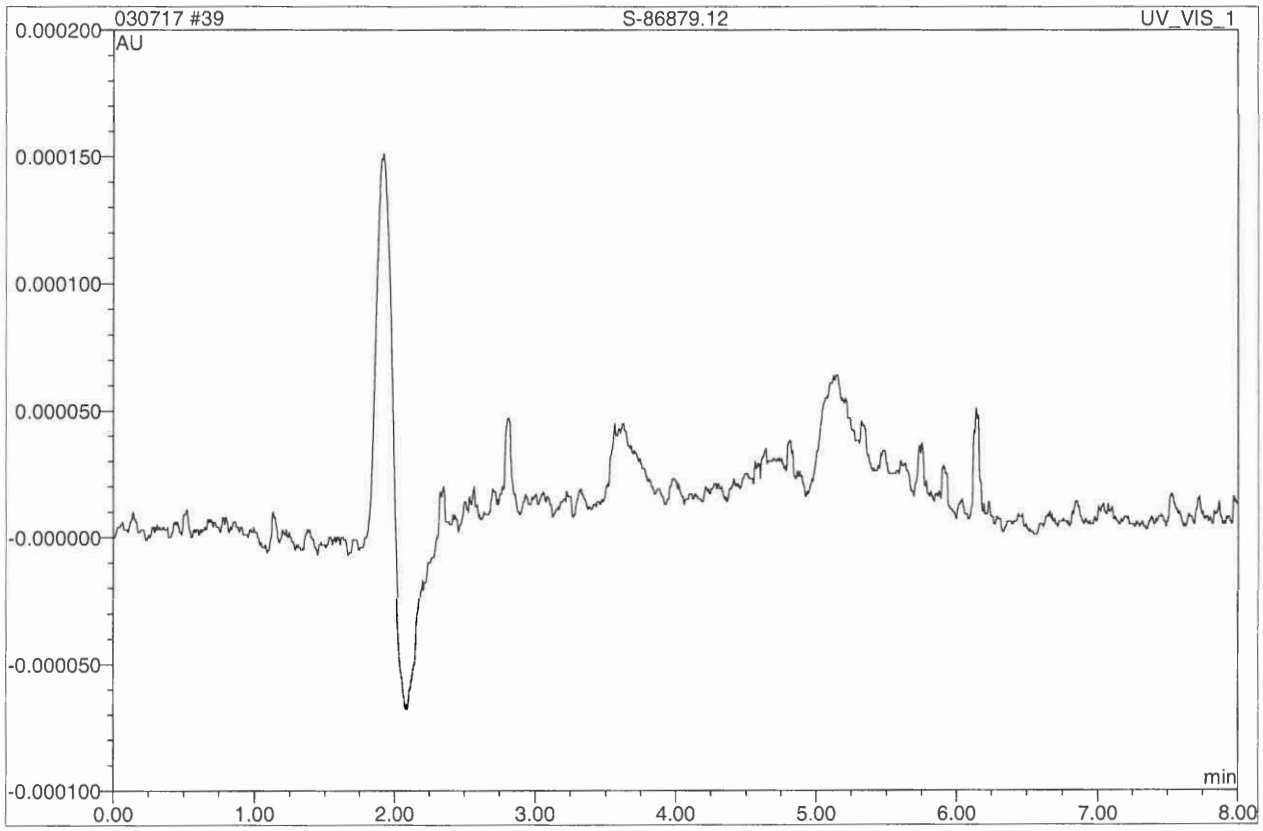
ND ✓

0.274 x 0.1 = 0.027

39 S-86879.12

7199 run by MK

Sample Name:	**S-86879.12**	*Injection Volume:*	**1000.0**
Vial Number:	**39**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:11**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

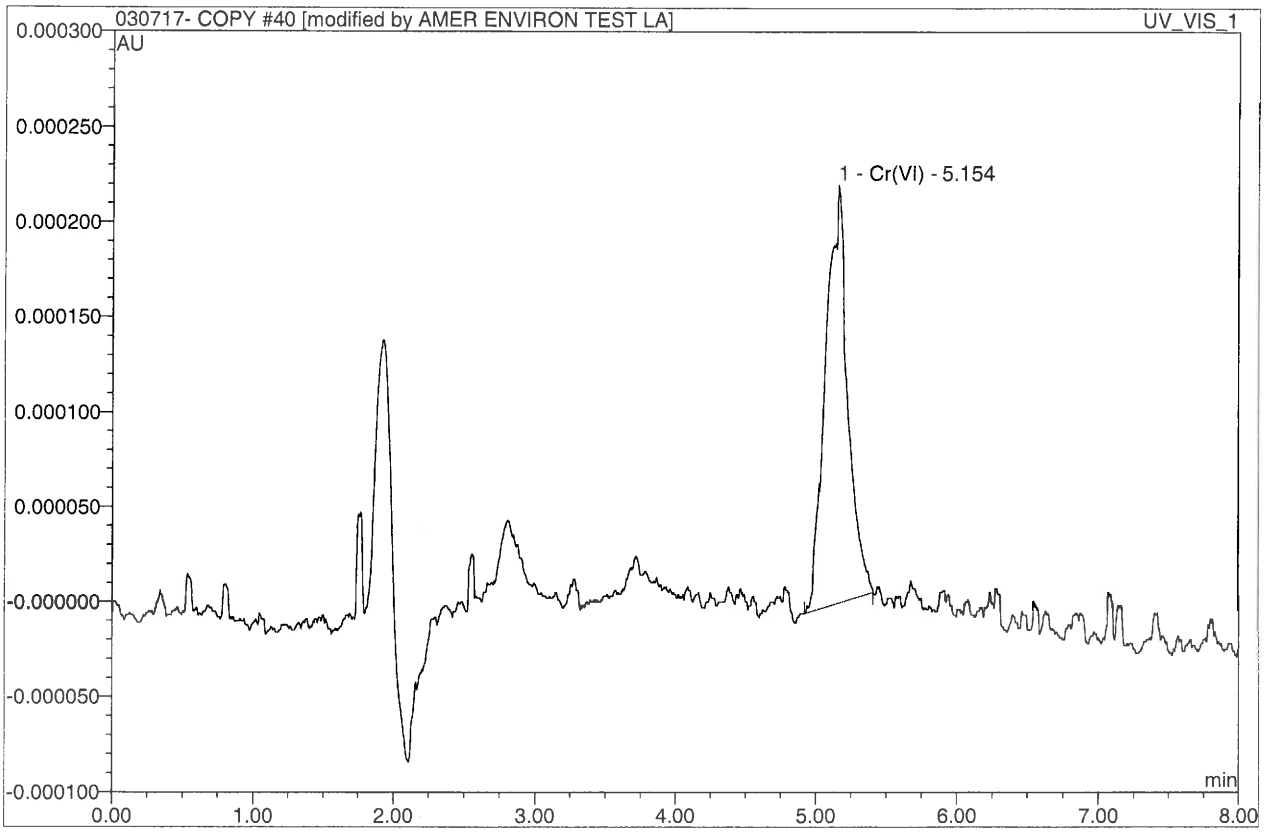


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

40 S-86879.13

7199 run by MK

Sample Name:	**S-86879.13**	*Injection Volume:*	**1000.0**
Vial Number:	**40**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:22**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.15	Cr(VI)	0.0002210	0.0000406	100.00	1.084	99.988
Total:			0.000	0.000	100.00	1.084	

ND ✓

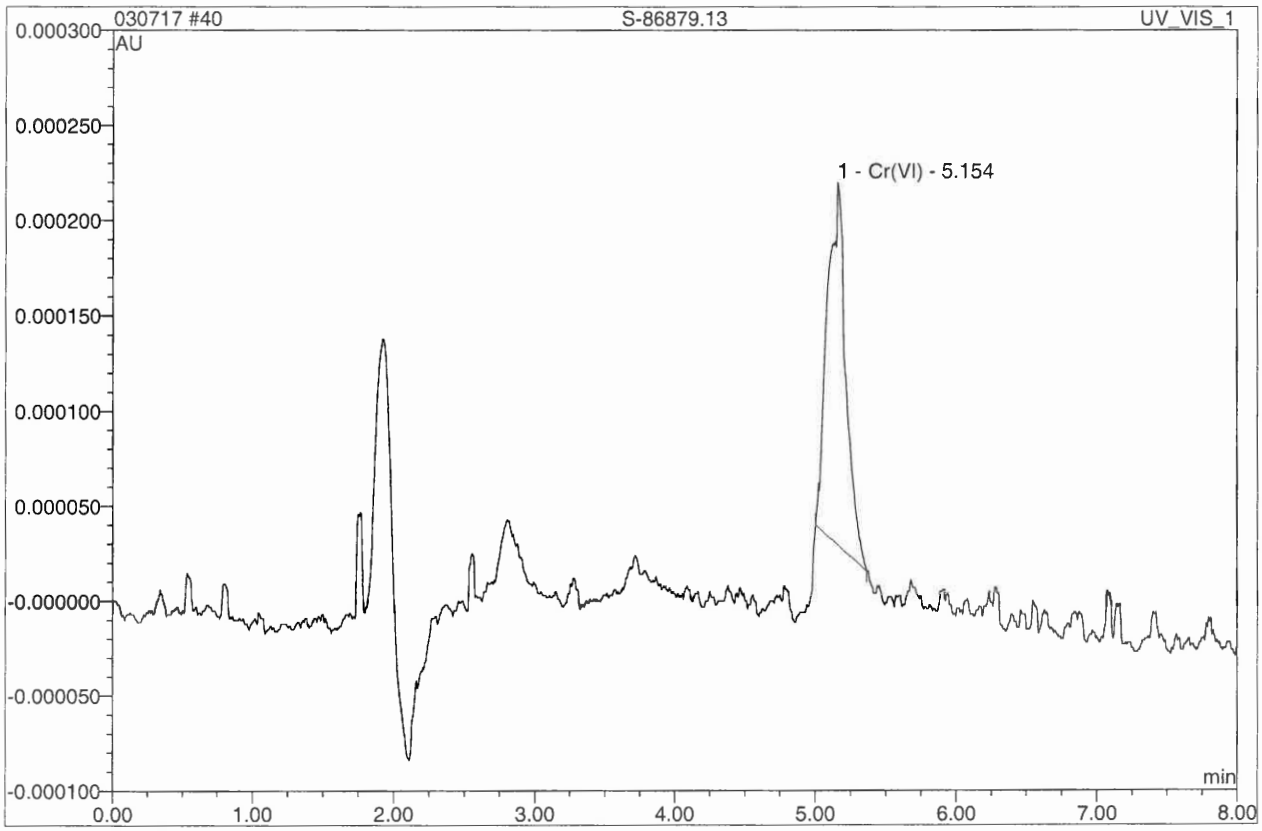
1.08 x 0.1 = 0.108

dark digested possibly false positive

40 S-86879.13

7199 run by MK

Sample Name:	**S-86879.13**	*Injection Volume:*	**1000.0**
Vial Number:	**40**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.975**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:22**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

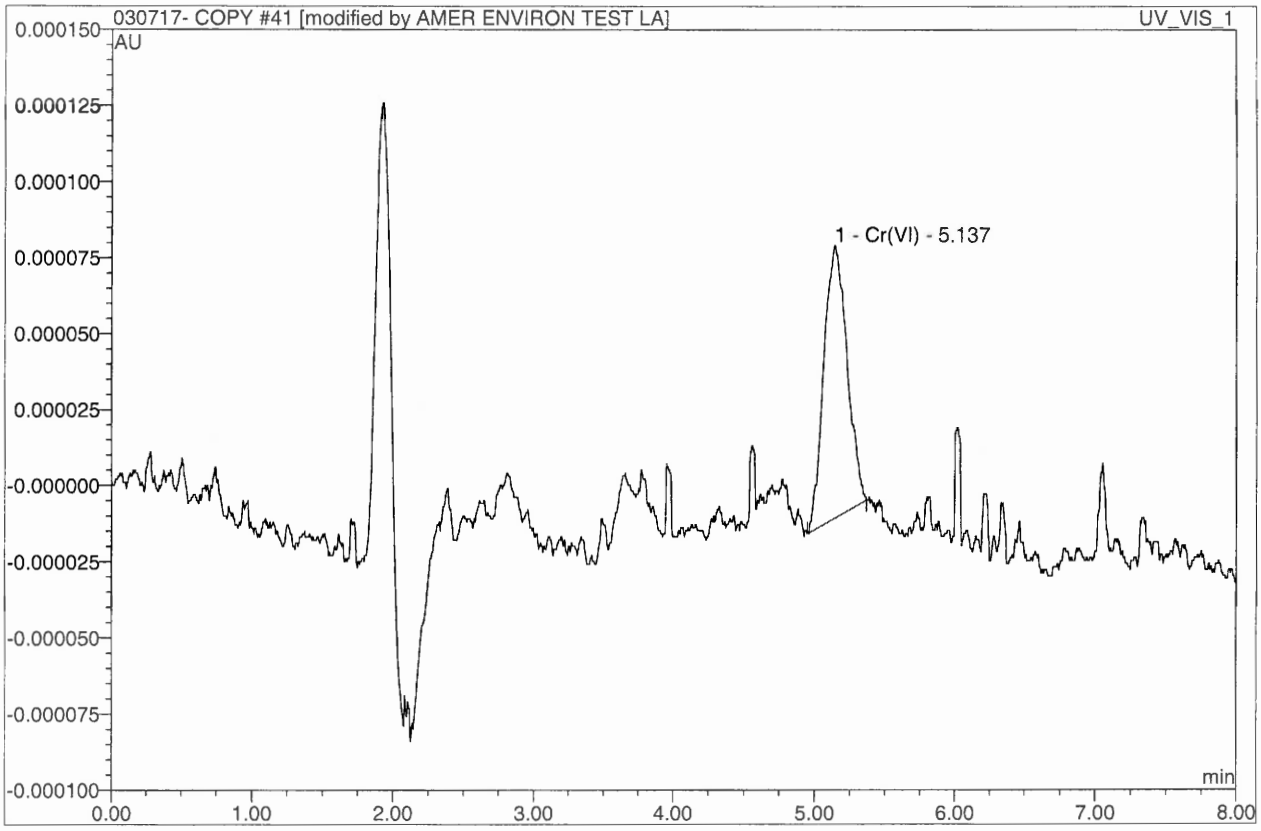


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.15	Cr(VI)	0.0001900	0.0000291	100.00	0.777	99.988
Total:			0.000	0.000	100.00	0.777	

41 S-86879.14

7199 run by MK

Sample Name:	**S-86879.14**	*Injection Volume:*	**1000.0**
Vial Number:	**41**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:32**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.14	Cr(VI)	0.0000910	0.0000173	100.00	0.461	99.988
Total:			0.000	0.000	100.00	0.461	

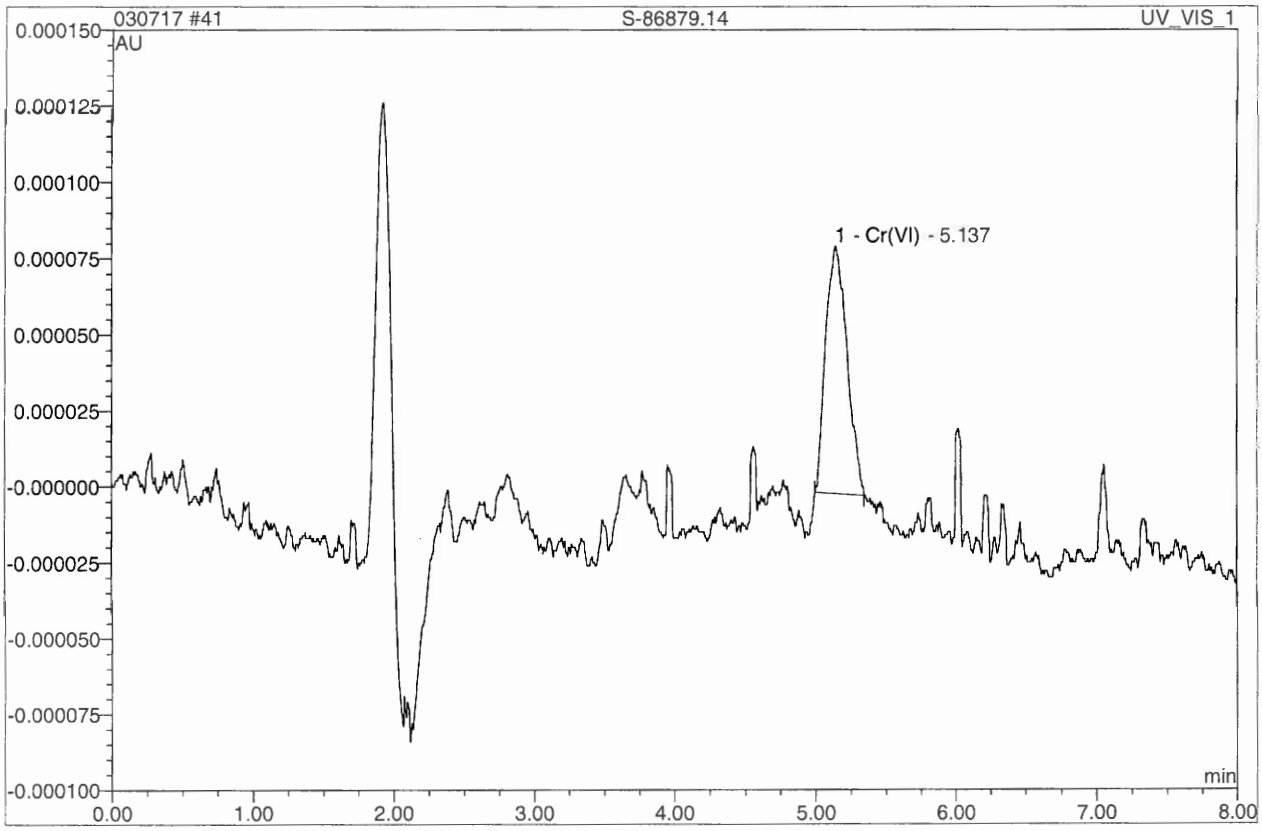
ND ✓

0.461 X 0.1 = 0.046

41 S-86879.14

7199 run by MK

Sample Name:	**S-86879.14**	*Injection Volume:*	**1000.0**
Vial Number:	**41**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.975**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:32**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

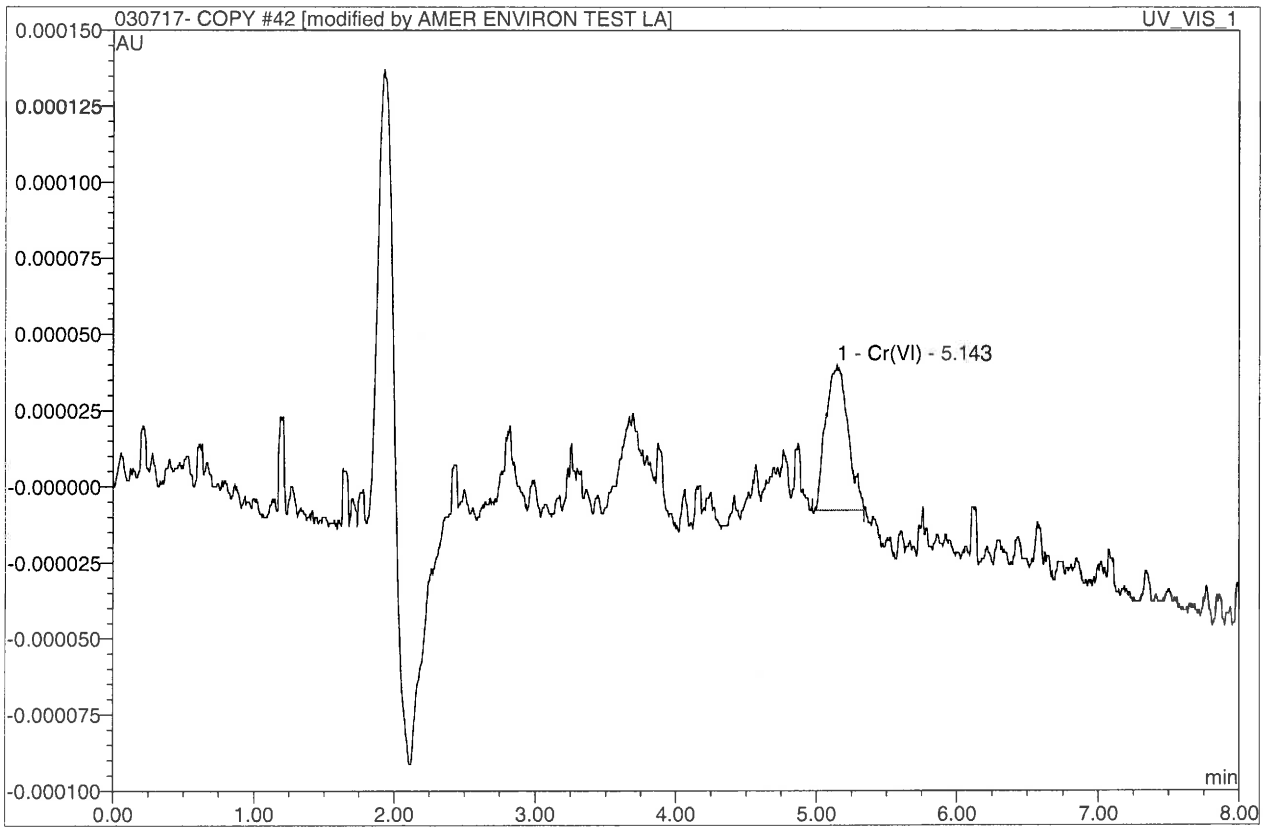


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.14	Cr(VI)	0.0000810	0.0000143	100.00	0.383	99.988
Total:			0.000	0.000	100.00	0.383	

42 S-86879.15

7199 run by MK

Sample Name:	**S-86879.15**	*Injection Volume:*	**1000.0**
Vial Number:	**42**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:43**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.14	Cr(VI)	0.0000480	0.0000087	100.00	0.233	99.988
Total:			0.000	0.000	100.00	0.233	

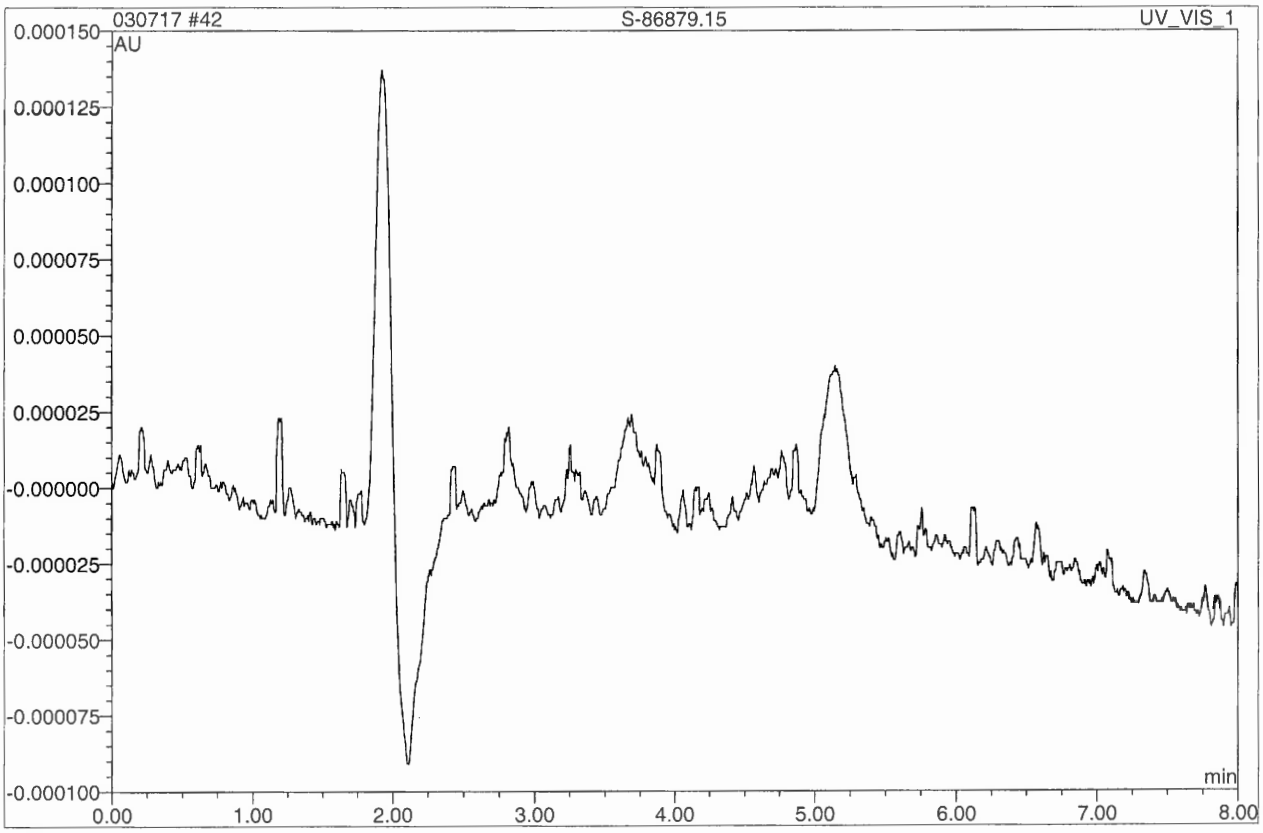
ND✓

0.233x0.1=0.023

42 S-86879.15

7199 run by MK

Sample Name:	**S-86879.15**	*Injection Volume:*	**1000.0**
Vial Number:	**42**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:43**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

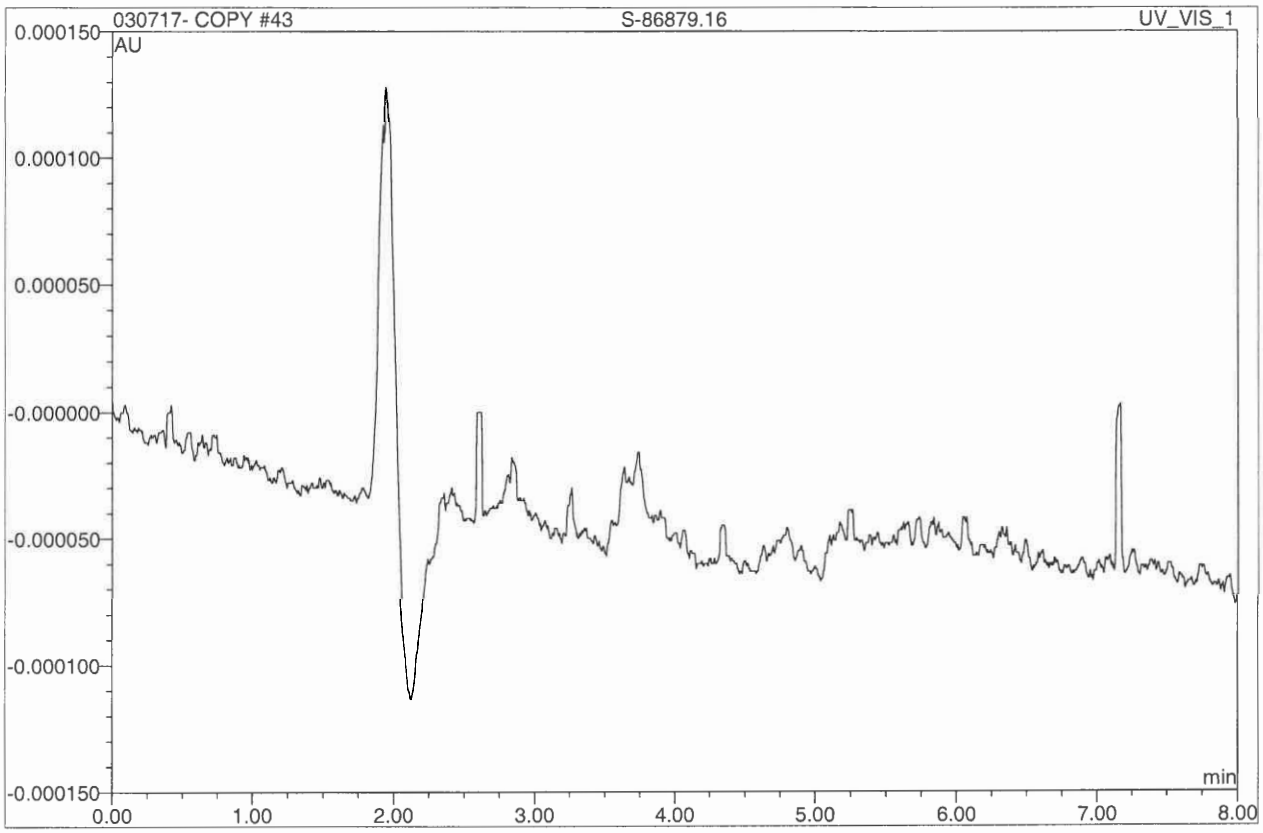


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

43 S-86879.16

7199 run by MK

Sample Name:	**S-86879.16**	*Injection Volume:*	**1000.0**
Vial Number:	**43**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:53**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



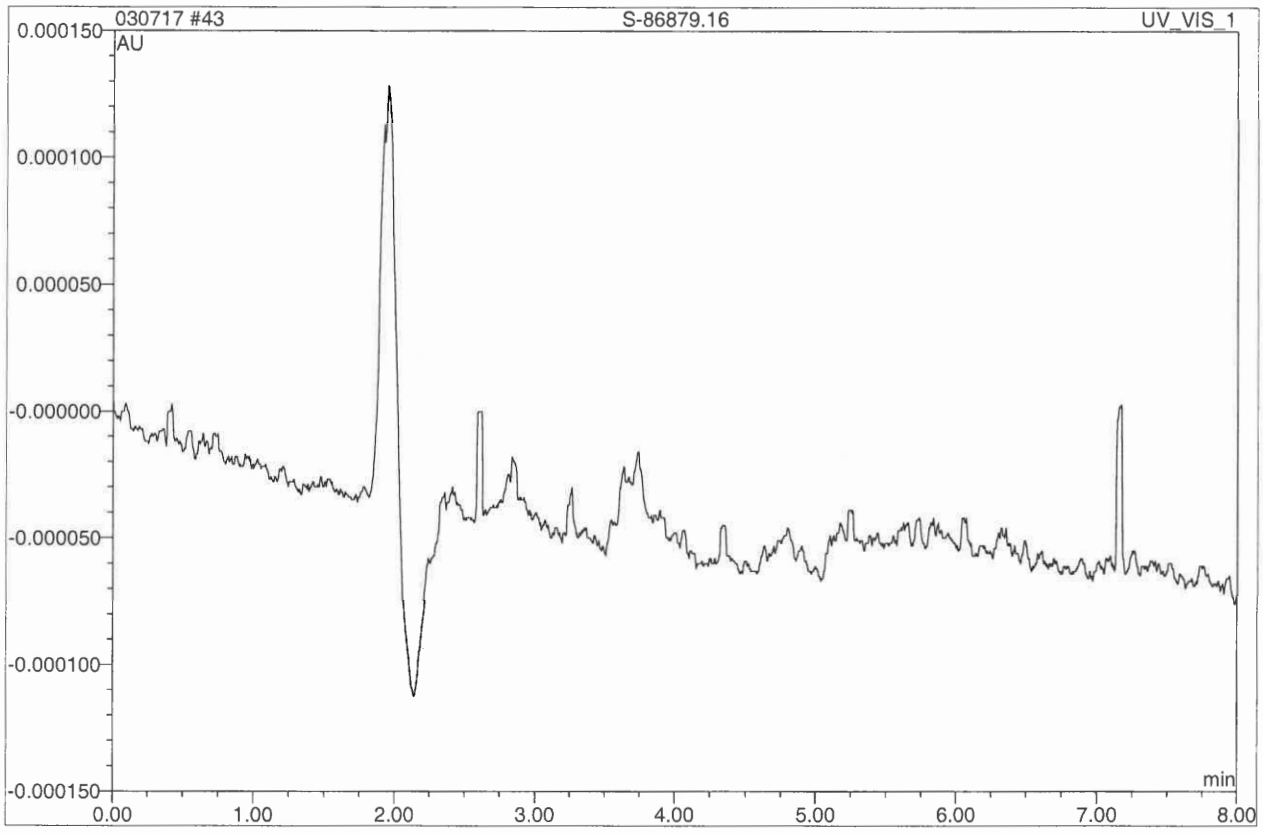
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

ND ✓

43 S-86879.16

7199 run by MK

Sample Name:	**S-86879.16**	*Injection Volume:*	**1000.0**
Vial Number:	**43**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:53**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

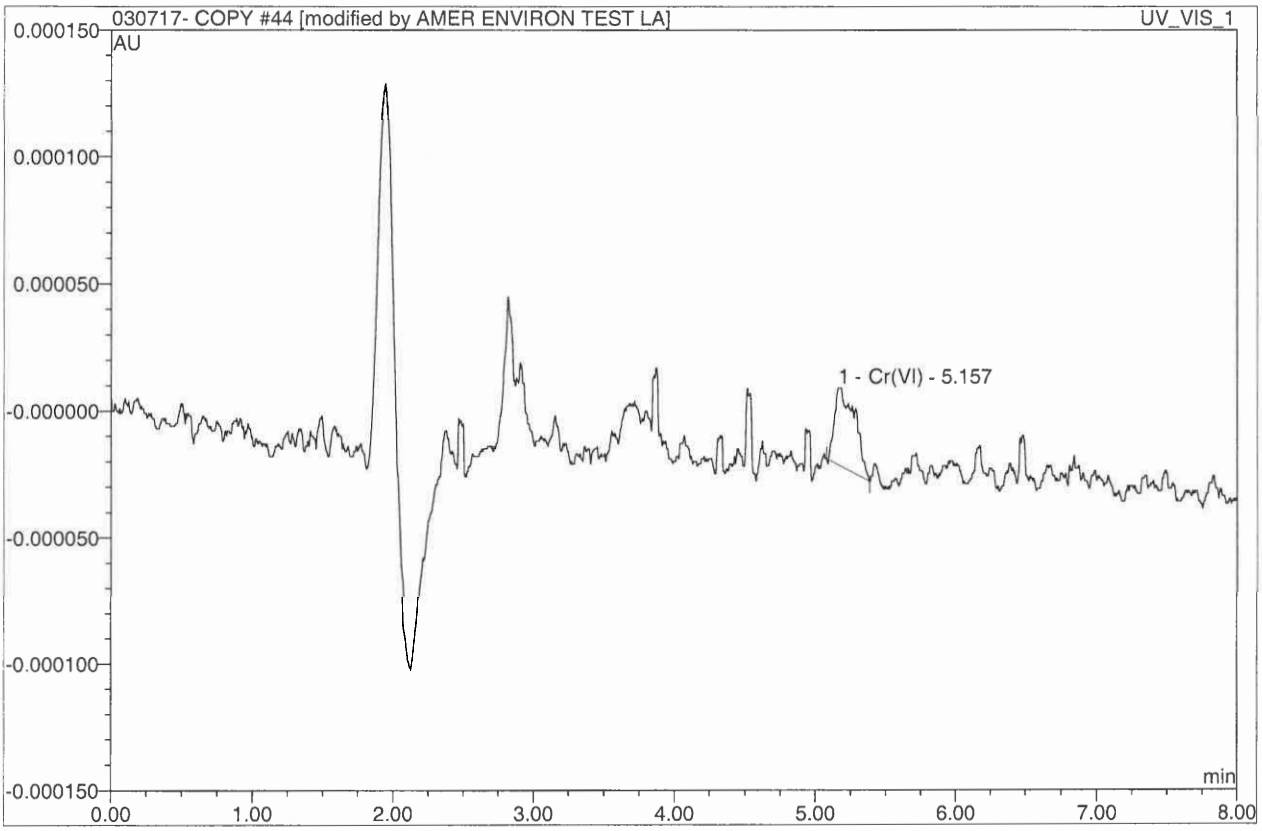


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

44 S-86879.17

7199 run by MK

Sample Name:	**S-86879.17**	*Injection Volume:*	**1000.0**
Vial Number:	**44**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.16	Cr(VI)	0.0000300	0.0000053	100.00	0.141	99.988
Total:			0.000	0.000	100.00	0.141	

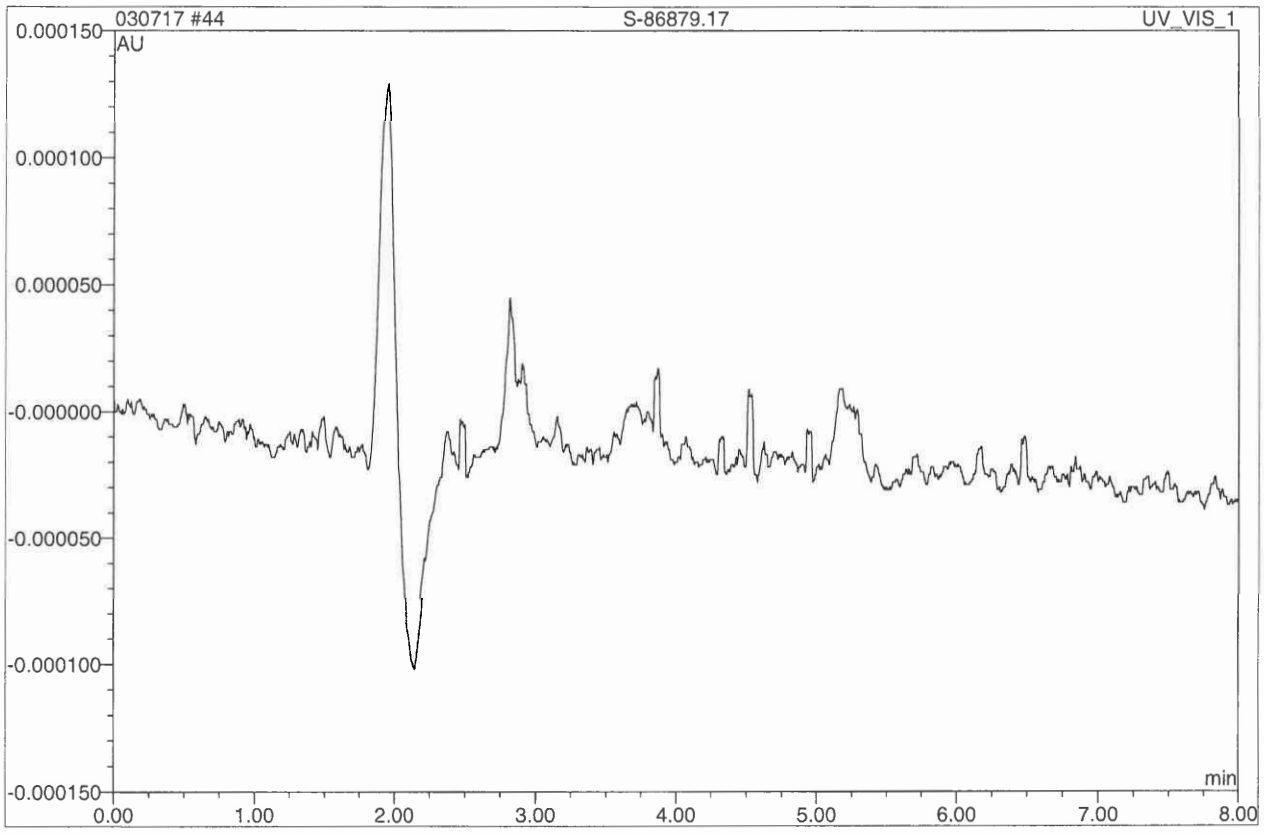
ND ✓

0.141 X 0.1 = 0.014

44 S-86879.17

7199 run by MK

Sample Name:	**S-86879.17**	*Injection Volume:*	**1000.0**
Vial Number:	**44**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:04**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

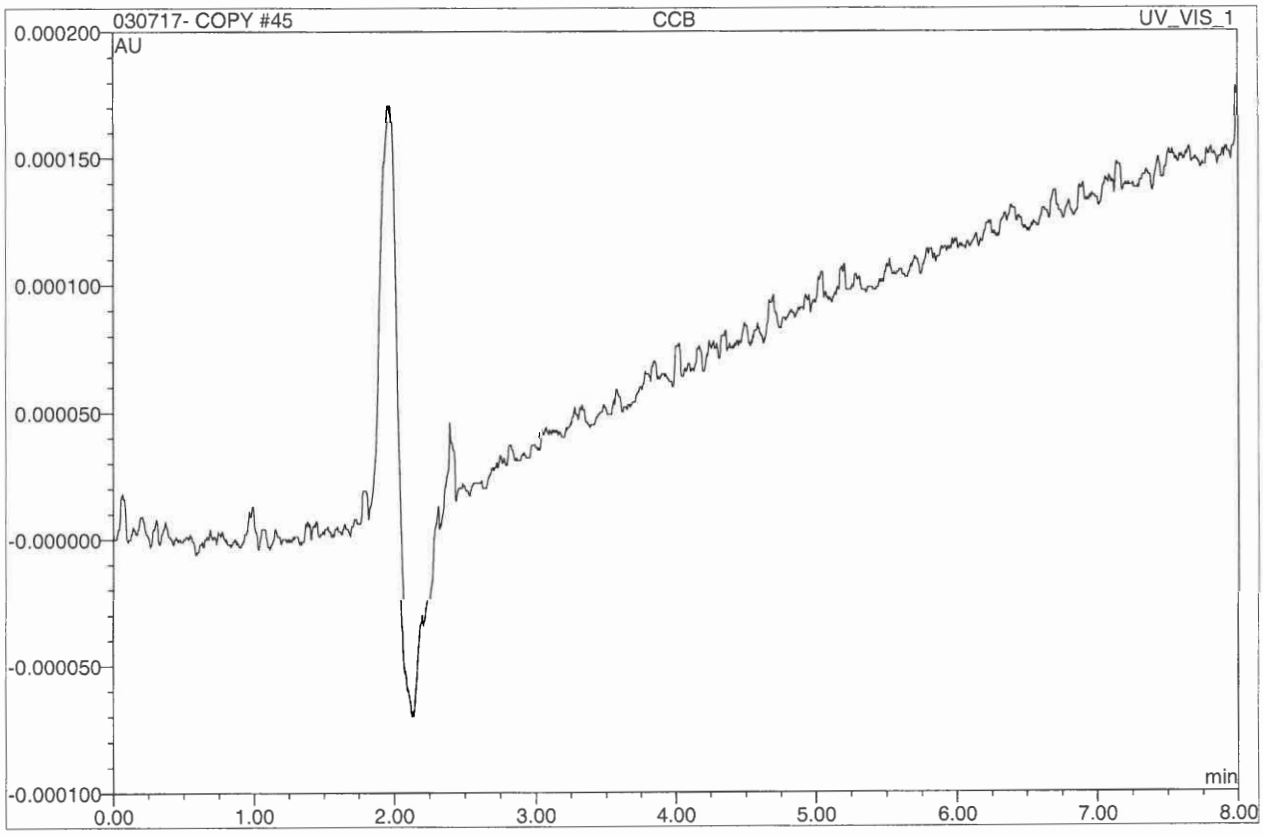


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

45 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**45**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:14**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

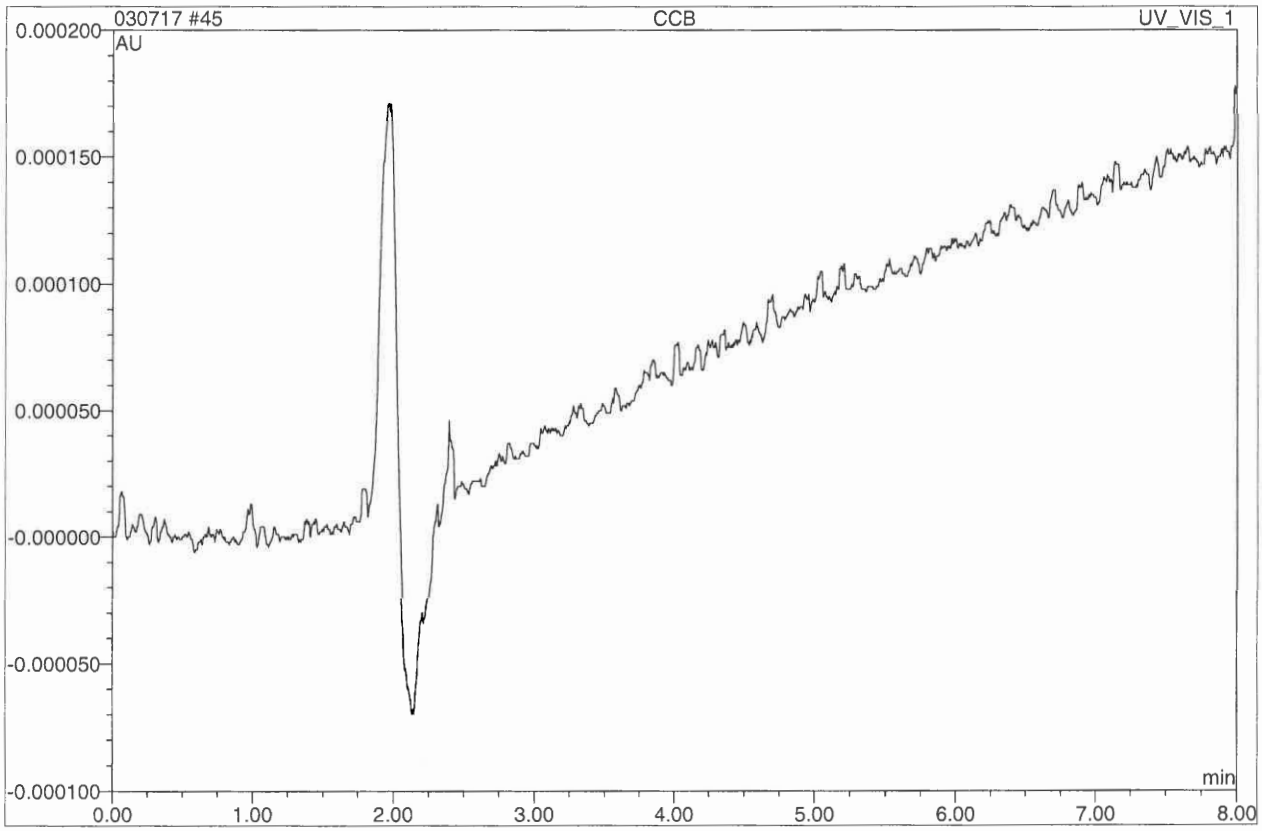


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

45 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**45**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:14**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86879

Chromium Hexavalent by 7199

QC RESULTS AND DATA

AETL Job Number 86879

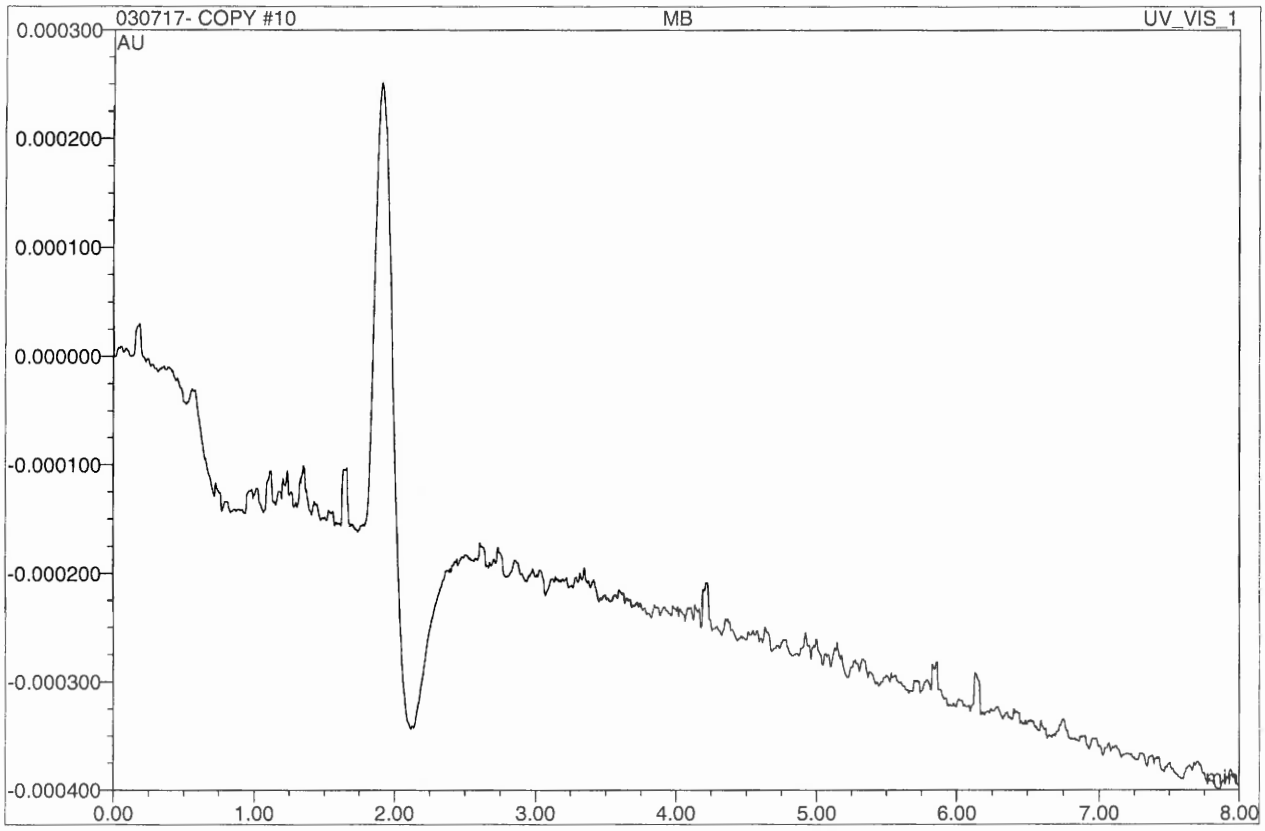
Chromium Hexavalent by 7199

METHOD BLANK

10 MB

7199 run by MK

Sample Name:	**MB**	*Injection Volume:*	**1000.0**
Vial Number:	**10**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:02**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

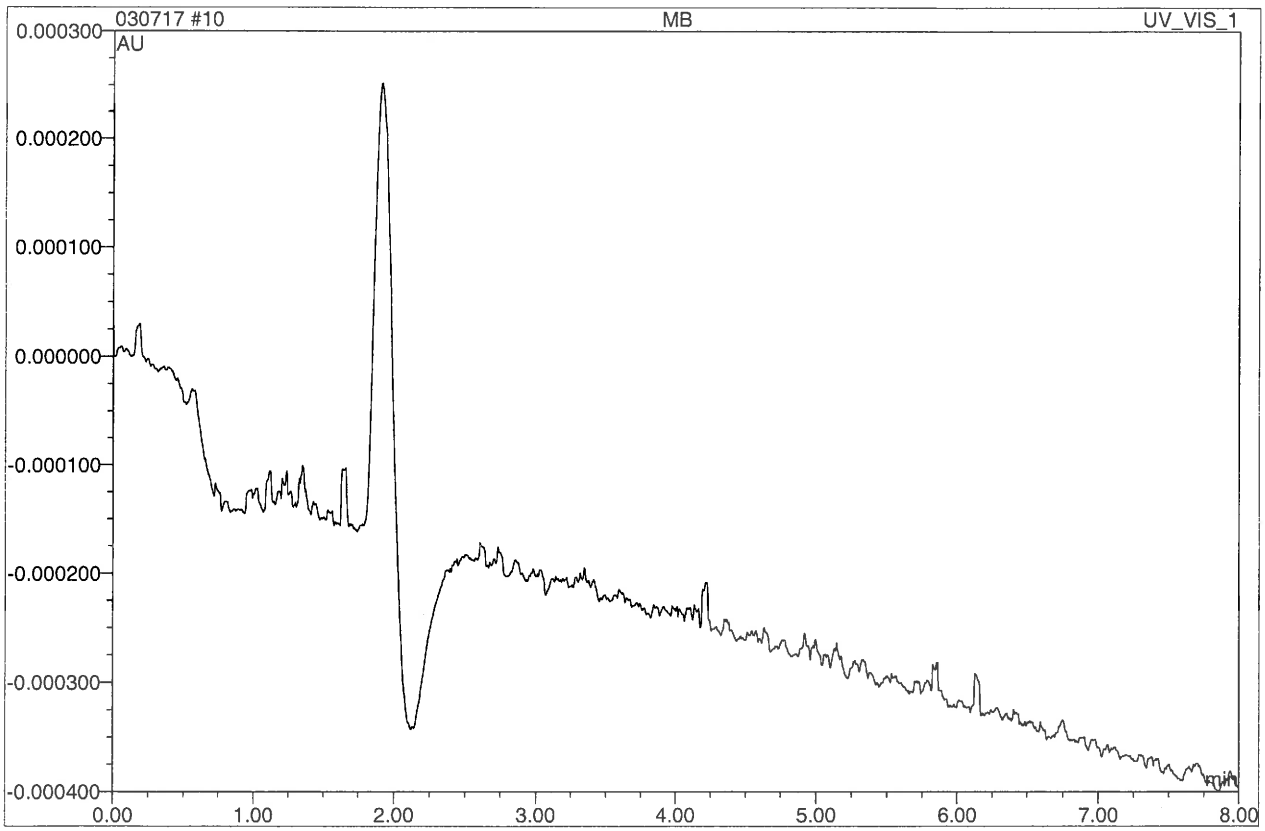


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

10 MB

7199 run by MK

Sample Name:	**MB**	*Injection Volume:*	**1000.0**
Vial Number:	**10**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:02**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

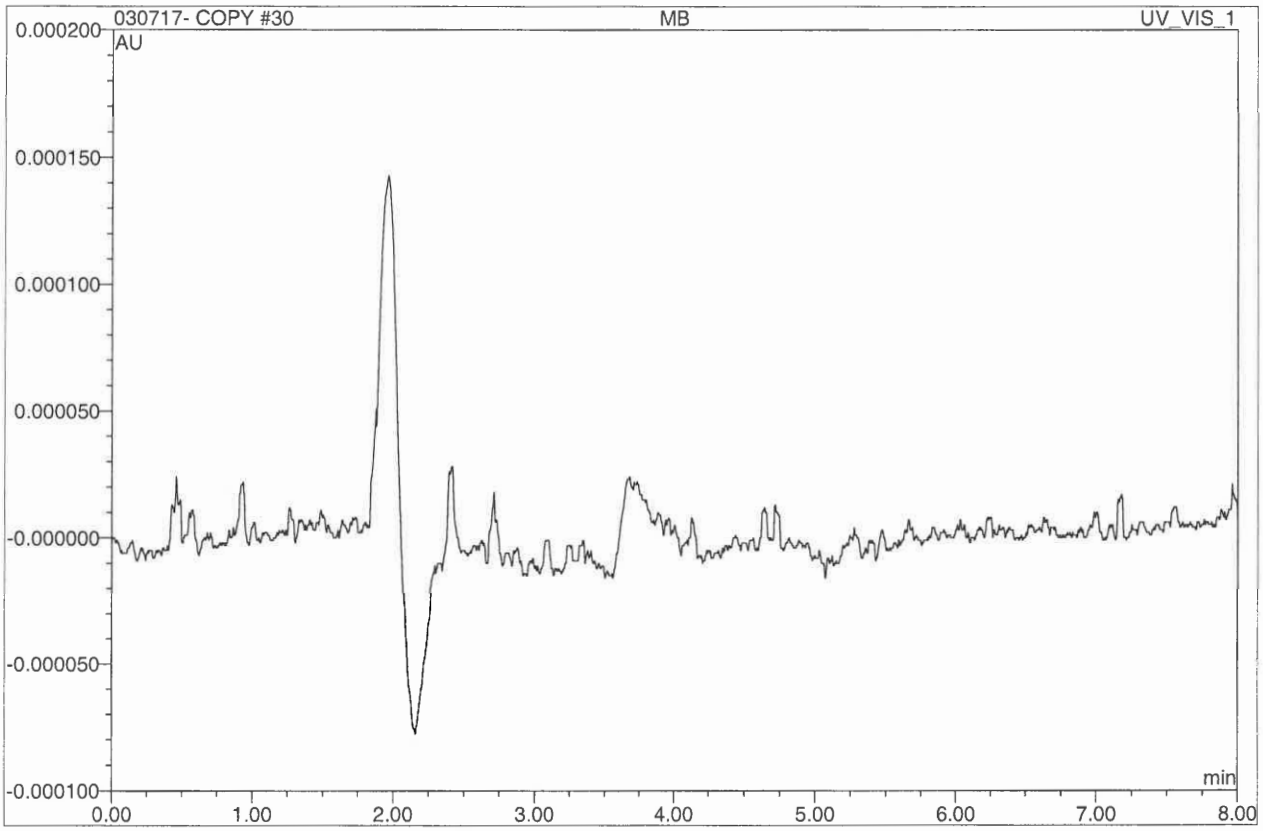


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

30 MB

7199 run by MK

Sample Name:	**MB**	*Injection Volume:*	**1000.0**
Vial Number:	**30**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:37**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

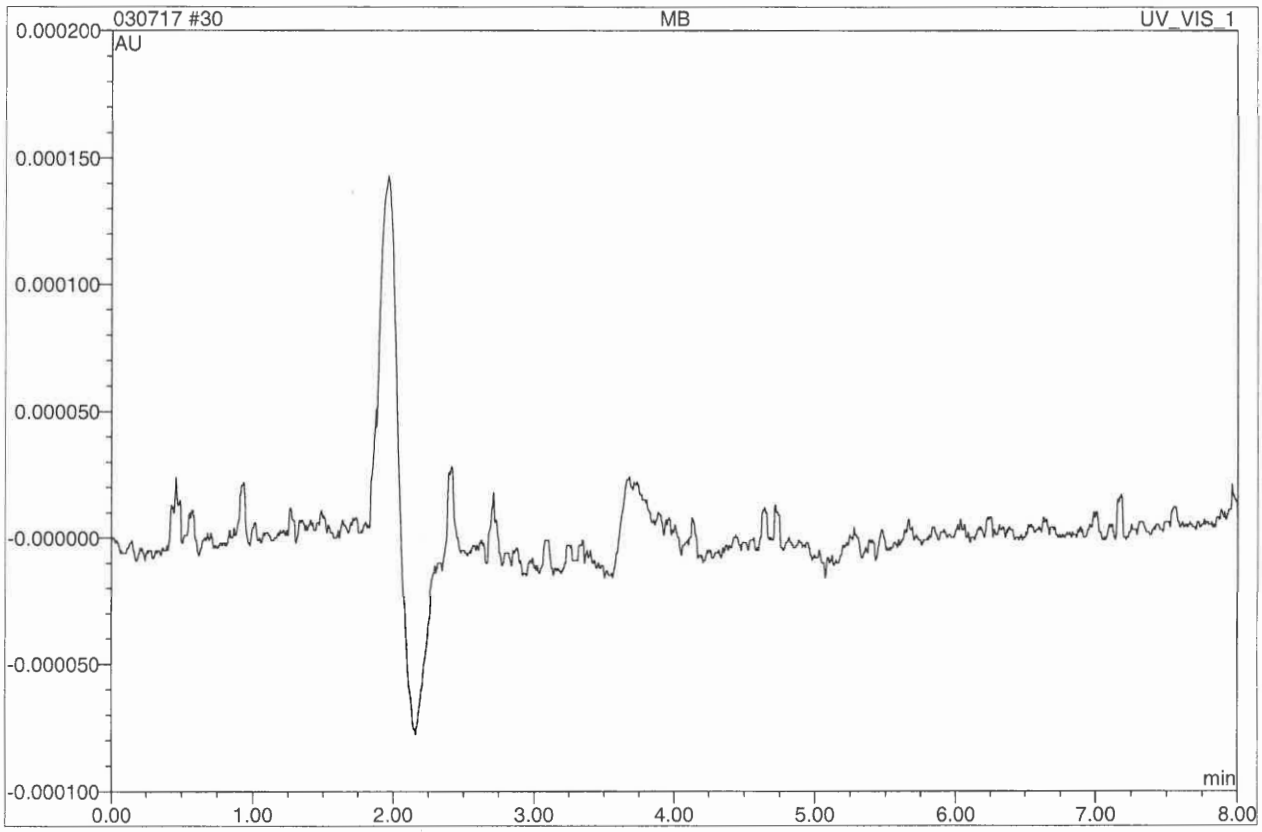


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

30 MB

7199 run by MK

Sample Name:	**MB**	*Injection Volume:*	**1000.0**
Vial Number:	**30**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:37**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86879

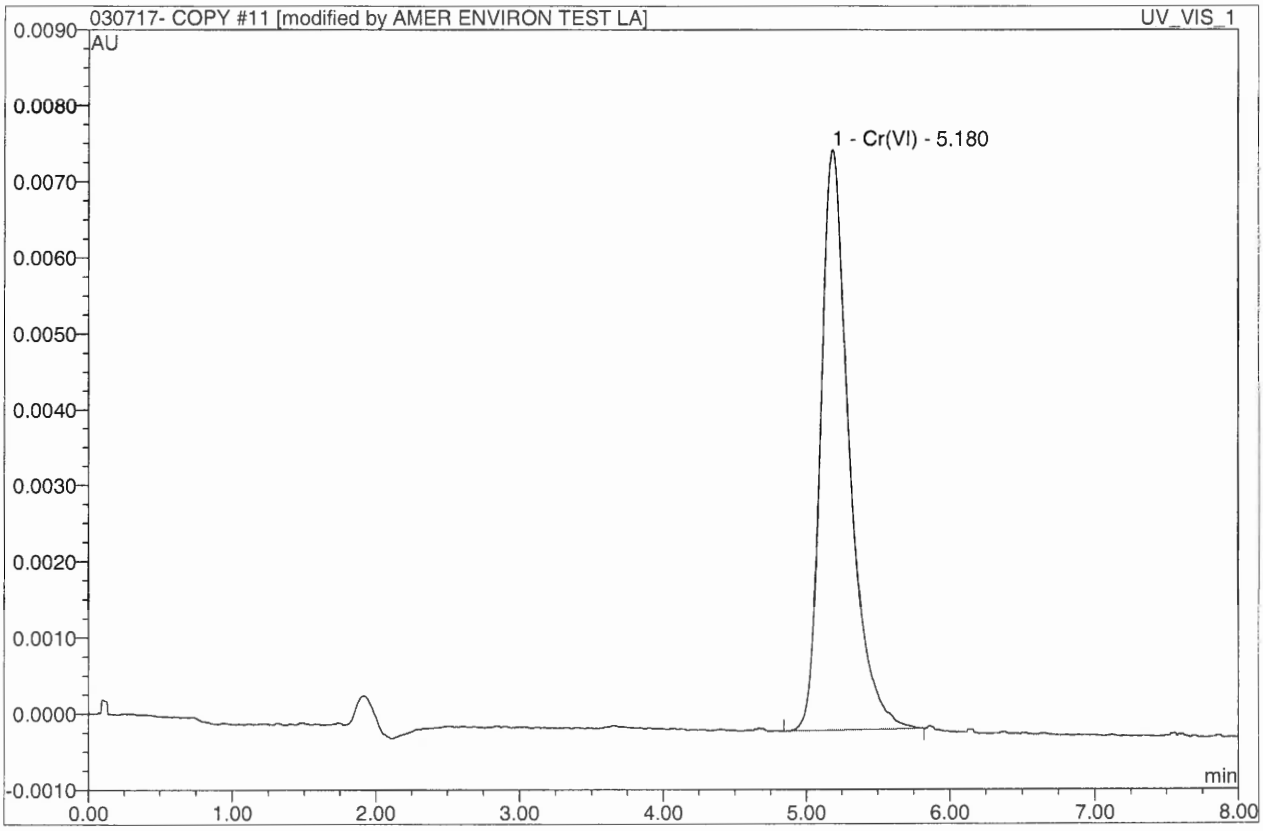
Chromium Hexavalent by 7199

LCS / LCSD

11 LCS 50.0 PPB

7199 run by MK

Sample Name:	**LCS 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**11**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:12**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



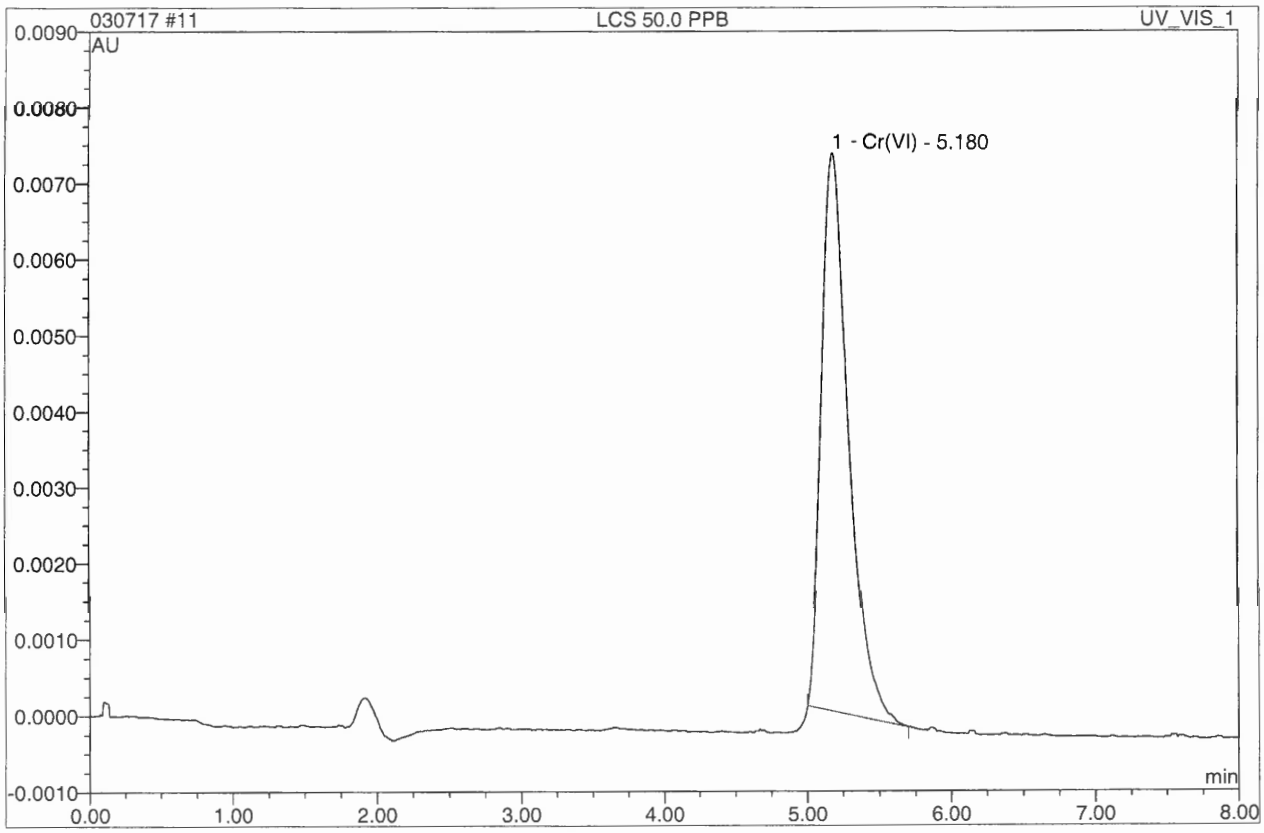
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.18	Cr(VI)	0.0076370	0.0017664	100.00	47.154	99.988
Total:			0.008	0.002	100.00	47.154	

$\frac{47.1}{50} = 94.2\%$ ✓

11 LCS 50.0 PPB

7199 run by MK

Sample Name:	**LCS 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**11**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.955**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:12**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

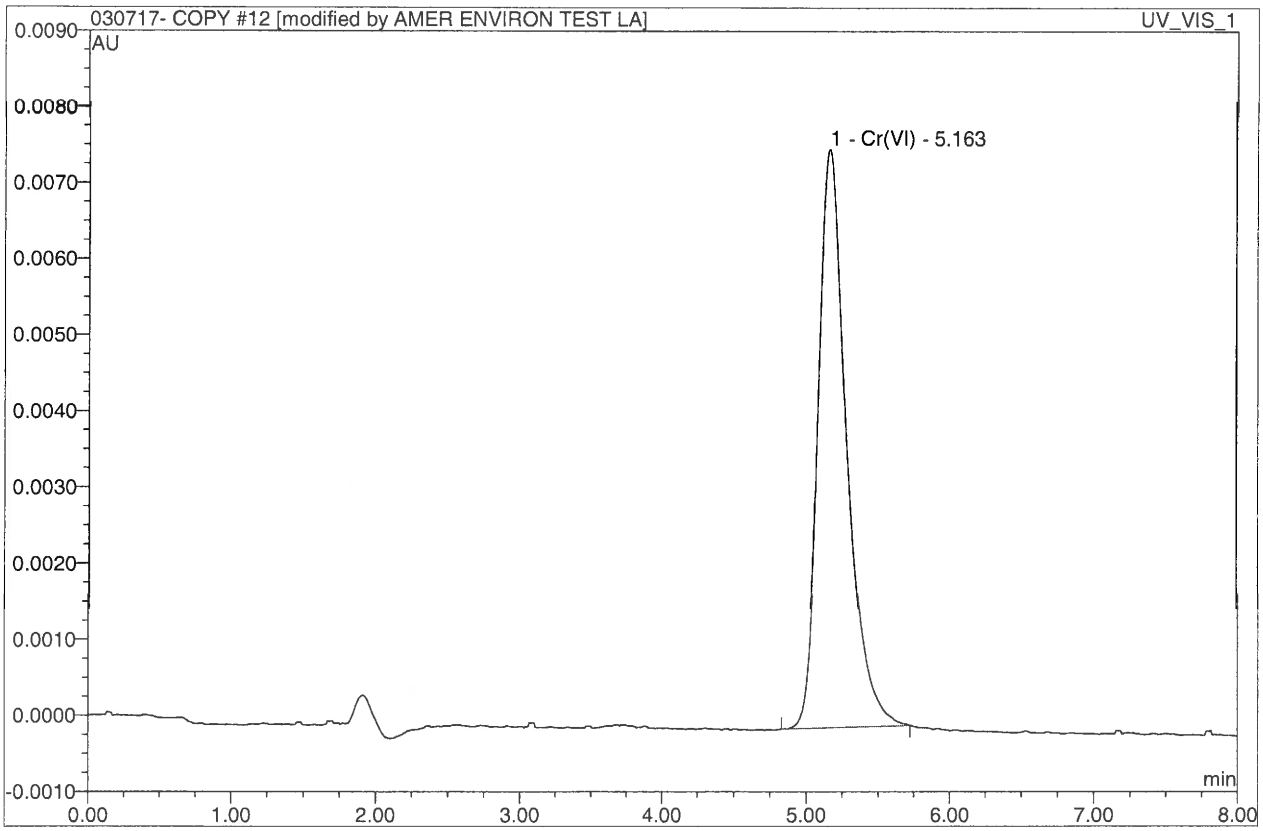


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.18	Cr(VI)	0.0073660	0.0016169	100.00	43.192	99.985
Total:			0.007	0.002	100.00	43.192	

12 LCS DUP 50.0 PPB

7199 run by MK

Sample Name:	**LCS DUP 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**12**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:23**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



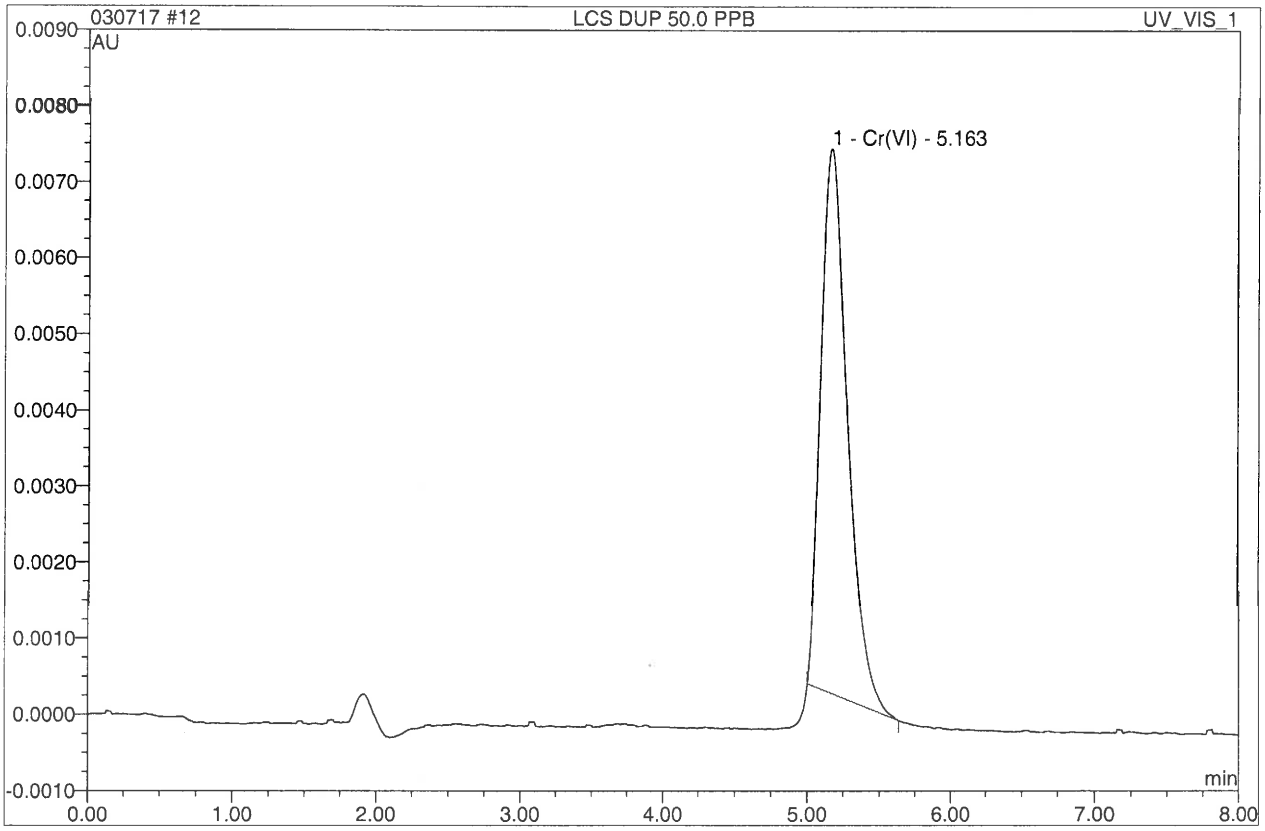
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.16	Cr(VI)	0.0075990	0.0017453	100.00	46.592	99.988
Total:			0.008	0.002	100.00	46.592	

$\frac{46.6}{50} = 93.2\%$ ✓

12 LCS DUP 50.0 PPB

7199 run by MK

Sample Name:	**LCS DUP 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**12**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.955**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:23**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

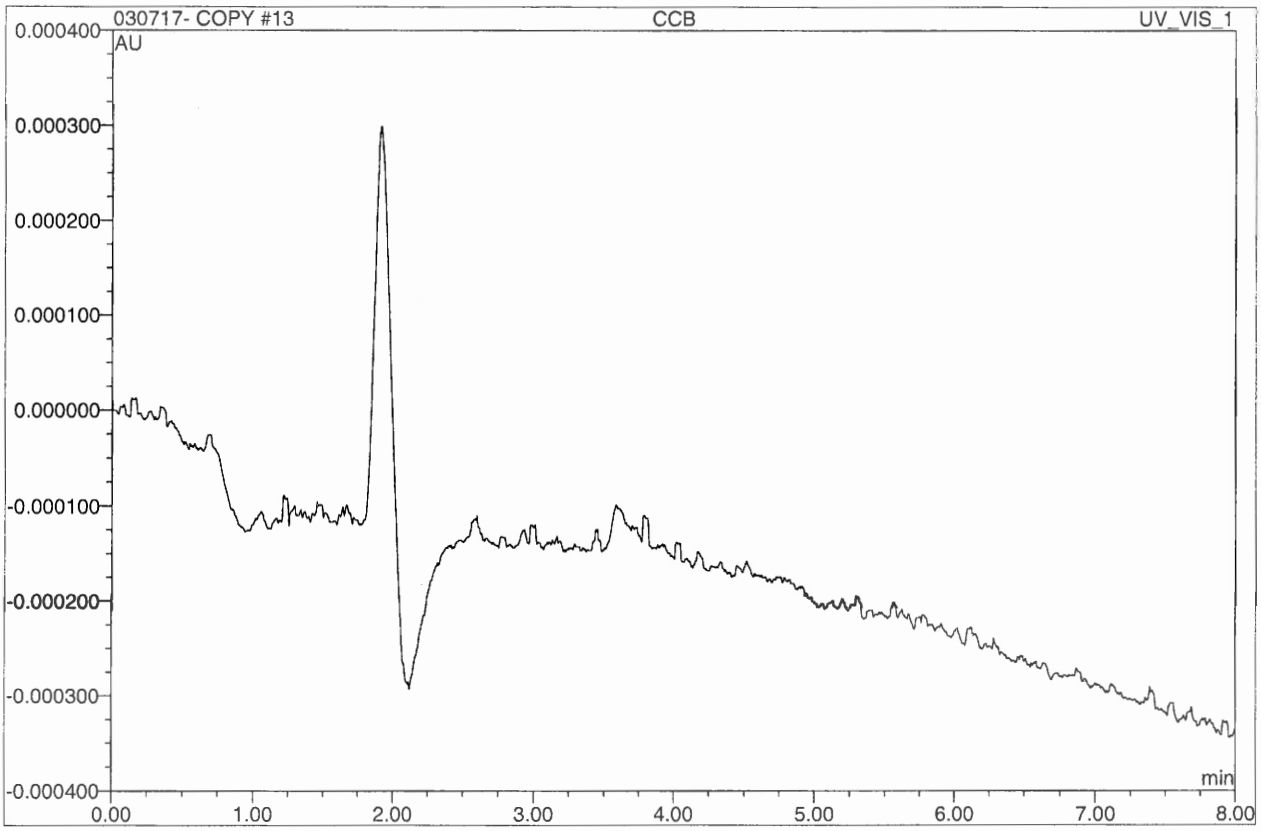


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.16	Cr(VI)	0.0071570	0.0015262	100.00	40.767	99.985
Total:			0.007	0.002	100.00	40.767	

13 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**13**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:33**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

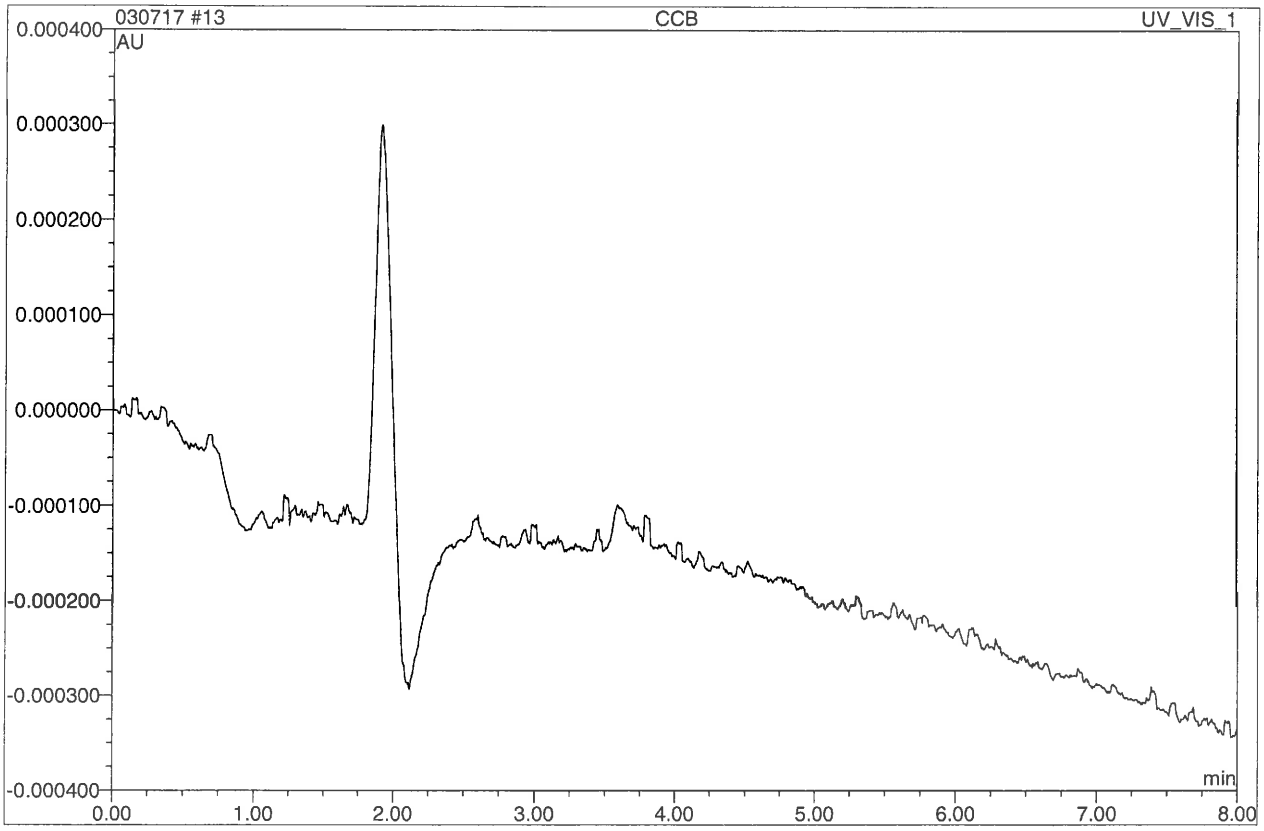


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

13 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**13**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 11:33**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

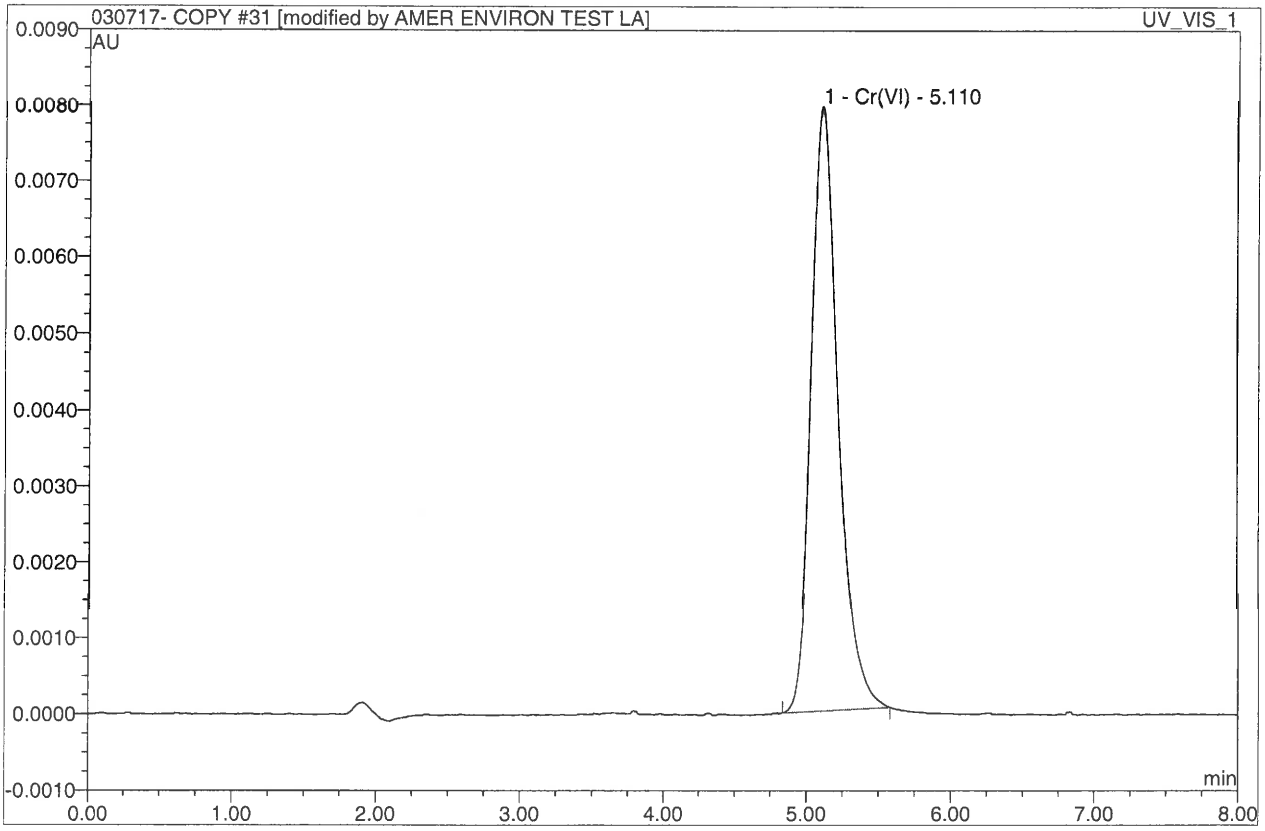


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

31 LCS 50.0 PPB

7199 run by MK

Sample Name:	**LCS 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**31**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:47**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



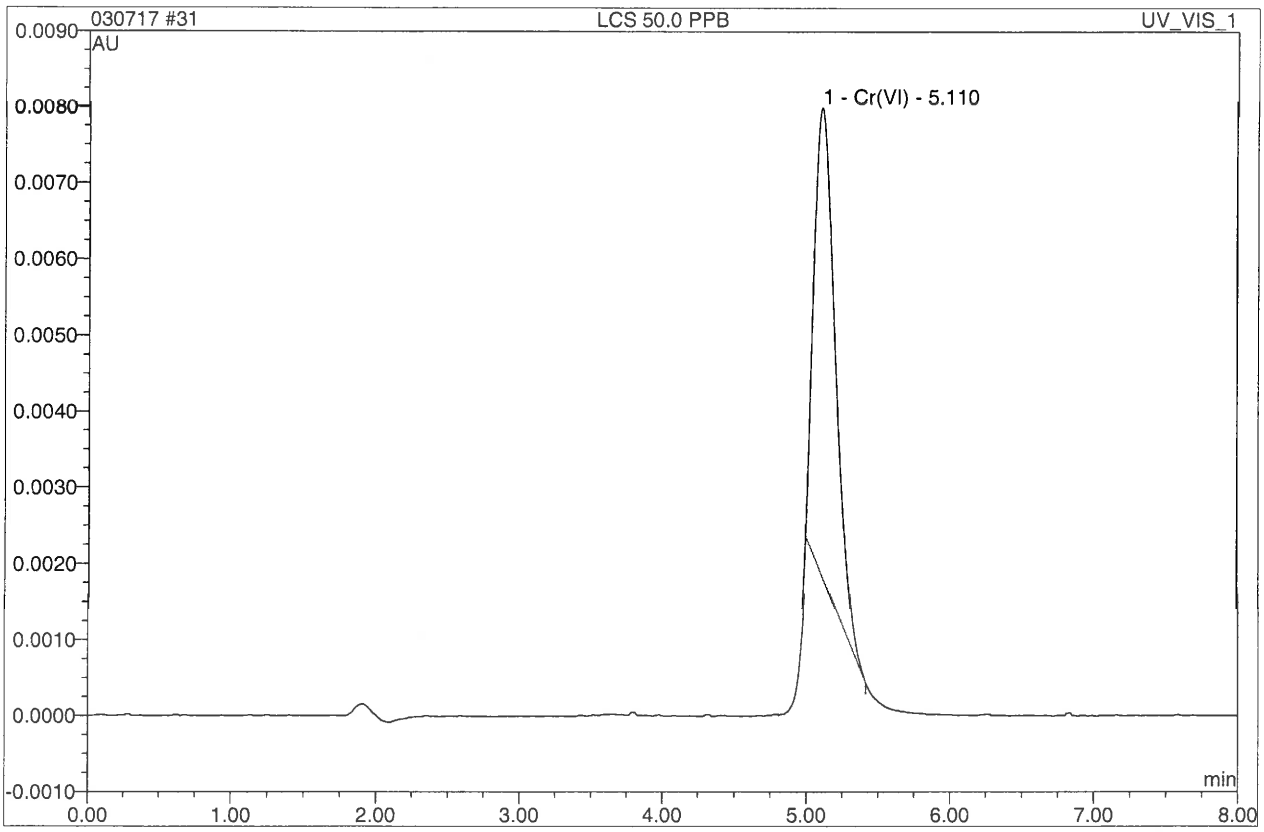
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.11	Cr(VI)	0.0079410	0.0017148	100.00	45.778	99.988
Total:			0.008	0.002	100.00	45.778	

$\frac{45.7}{50} = 91.4\%$ ✓

31 LCS 50.0 PPB

7199 run by MK

Sample Name:	**LCS 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**31**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.955**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:47**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

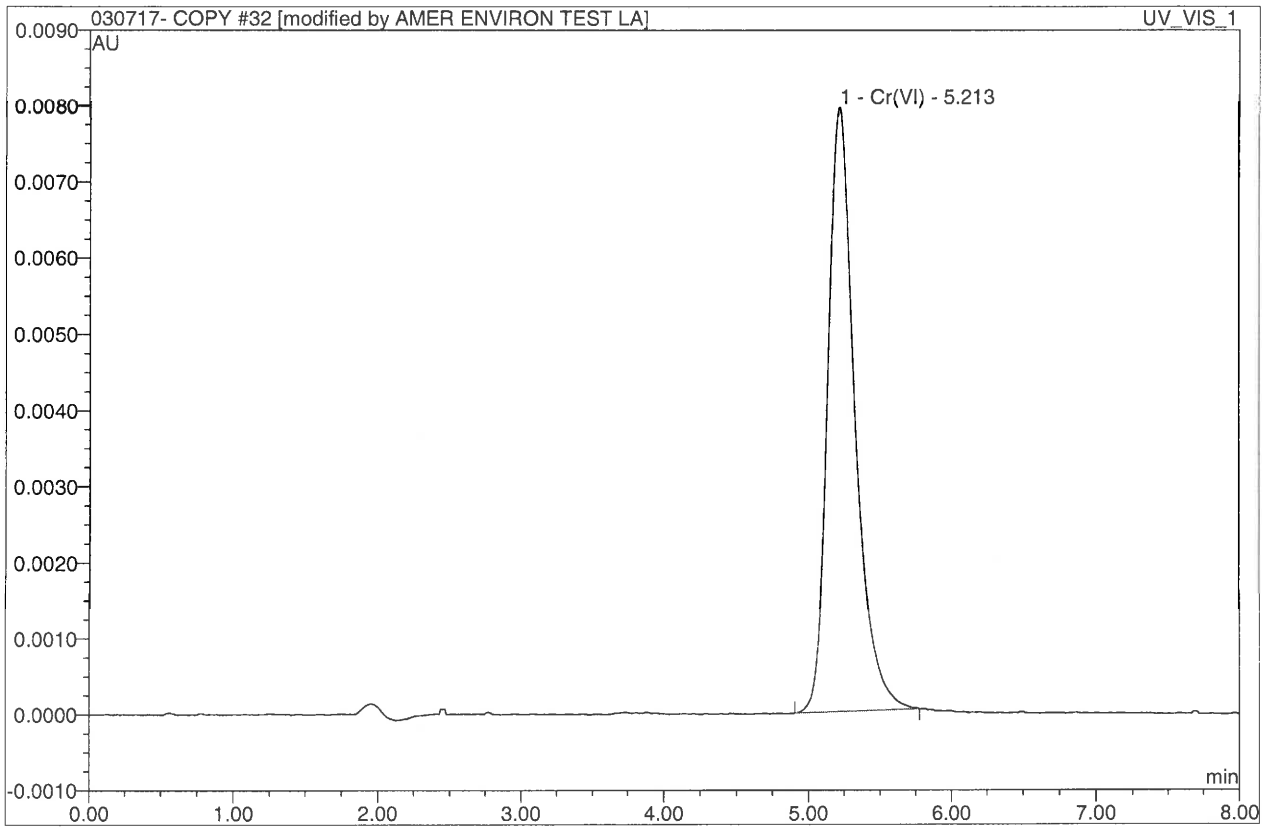


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.11	Cr(VI)	0.0061380	0.0010561	100.00	28.212	99.985
Total:			0.006	0.001	100.00	28.212	

32 LCS DUP 50.0 PPB

7199 run by MK

Sample Name:	**LCS DUP 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**32**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:58**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



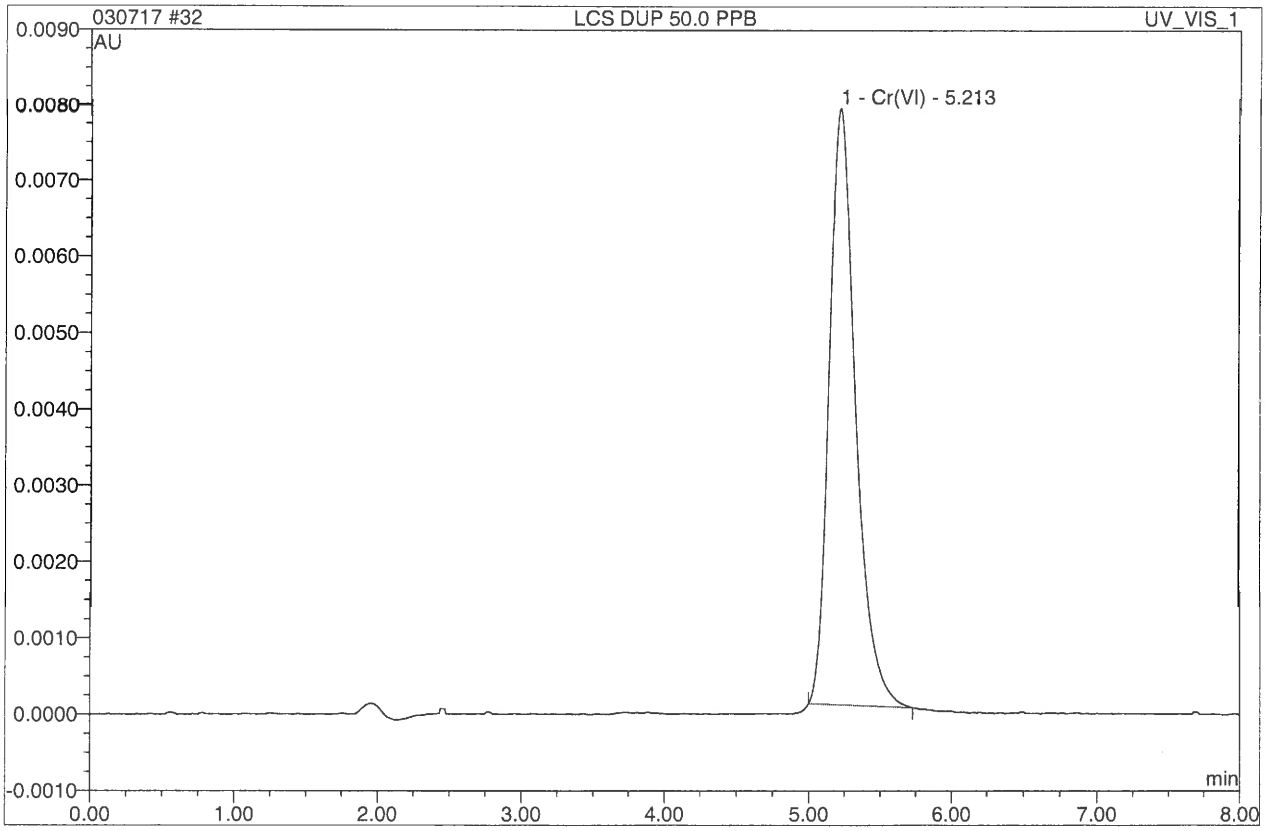
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.21	Cr(VI)	0.0079420	0.0017443	100.00	46.565	99.988
Total:			0.008	0.002	100.00	46.565	

$\frac{46.5}{50} = 93.0$ ✓

32 LCS DUP 50.0 PPB

7199 run by MK

Sample Name:	**LCS DUP 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**32**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.955**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 14:58**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

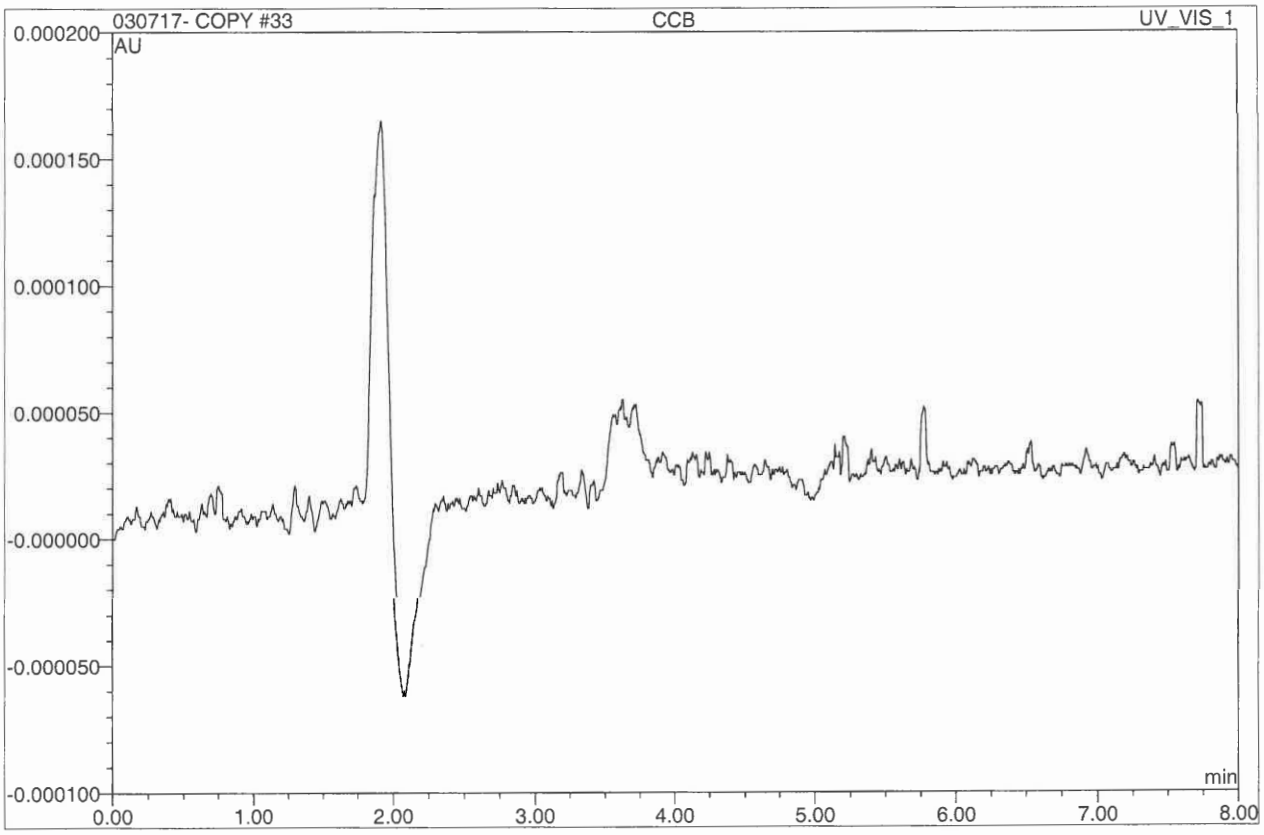


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.21	Cr(VI)	0.0078520	0.0016897	100.00	45.137	99.985
Total:			0.008	0.002	100.00	45.137	

33 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**33**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:08**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

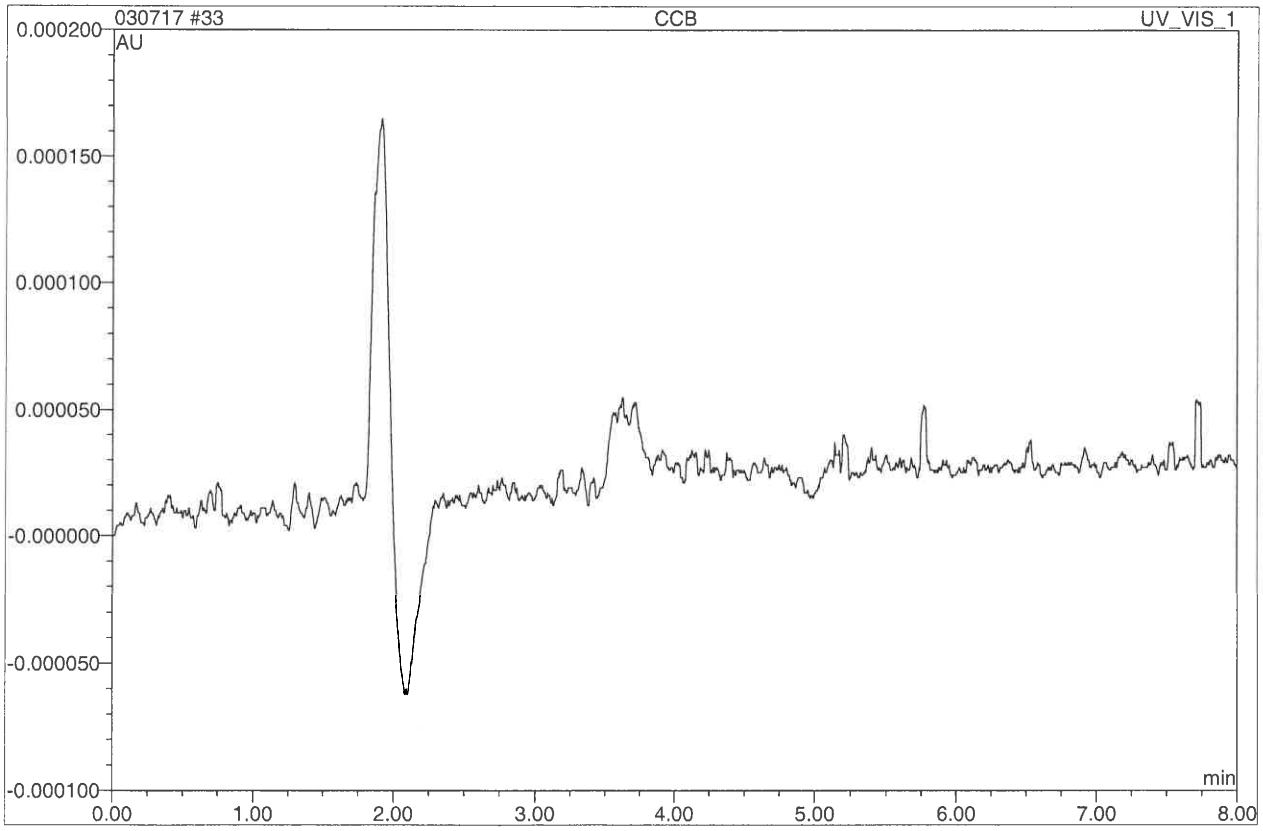


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

33 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**33**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:08**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86879

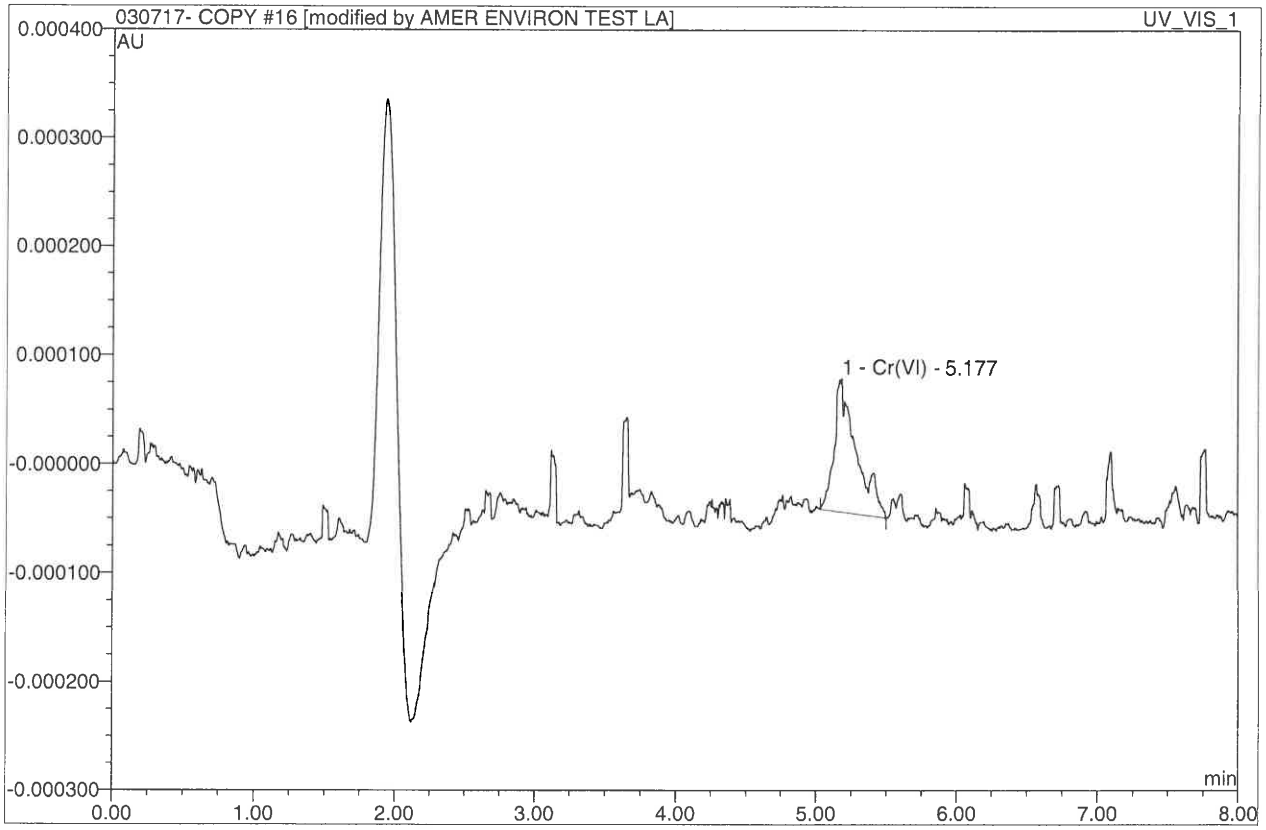
Chromium Hexavalent by 7199

MS / MSD

16 S-86879.01 MS 50.0 PPB

7199 run by MK

Sample Name:	**S-86879.01 MS 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**16**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 12:05**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



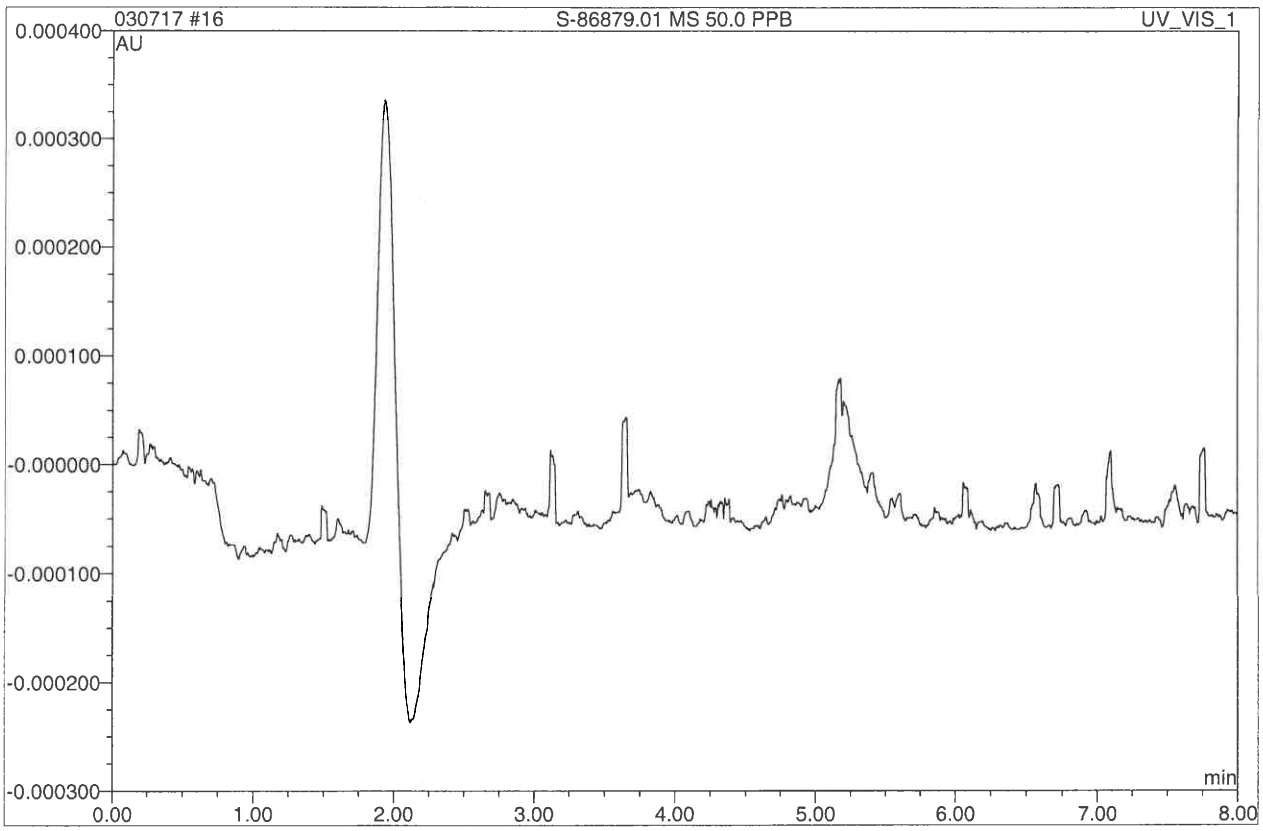
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.18	Cr(VI)	0.0001220	0.0000221	100.00	0.590	99.988
Total:			0.000	0.000	100.00	0.590	

ms failed due to sample matrix interference ✓

16 S-86879.01 MS 50.0 PPB

7199 run by MK

Sample Name:	**S-86879.01 MS 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**16**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 12:05**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

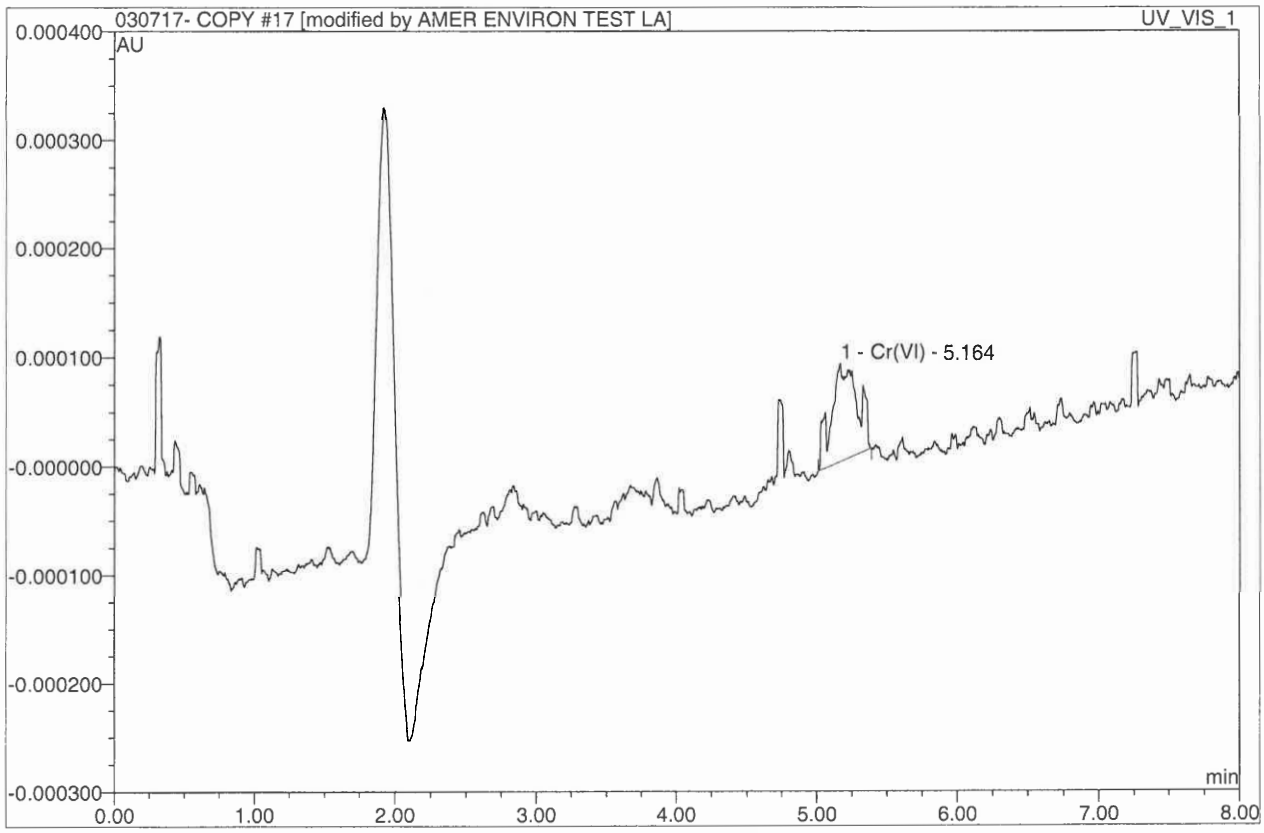


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

17 S-86879.01 MSD 50.0 PPB

7199 run by MK

Sample Name:	**S-86879.01 MSD 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**17**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 12:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



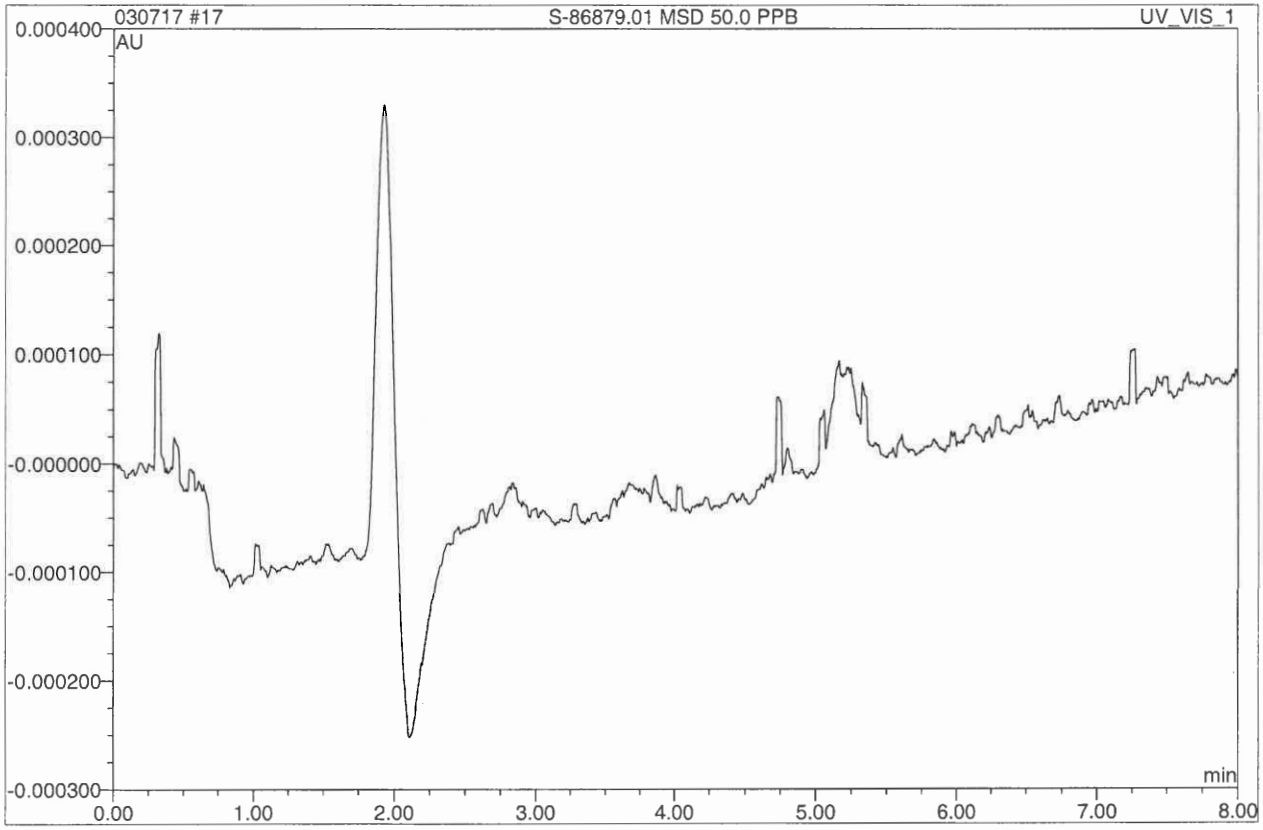
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.16	Cr(VI)	0.0000910	0.0000194	100.00	0.518	99.988
Total:			0.000	0.000	100.00	0.518	

msd failed
due to sample
matrix interference

17 S-86879.01 MSD 50.0 PPB

7199 run by MK

Sample Name:	**S-86879.01 MSD 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**17**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 12:15**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

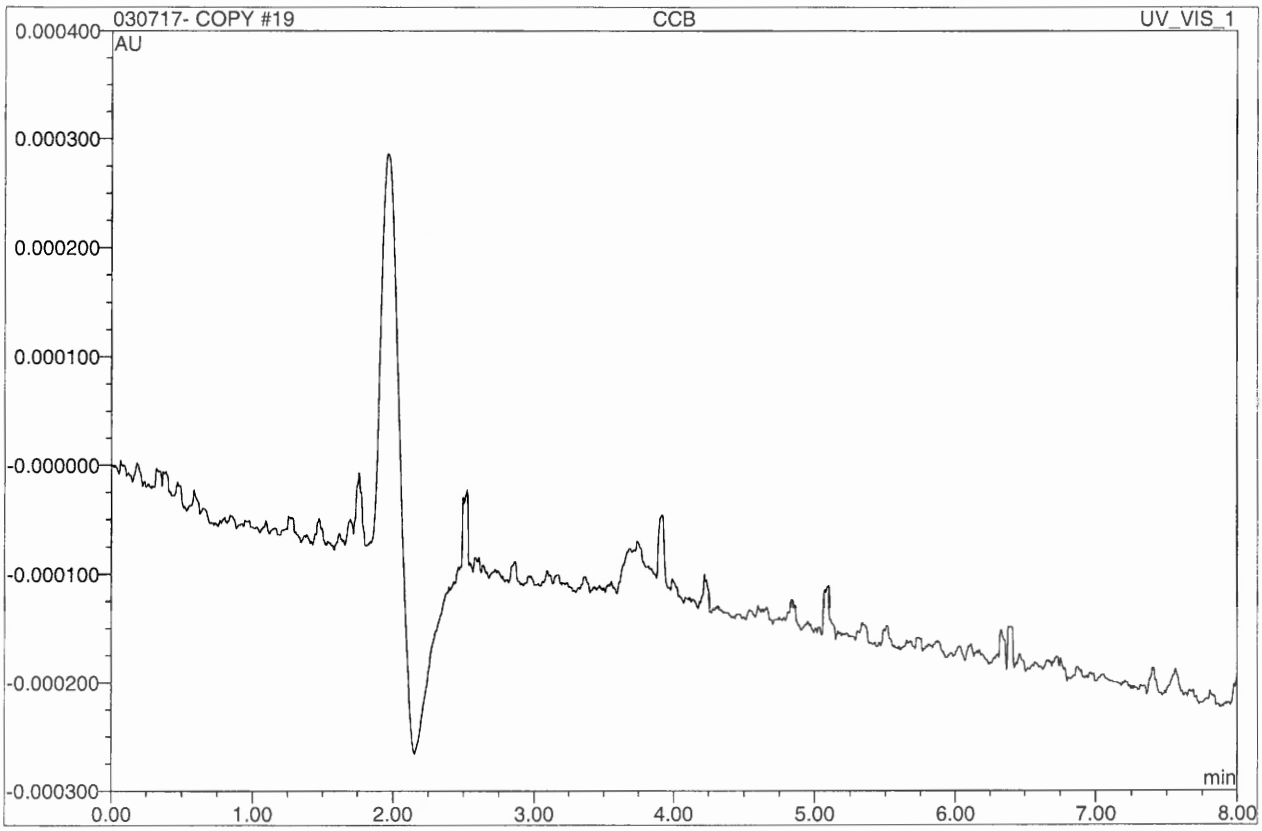


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

19 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**19**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 12:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

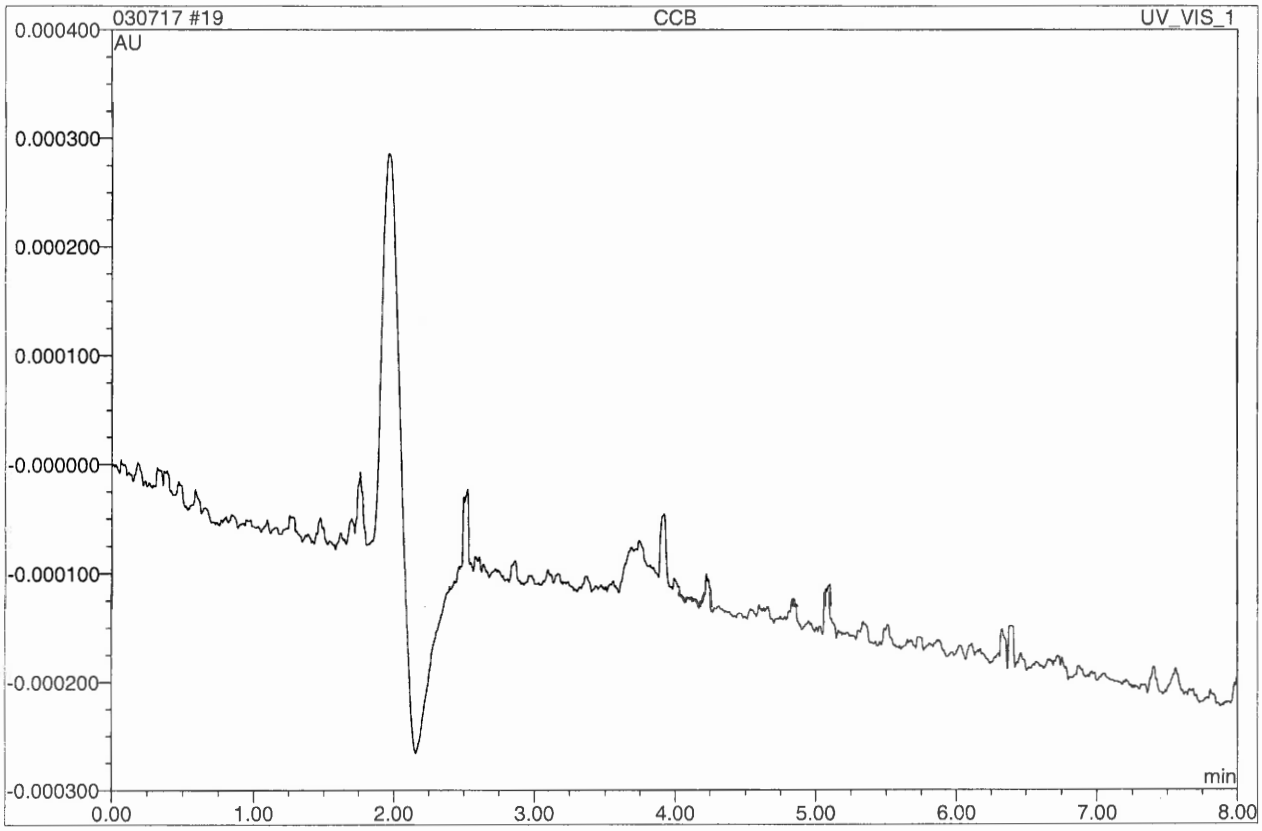


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

19 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**19**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 12:36**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

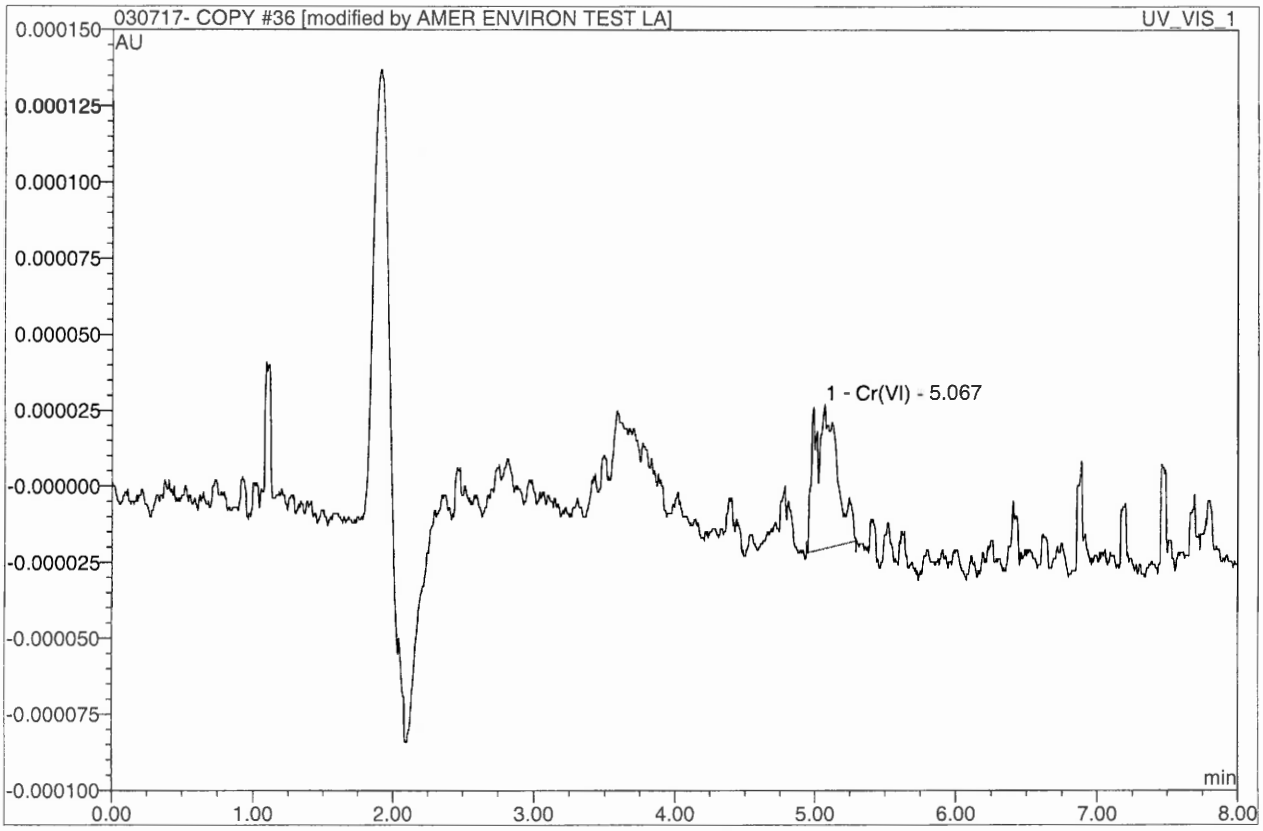


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

36 S-86879.11 MS 50.0PPB

7199 run by MK

Sample Name:	**S-86879.11 MS 50.0PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**36**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:40**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



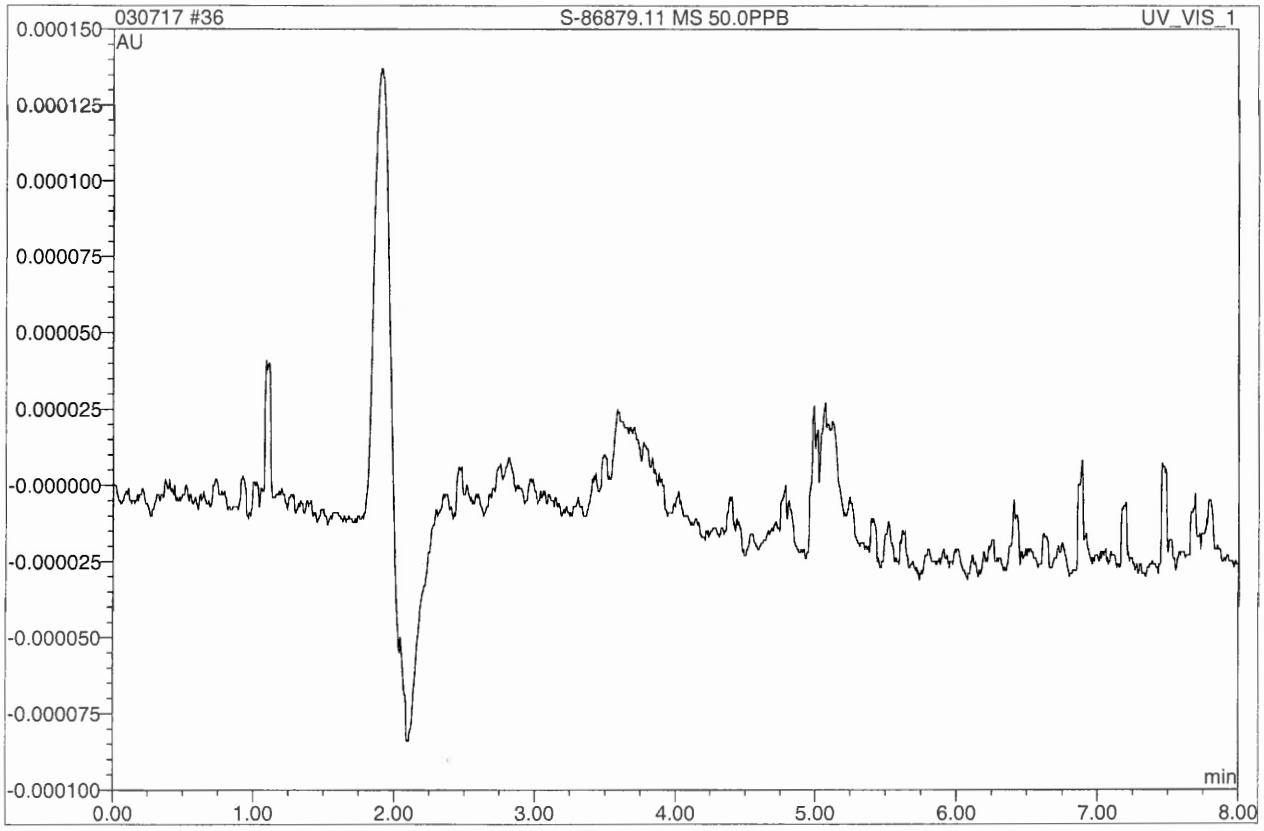
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.07	Cr(VI)	0.0000480	0.0000089	100.00	0.238	99.988
Total:			0.000	0.000	100.00	0.238	

due to sample matrix
interference ms failed
✓

36 S-86879.11 MS 50.0PPB

7199 run by MK

Sample Name:	**S-86879.11 MS 50.0PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**36**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:40**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

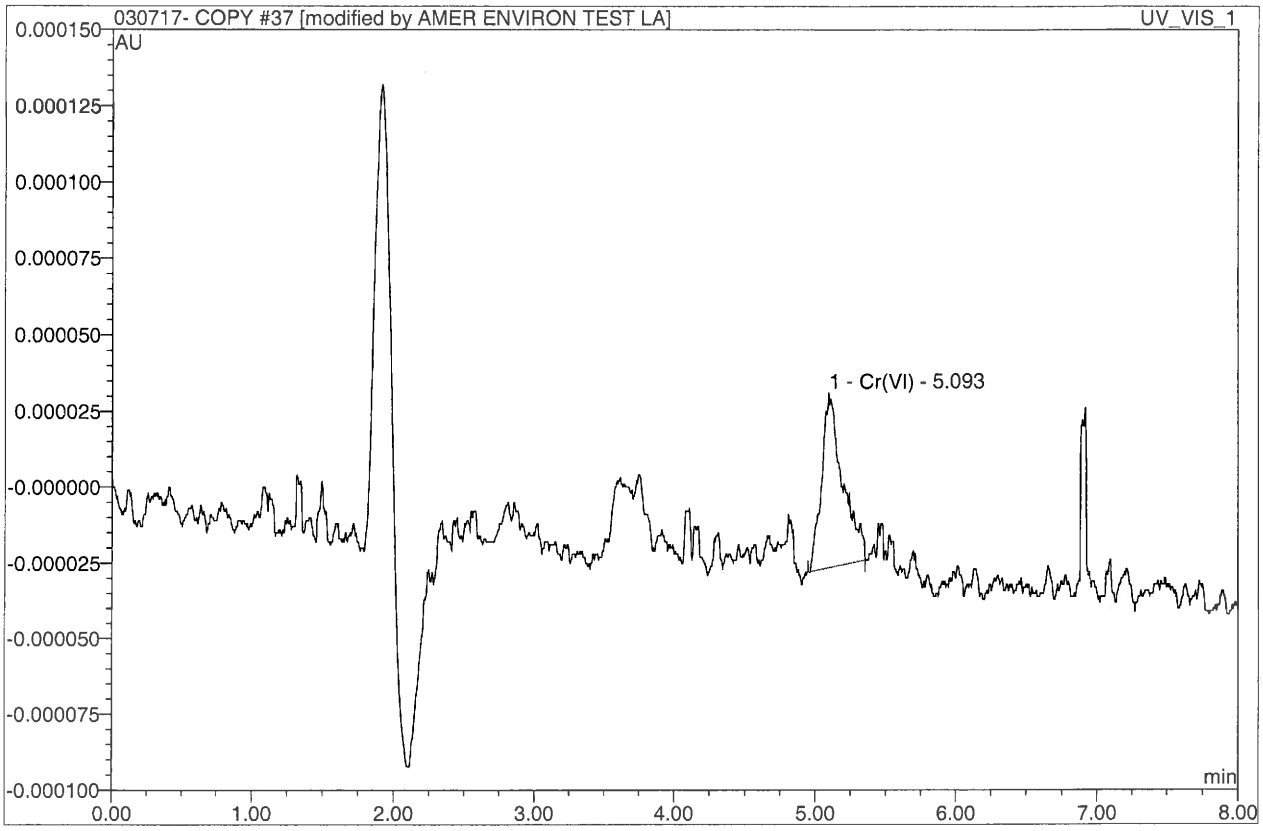


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

37 S-86879.11 MSD 50.0 PPB

7199 run by MK

Sample Name:	**S-86879.11 MSD 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**37**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:50**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



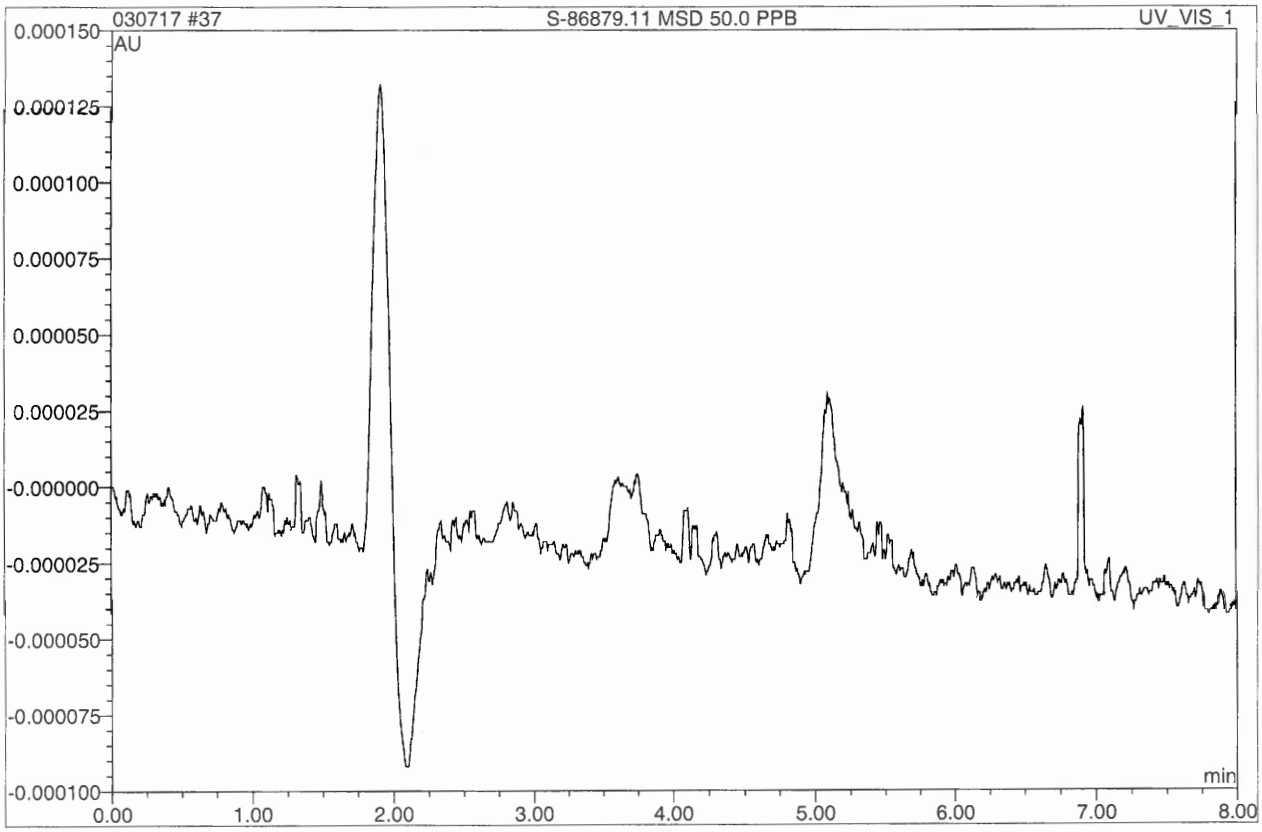
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.09	Cr(VI)	0.0000580	0.0000099	100.00	0.264	99.988
Total:			0.000	0.000	100.00	0.264	

due to sample matrix
interference mod failed
✓

37 S-86879.11 MSD 50.0 PPB

7199 run by MK

Sample Name:	**S-86879.11 MSD 50.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**37**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 15:50**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

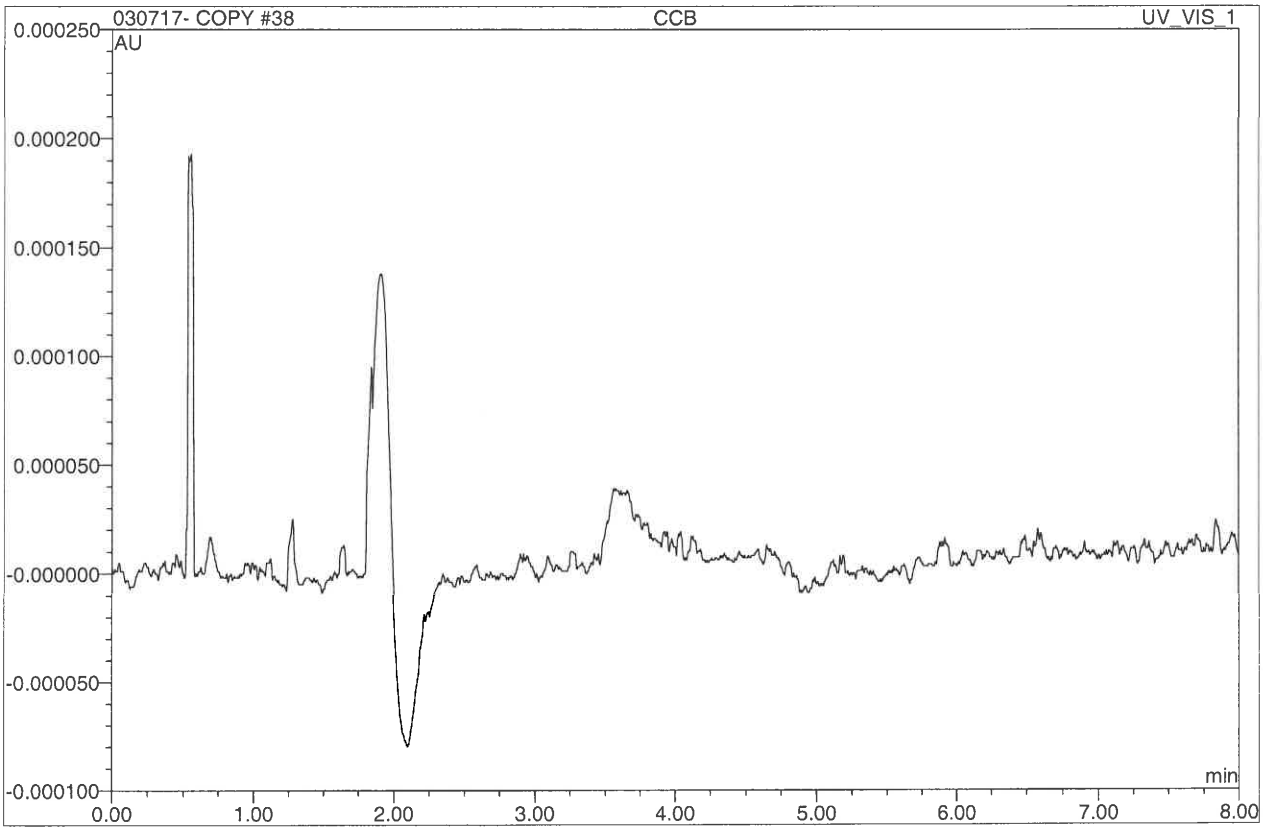


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

38 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**38**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:01**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

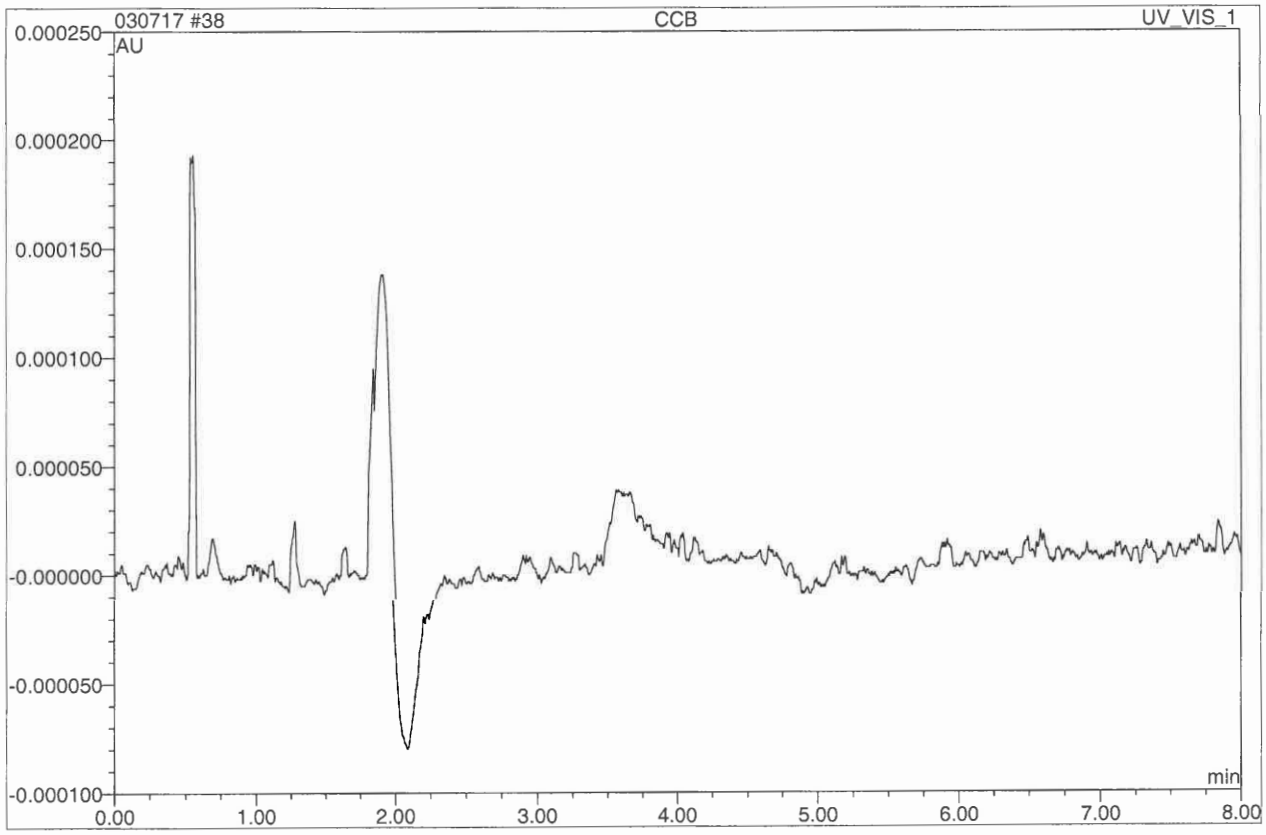


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

38 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**38**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 16:01**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86879

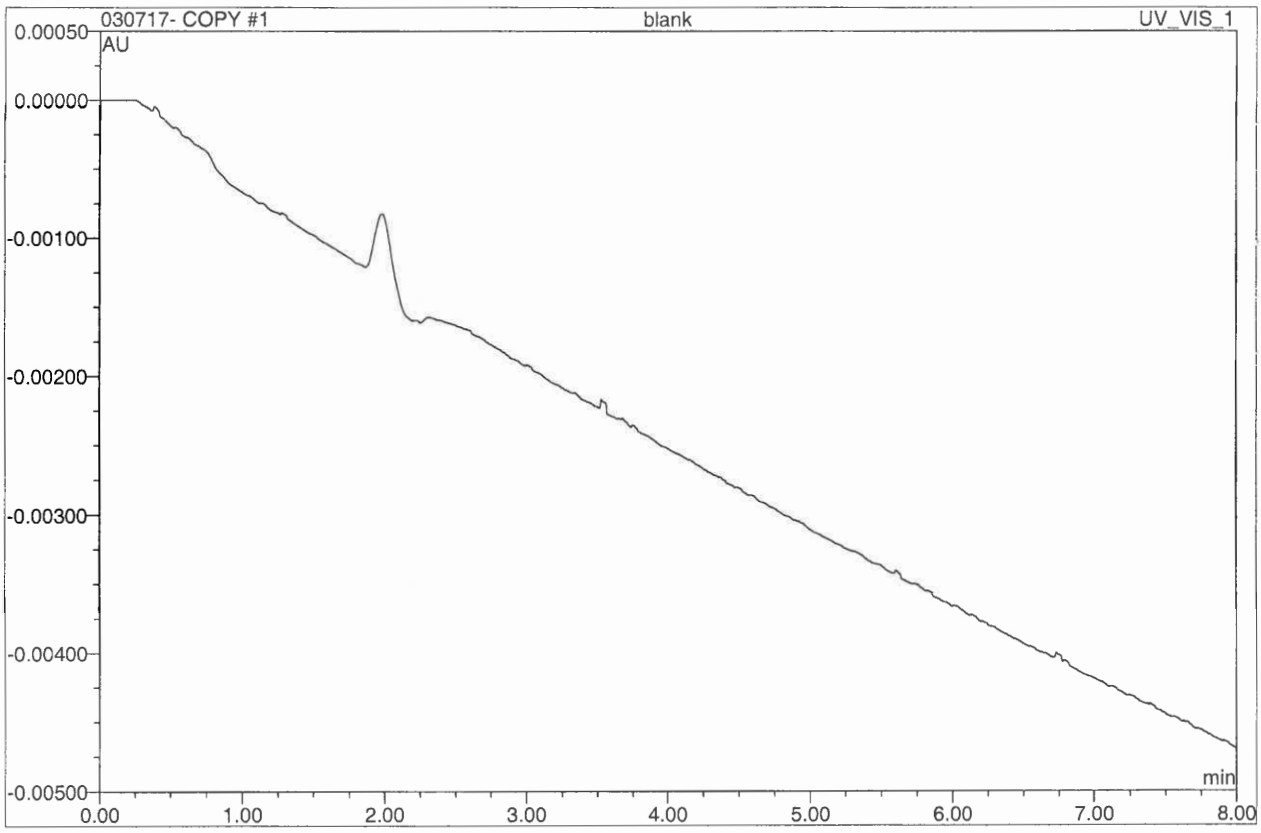
Chromium Hexavalent by 7199

INITIAL CALIBRATION (IC) DATA AND GRAPH

1 blank

7199 run by MK

Sample Name:	**blank**	*Injection Volume:*	**1000.0**
Vial Number:	**1**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 9:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

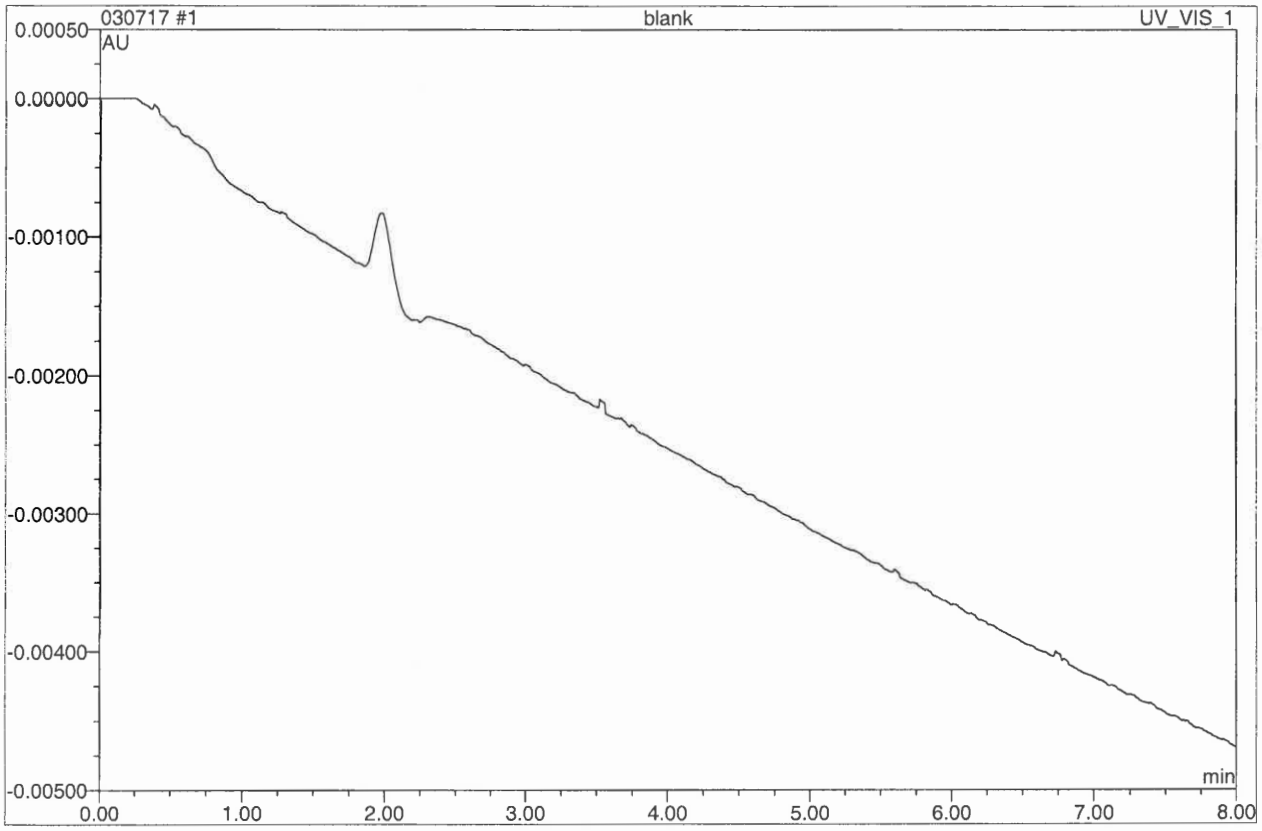


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

1 blank

7199 run by MK

Sample Name:	**blank**	*Injection Volume:*	**1000.0**
Vial Number:	**1**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 9:27**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

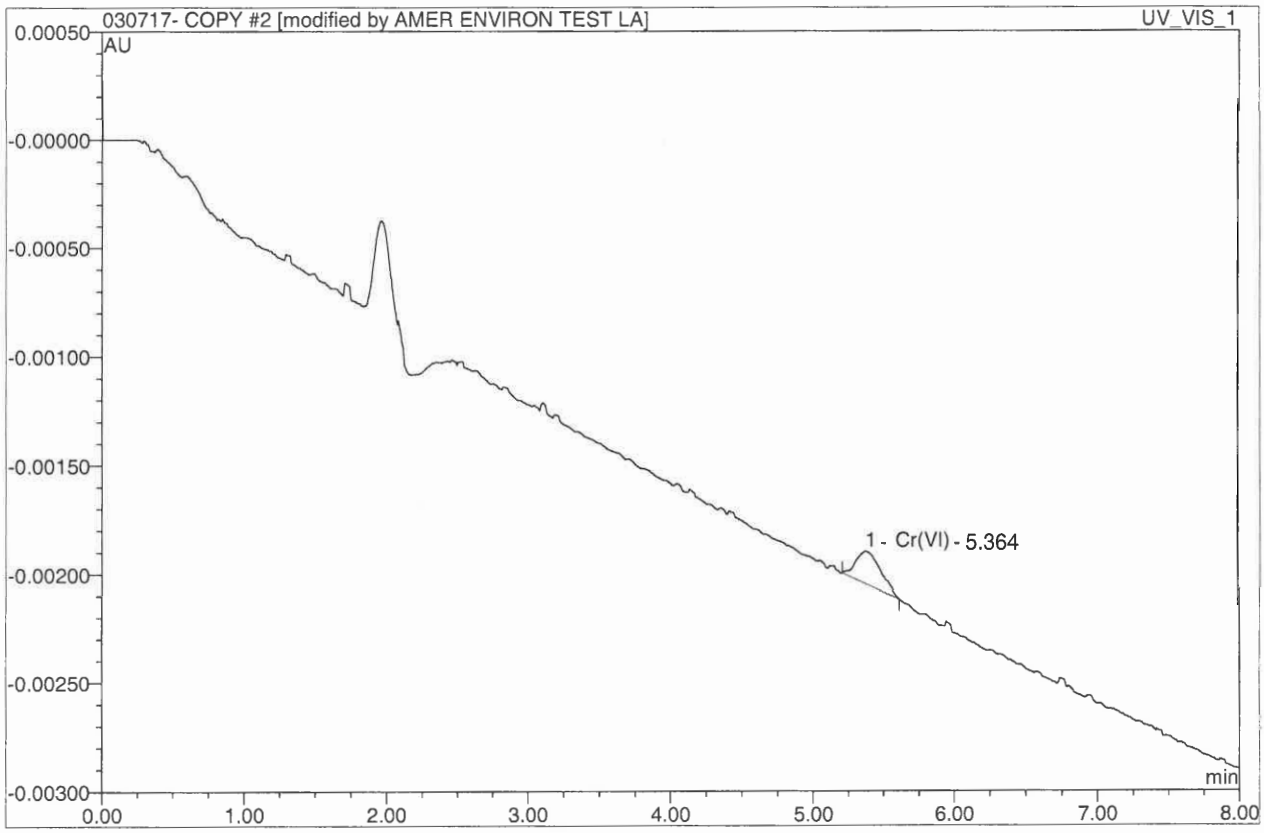


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

2 1.000 ppb

7199 run by MK

Sample Name:	**1.000 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**2**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 9:38**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

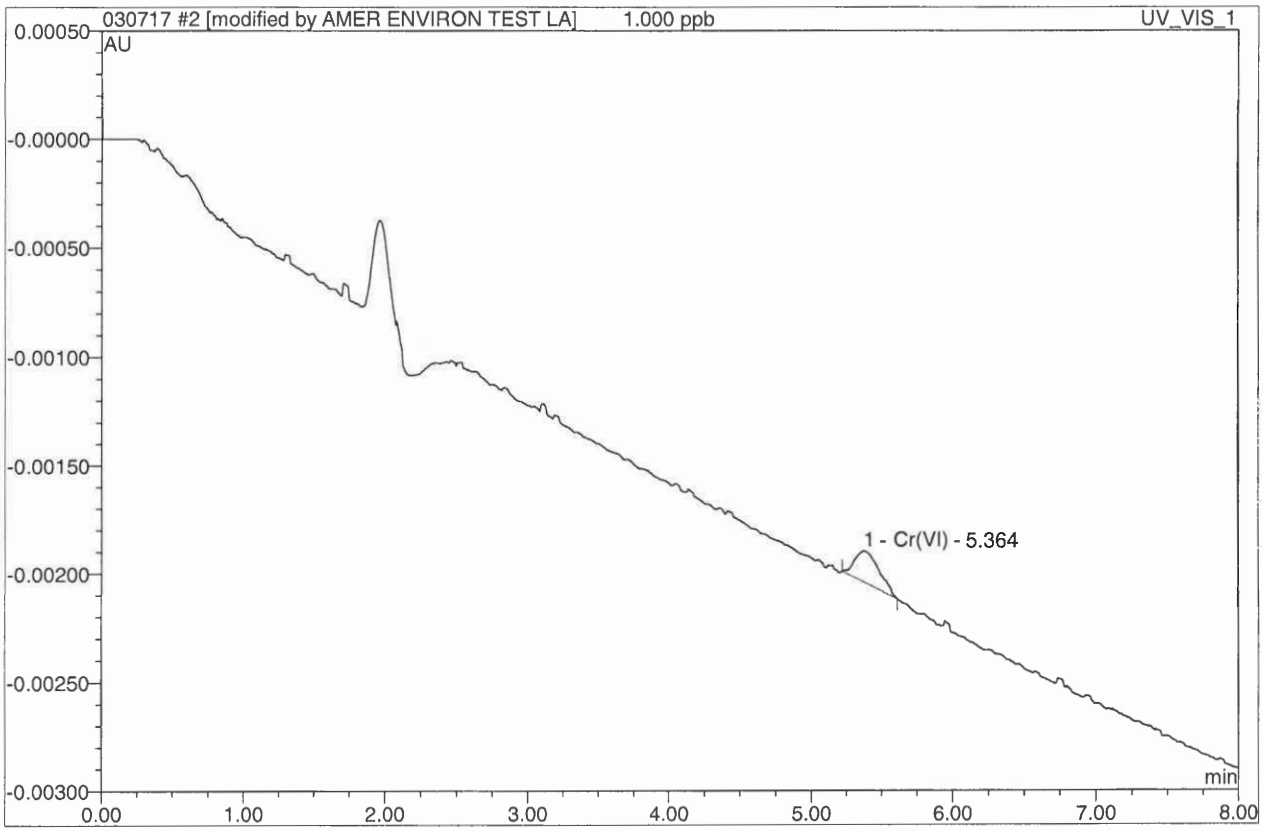


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.36	Cr(VI)	0.0001480	0.0000310	100.00	0.826	99.988
Total:			0.000	0.000	100.00	0.826	

2 1.000 ppb

7199 run by MK

Sample Name:	**1.000 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**2**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.975**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 9:38**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

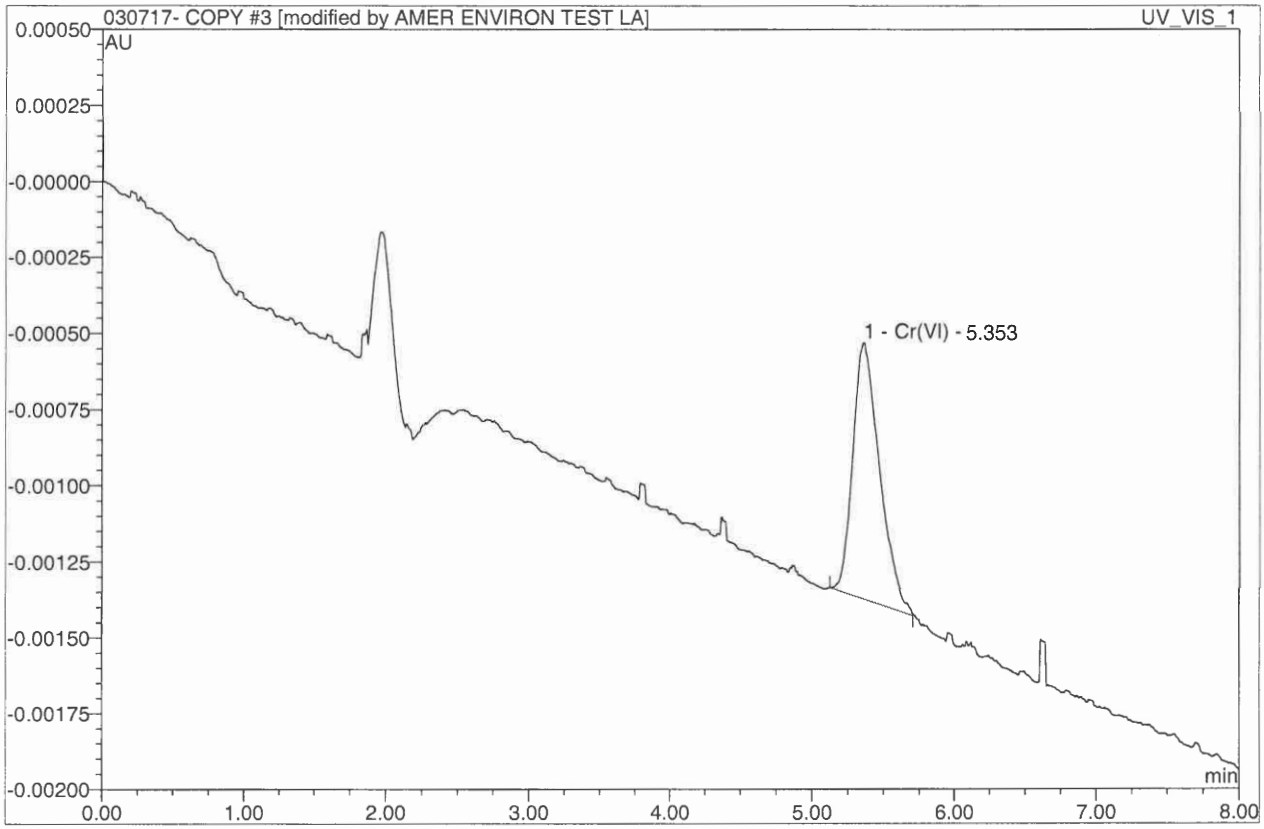


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.36	Cr(VI)	0.0001430	0.0000291	100.00	0.777	99.988
Total:			0.000	0.000	100.00	0.777	

3 5.000 ppb

7199 run by MK

Sample Name:	**5.000 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**3**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 9:48**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

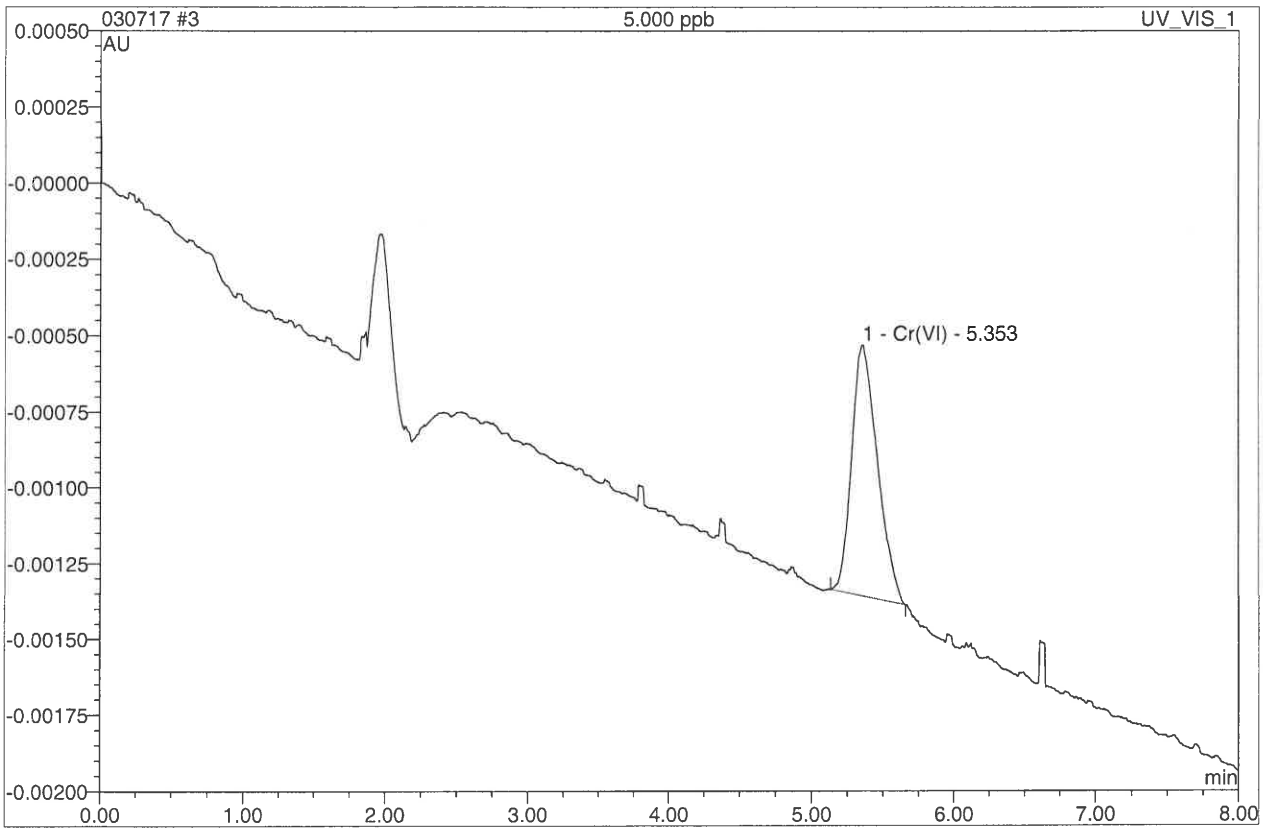


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.35	Cr(VI)	0.0008400	0.0001817	100.00	4.851	99.988
Total:			0.001	0.000	100.00	4.851	

3 5.000 ppb

7199 run by MK

Sample Name:	**5.000 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**3**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.973**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 9:48**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

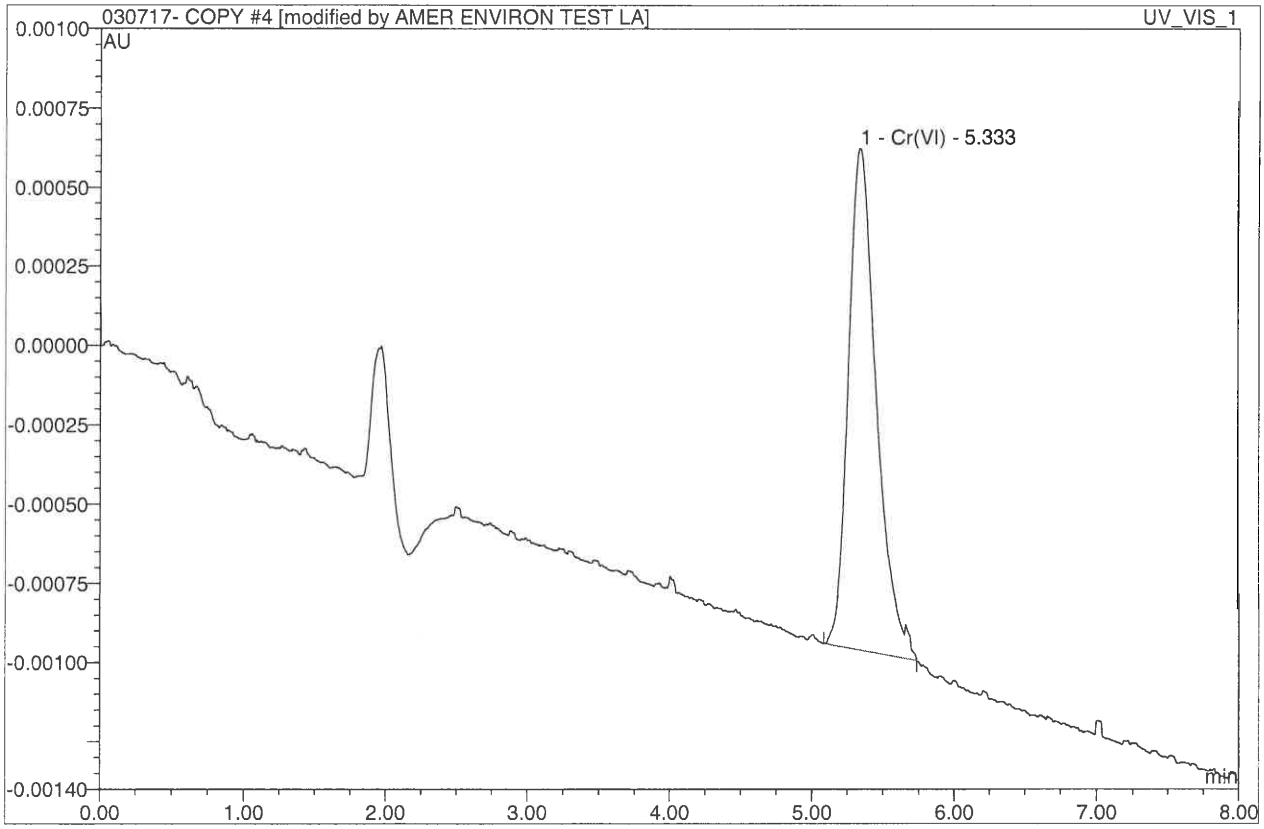


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.35	Cr(VI)	0.0008260	0.0001720	100.00	4.591	99.988
Total:			0.001	0.000	100.00	4.591	

4 10.0 ppb

7199 run by MK

Sample Name:	**10.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**4**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 9:59**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

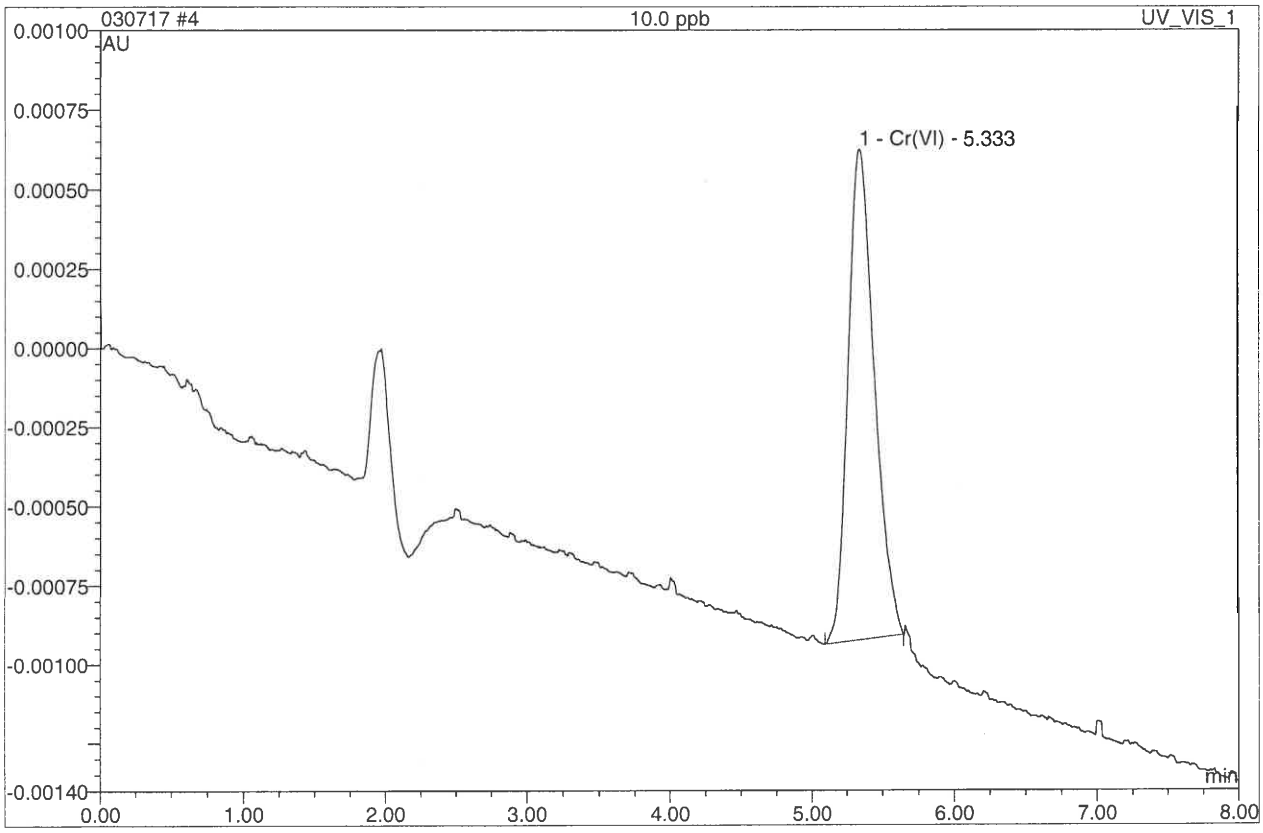


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.33	Cr(VI)	0.0015830	0.0003598	100.00	9.606	99.988
Total:			0.002	0.000	100.00	9.606	

4 10.0 ppb

7199 run by MK

Sample Name:	**10.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**4**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.957**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 9:59**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

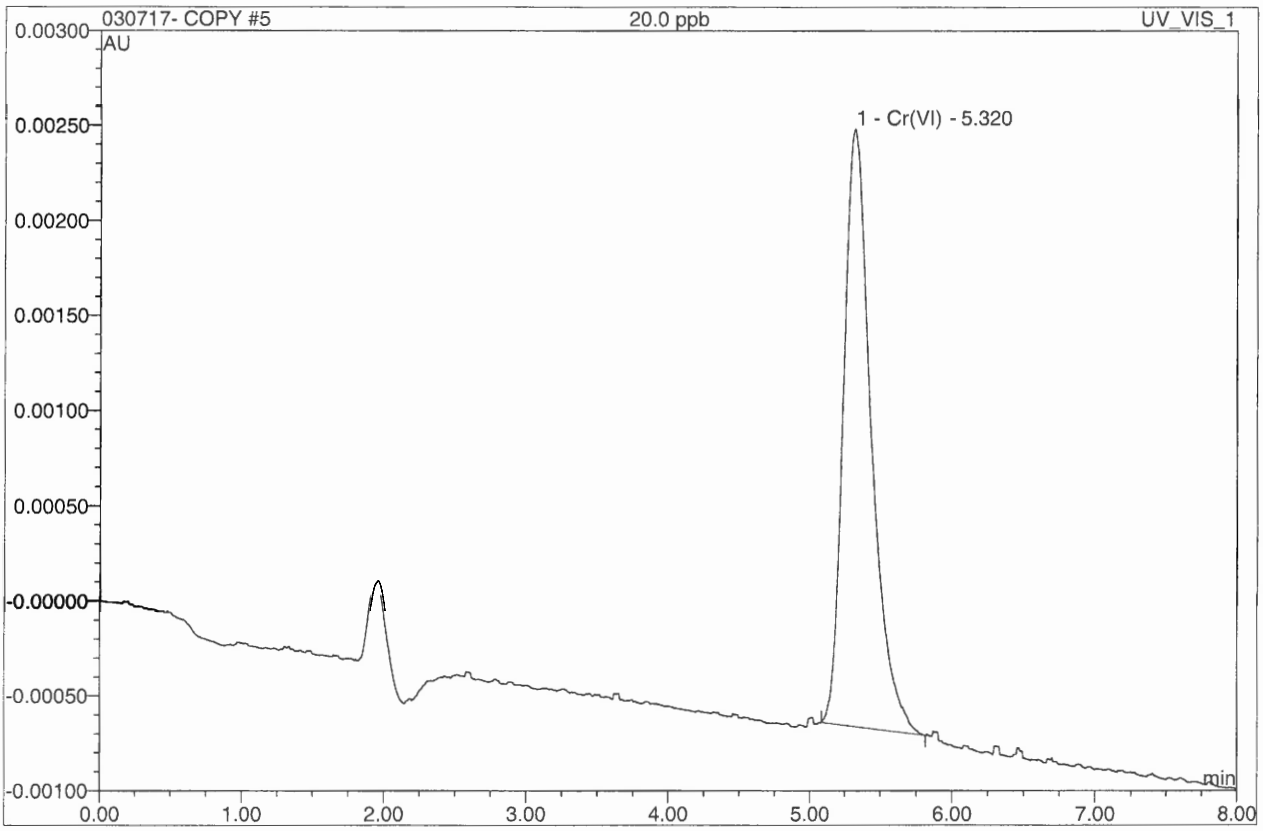


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.33	Cr(VI)	0.0015500	0.0003332	100.00	8.901	99.985
Total:			0.002	0.000	100.00	8.901	

5 20.0 ppb

7199 run by MK

Sample Name:	**20.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**5**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

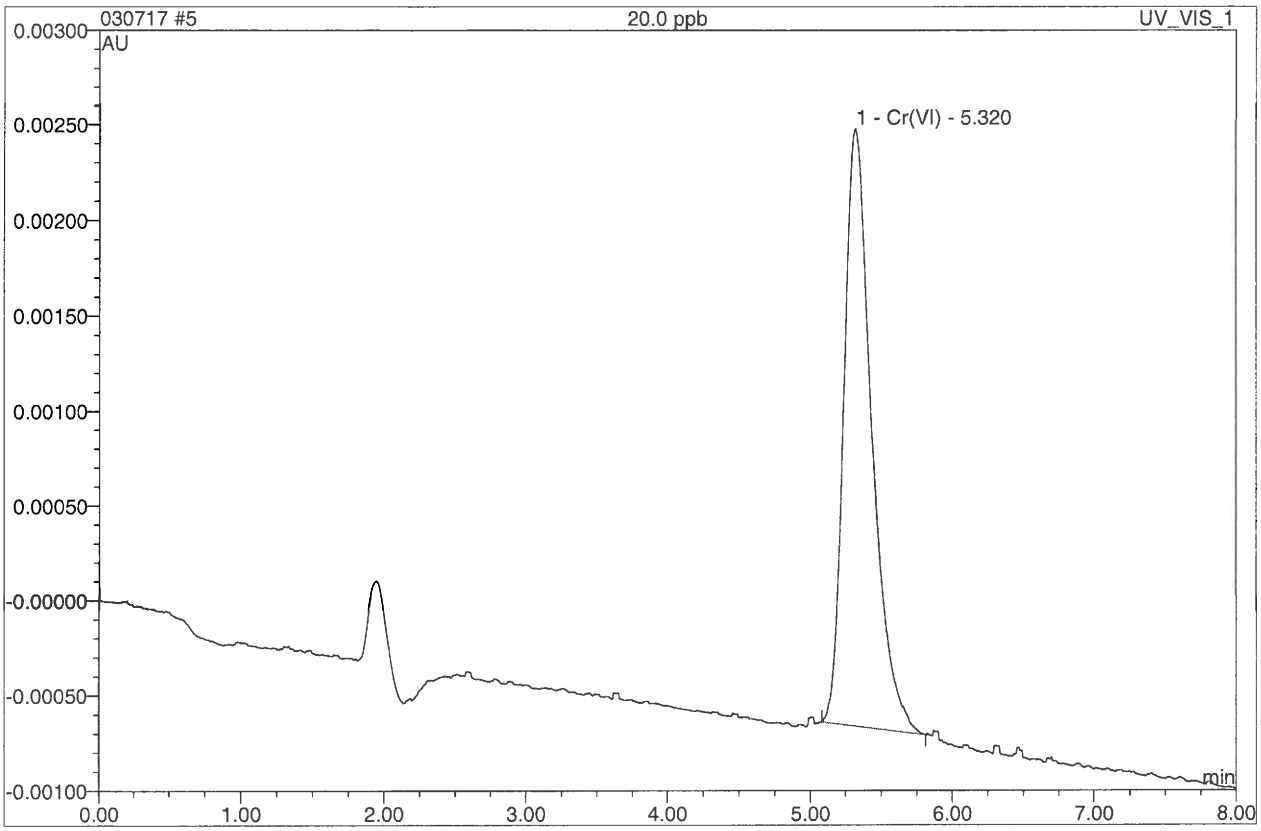


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.32	Cr(VI)	0.0031450	0.0007129	100.00	19.032	99.988
Total:			0.003	0.001	100.00	19.032	

5 20.0 ppb

7199 run by MK

Sample Name:	**20.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**5**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.955**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:09**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

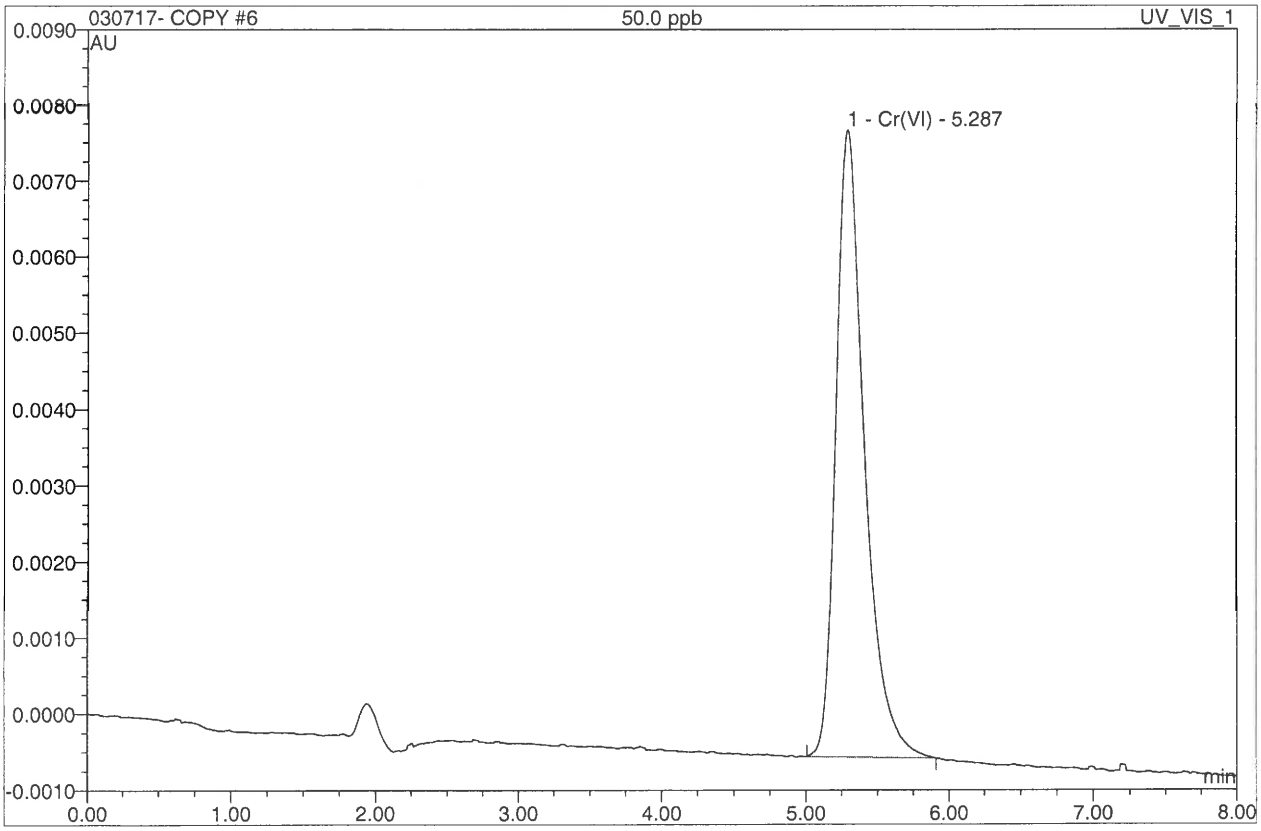


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.32	Cr(VI)	0.0031450	0.0007129	100.00	19.044	99.985
Total:			0.003	0.001	100.00	19.044	

6 50.0 ppb

7199 run by MK

Sample Name:	**50.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**6**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:20**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

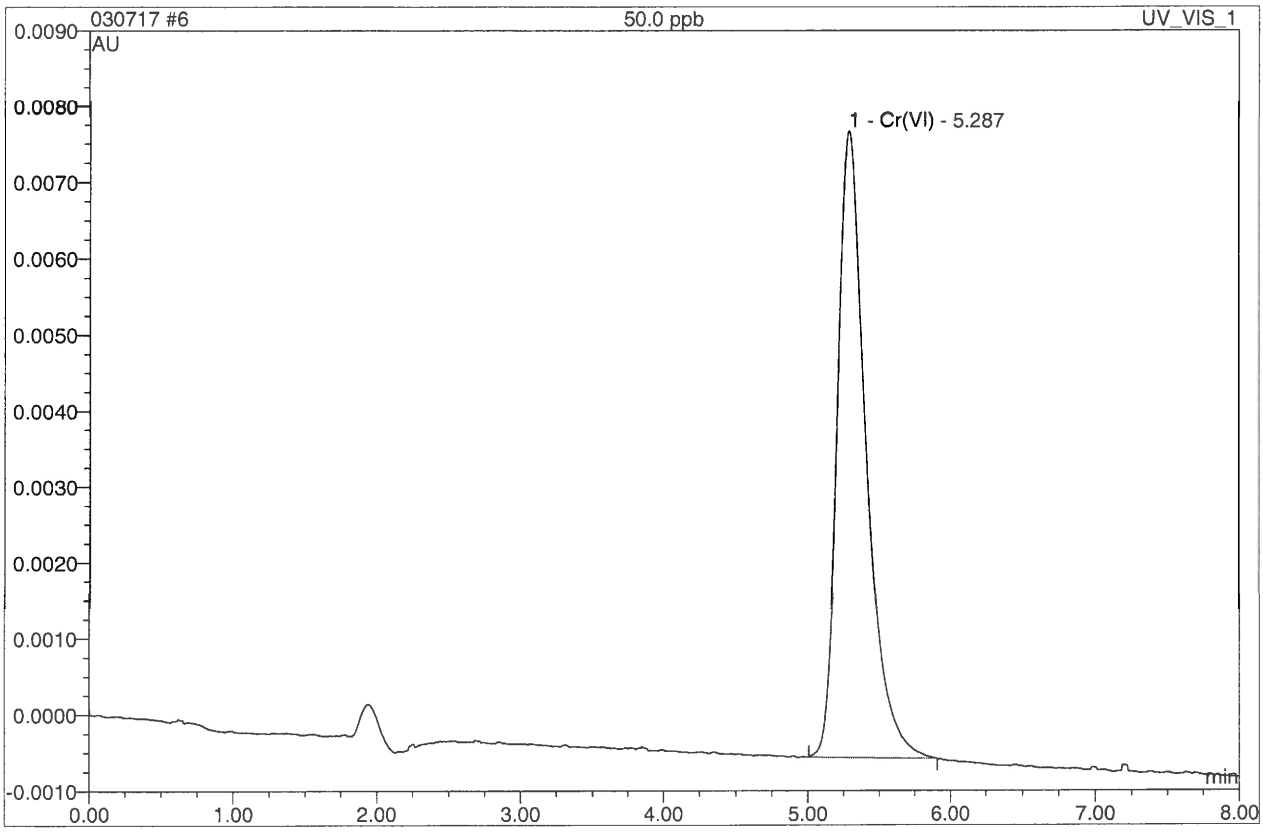


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.29	Cr(VI)	0.0082420	0.0019081	100.00	50.937	99.988
Total:			0.008	0.002	100.00	50.937	

6 50.0 ppb

7199 run by MK

Sample Name:	**50.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**6**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.975**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:20**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

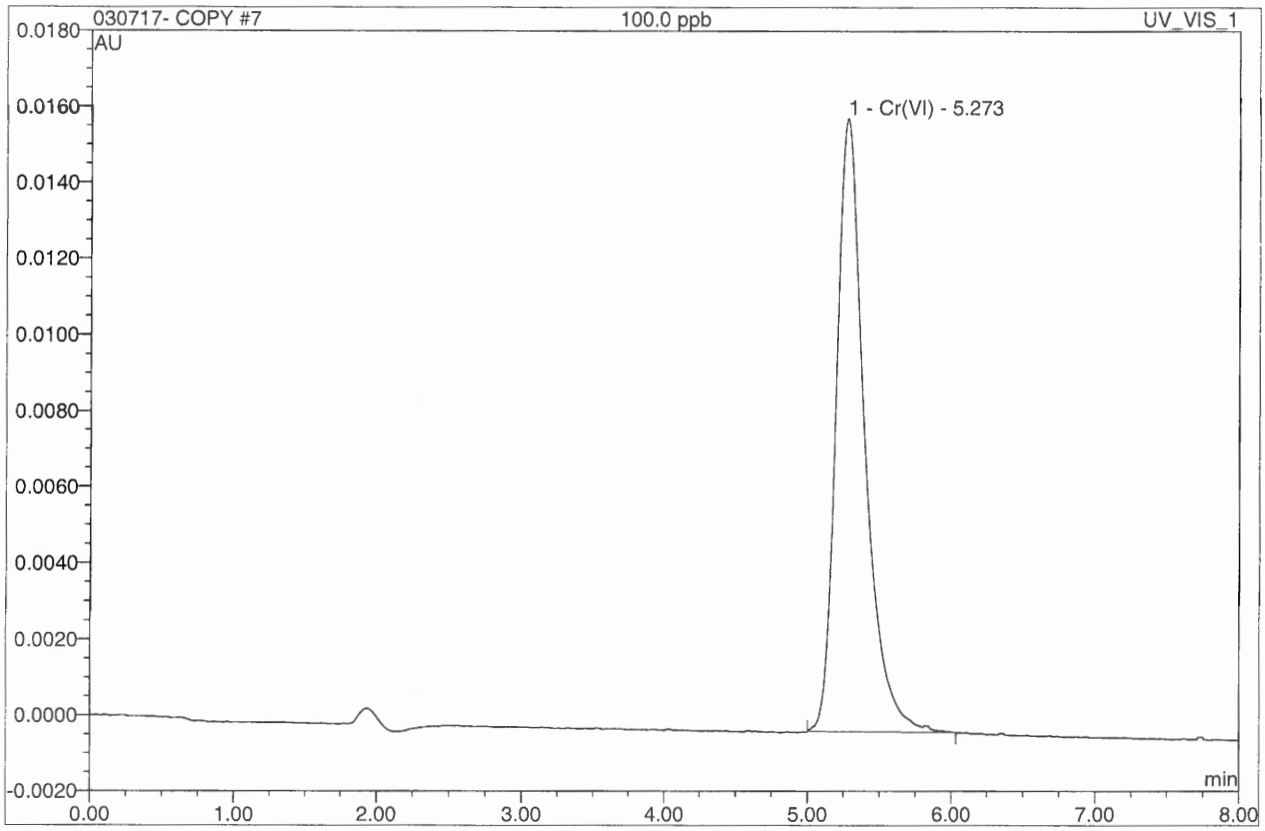


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.29	Cr(VI)	0.0082420	0.0019081	100.00	50.916	99.988
Total:			0.008	0.002	100.00	50.916	

7 100.0 ppb

7199 run by MK

Sample Name:	**100.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**7**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:30**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

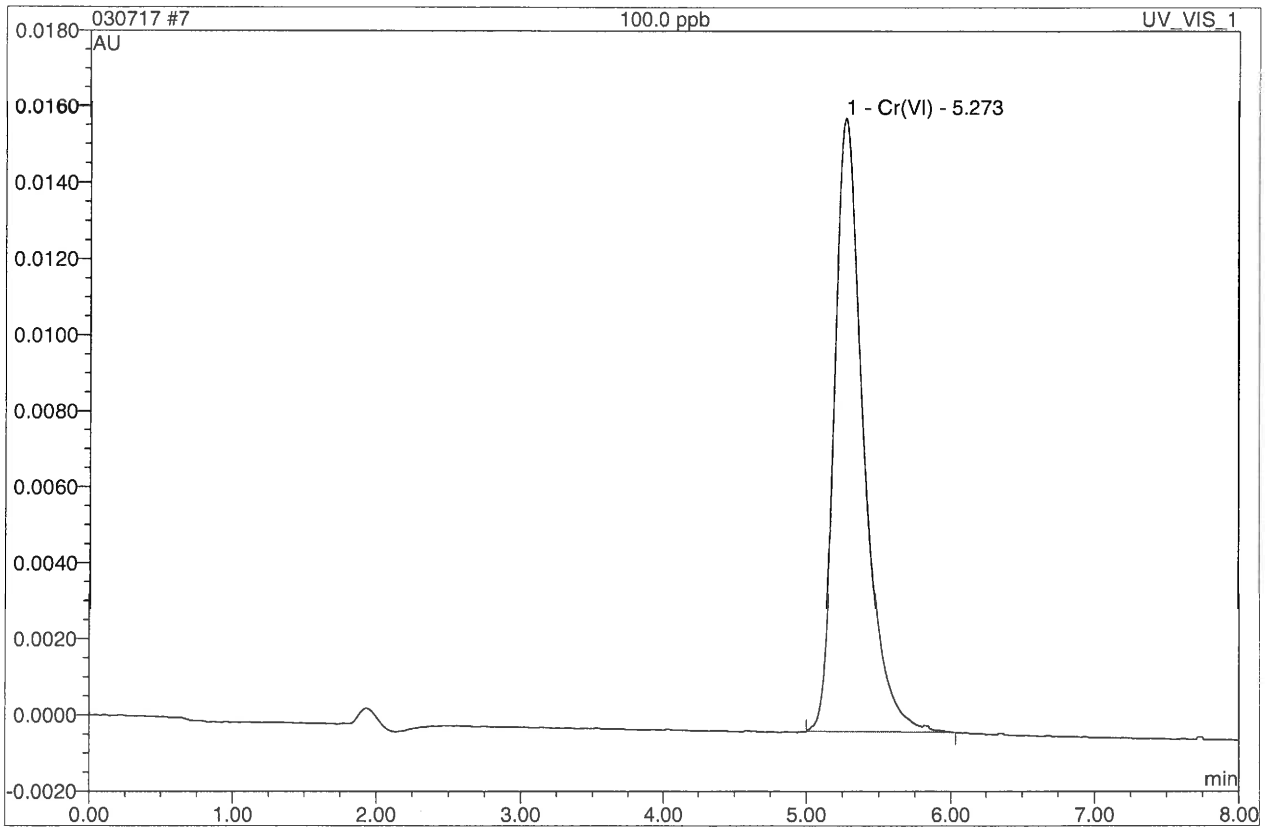


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.27	Cr(VI)	0.0161290	0.0037375	100.00	99.773	99.988
Total:			0.016	0.004	100.00	99.773	

7 100.0 ppb

7199 run by MK

Sample Name:	**100.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**7**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.975**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:30**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

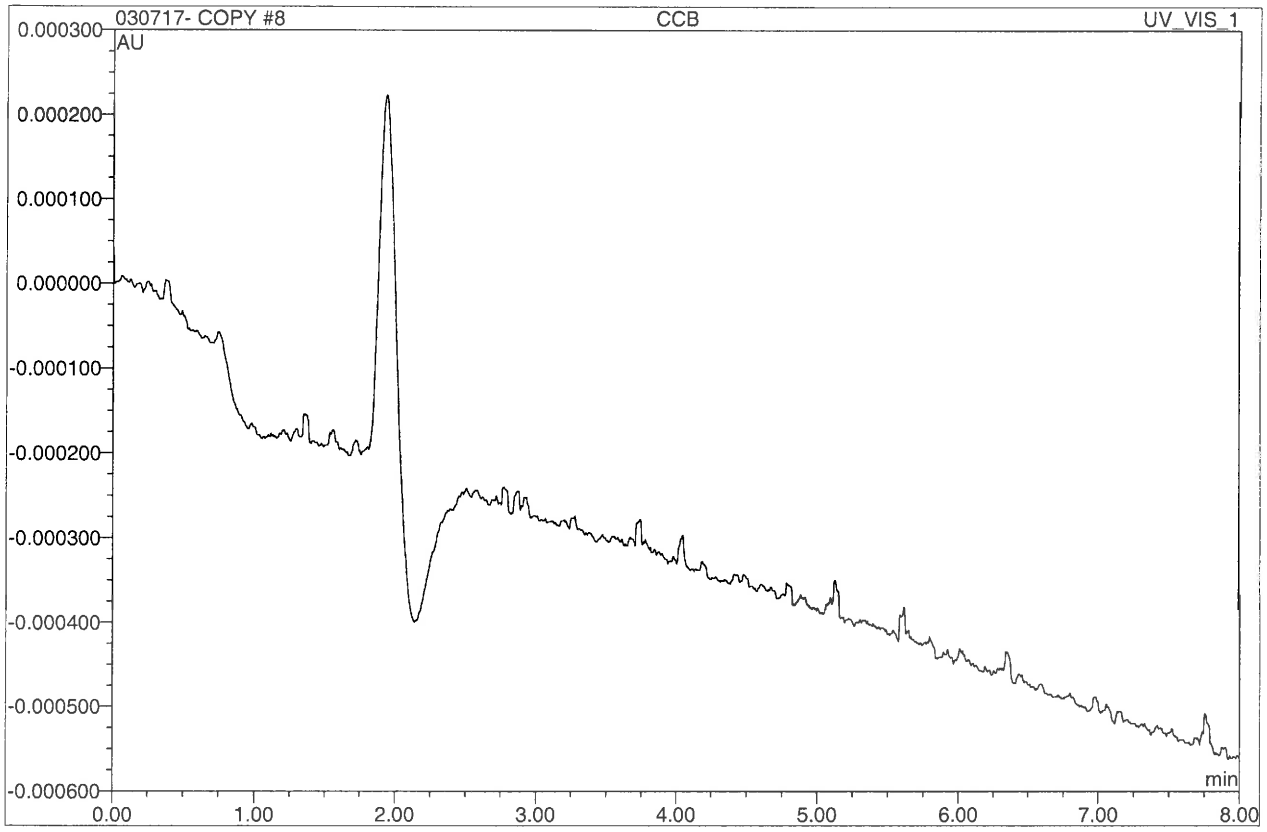


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.27	Cr(VI)	0.0161290	0.0037375	100.00	99.731	99.988
Total:			0.016	0.004	100.00	99.731	

8 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**8**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:41**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

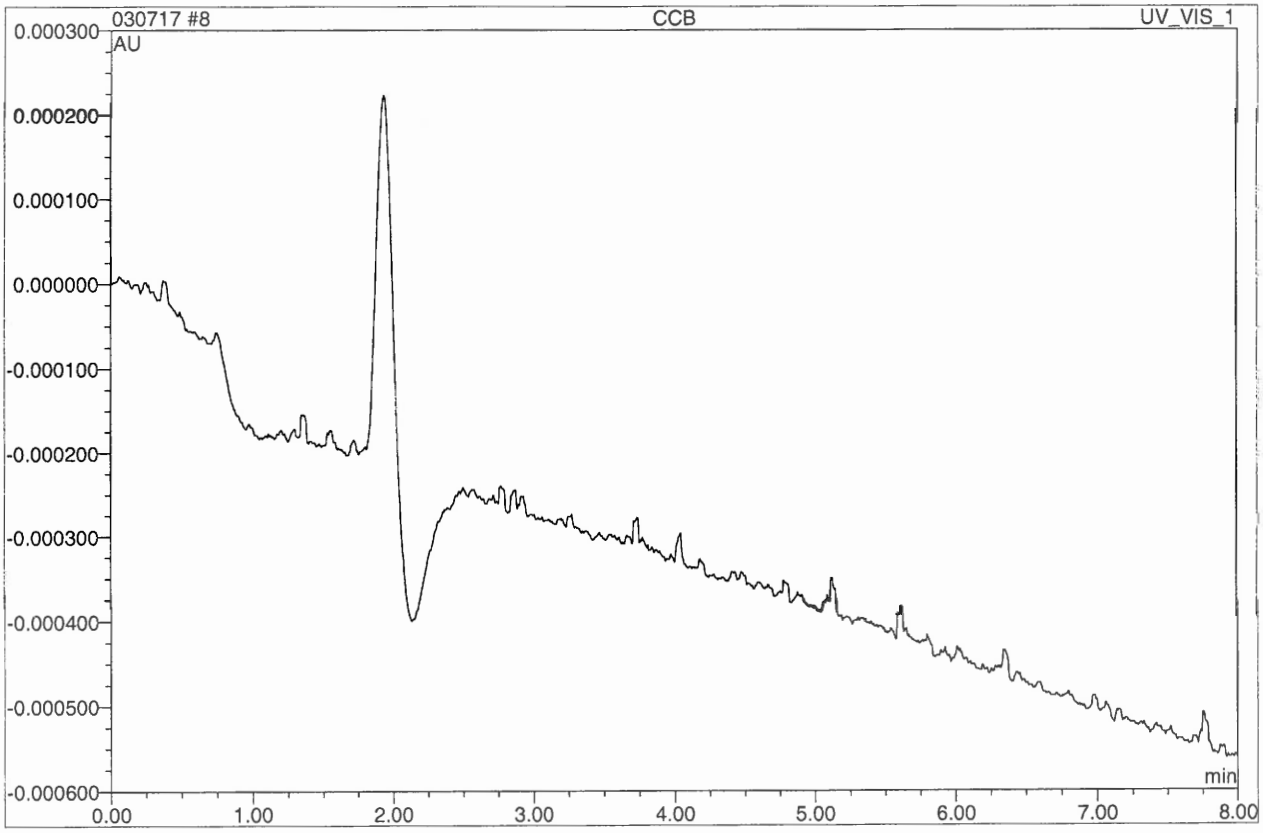


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

8 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**8**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:41**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

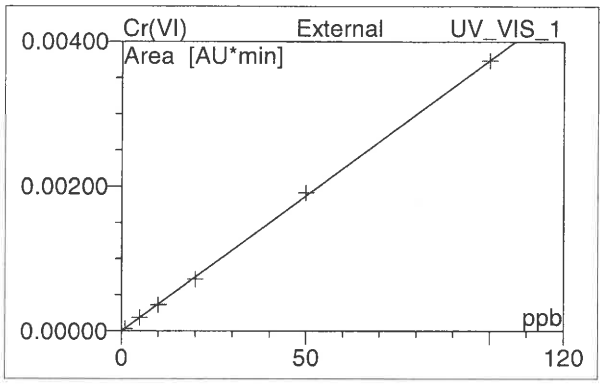


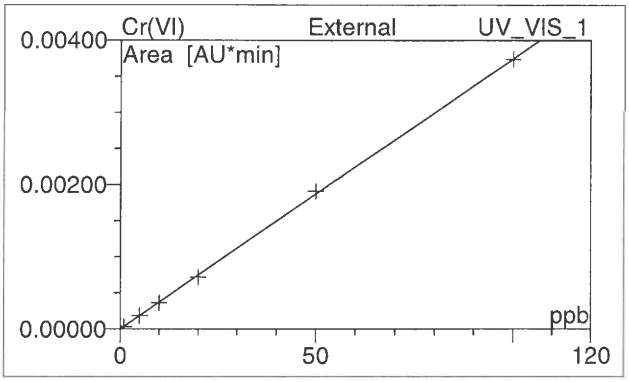
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

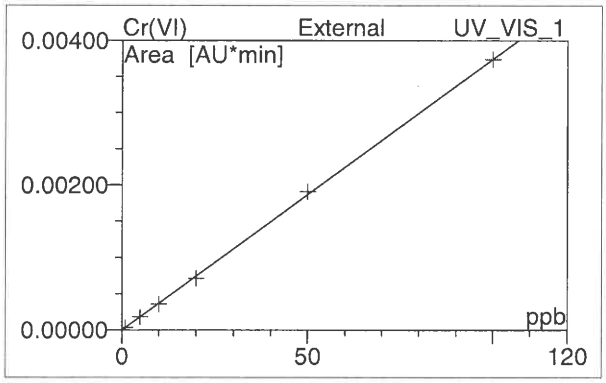
7 100.0 ppb

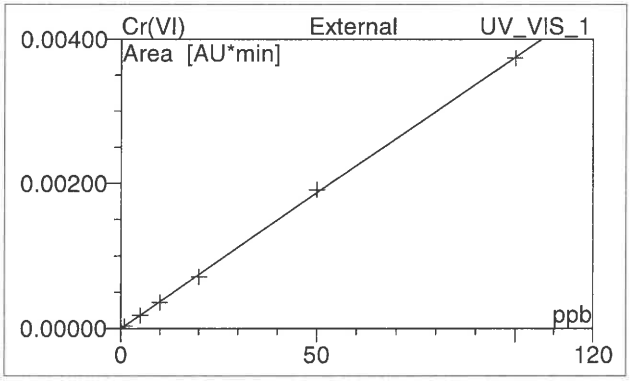
7199 run by MK

Sample Name:	**100.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**7**	*Channel:*	**UV_VIS_1**
Sample Type:	**standard**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Peak Cal STD:*	**0.000**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:30**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**









No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	Offset	Slope	Curve
1	5.27	Cr(VI)	Lin	6	99.9878	0.0000	0.0000	0.0000
Average:					99.9878	0.0000	0.0000	0.0000

AETL Job Number 86879

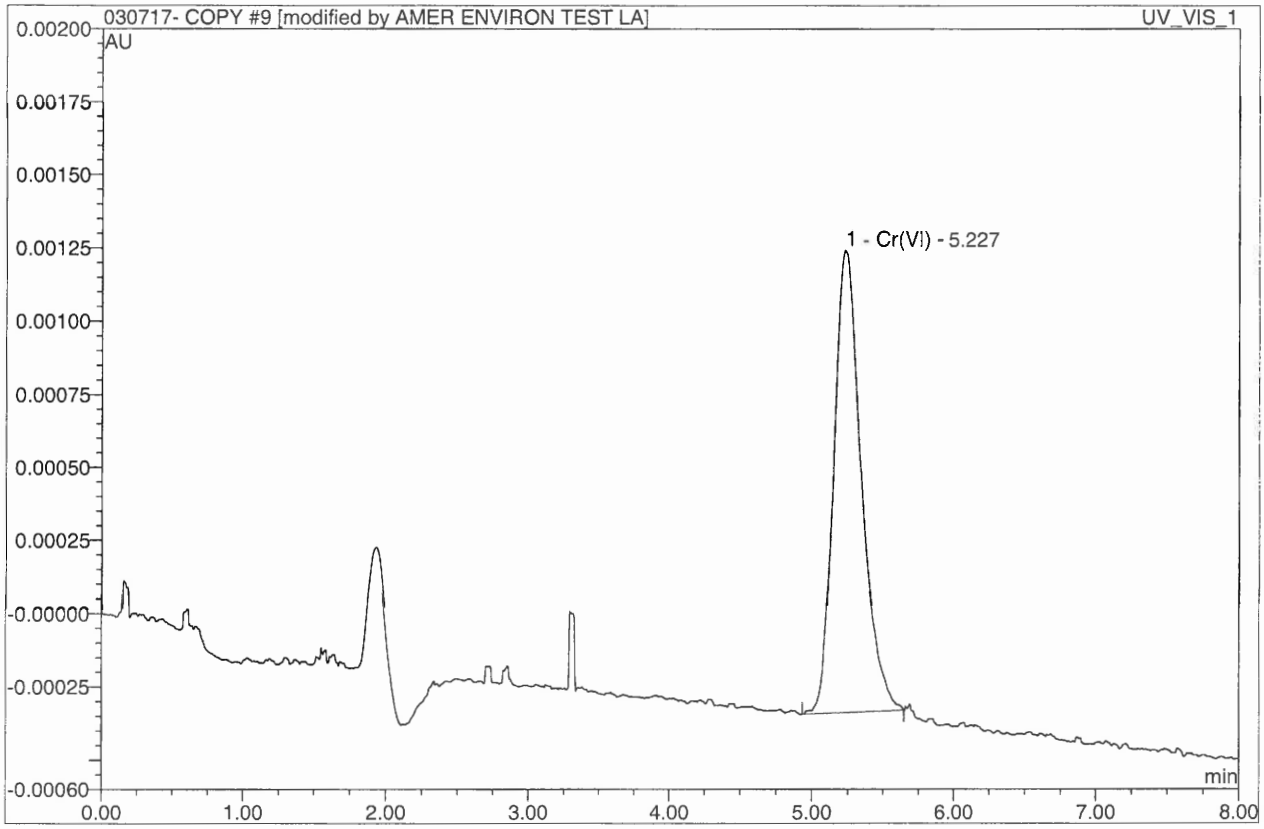
Chromium Hexavalent by 7199

SECOND SOURCE VERIFICATION (ICV)

9 ICV10.0 ppb

7199 run by MK

Sample Name:	**ICV10.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**9**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:51**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



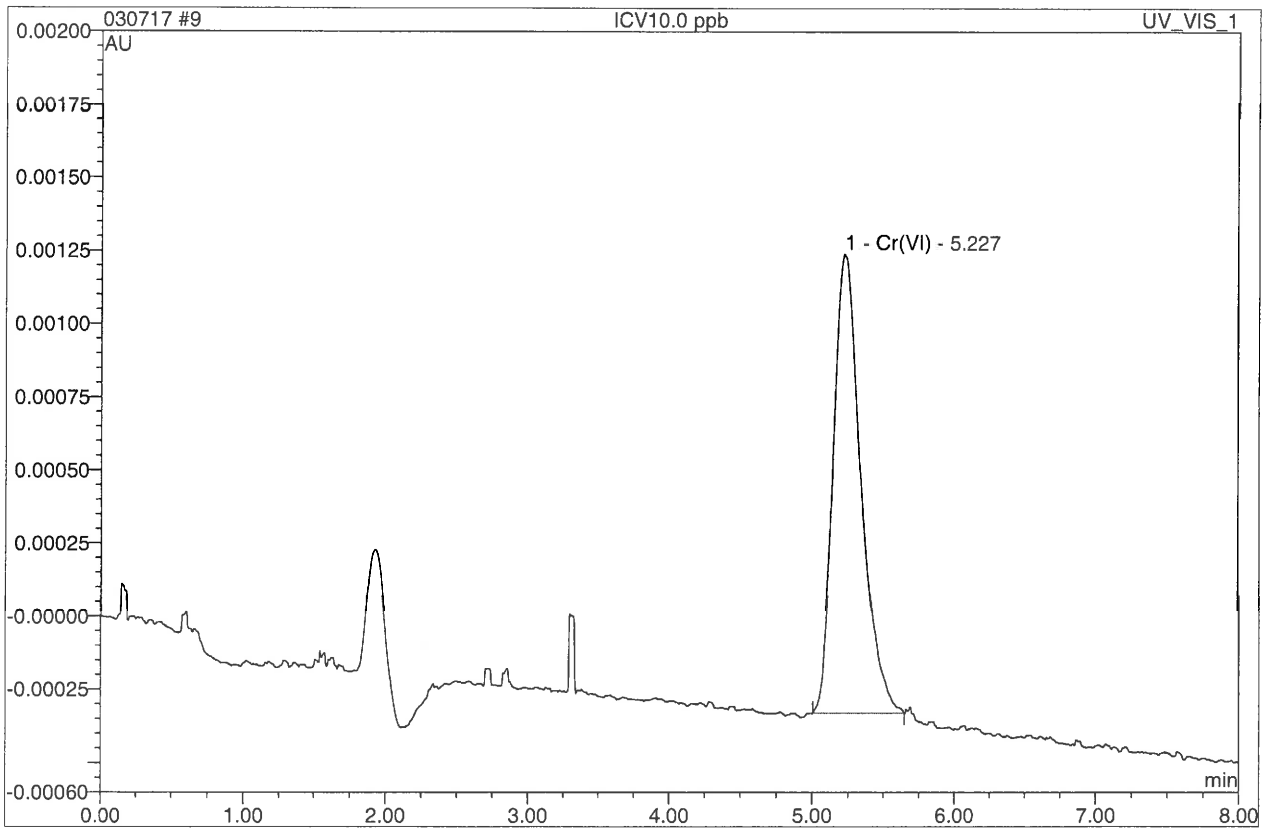
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.23	Cr(VI)	0.0015780	0.0003531	100.00	9.425	99.988
Total:			0.002	0.000	100.00	9.425	

$\frac{9.42}{10.0} = 94.2\%$ ✓

9 ICV10.0 ppb

7199 run by MK

Sample Name:	**ICV10.0 ppb**	*Injection Volume:*	**1000.0**
Vial Number:	**9**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.975**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 10:51**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.23	Cr(VI)	0.0015700	0.0003487	100.00	9.306	99.988
Total:			0.002	0.000	100.00	9.306	

AETL Job Number 86879

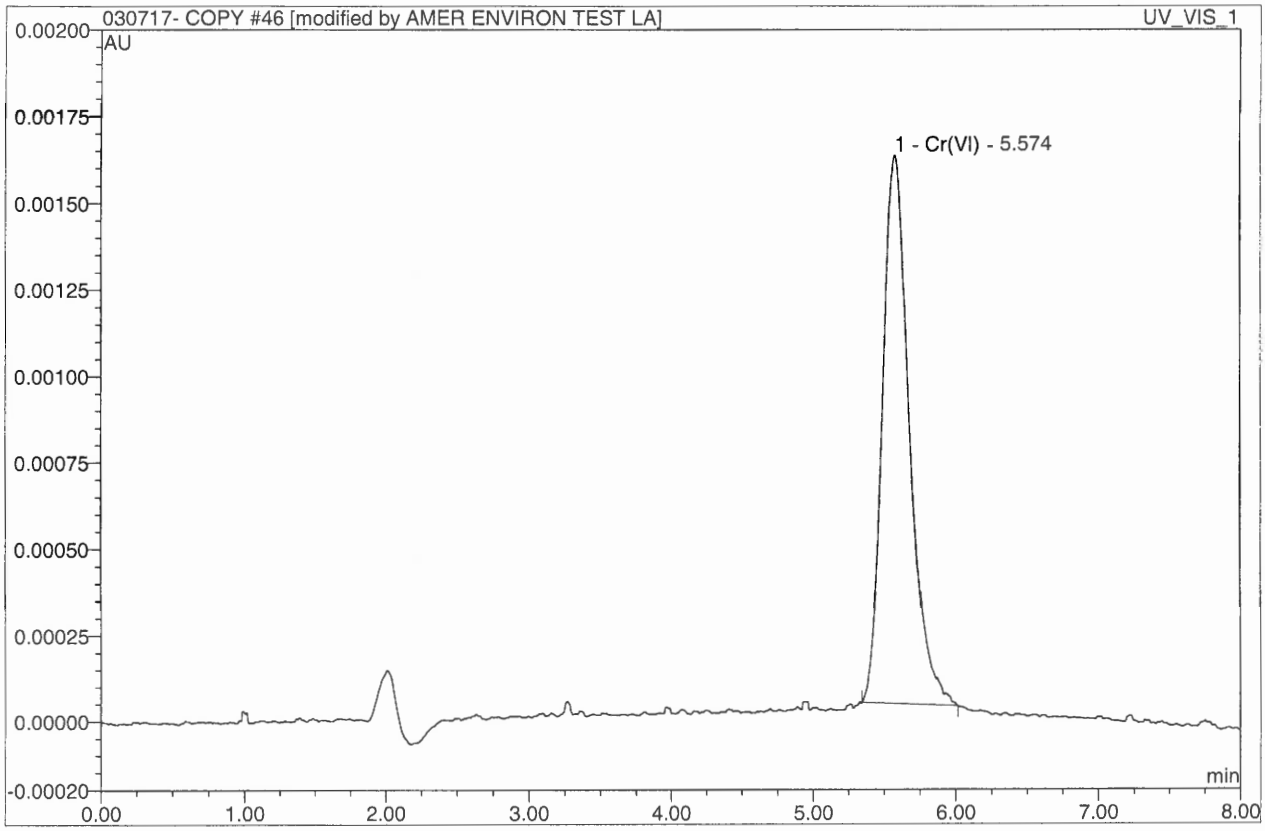
Chromium Hexavalent by 7199

DAILY CALIBRATION (CCV)

46 CCV 10.0 PPB

7199 run by MK

Sample Name:	**CCV 10.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**46**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.972**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**



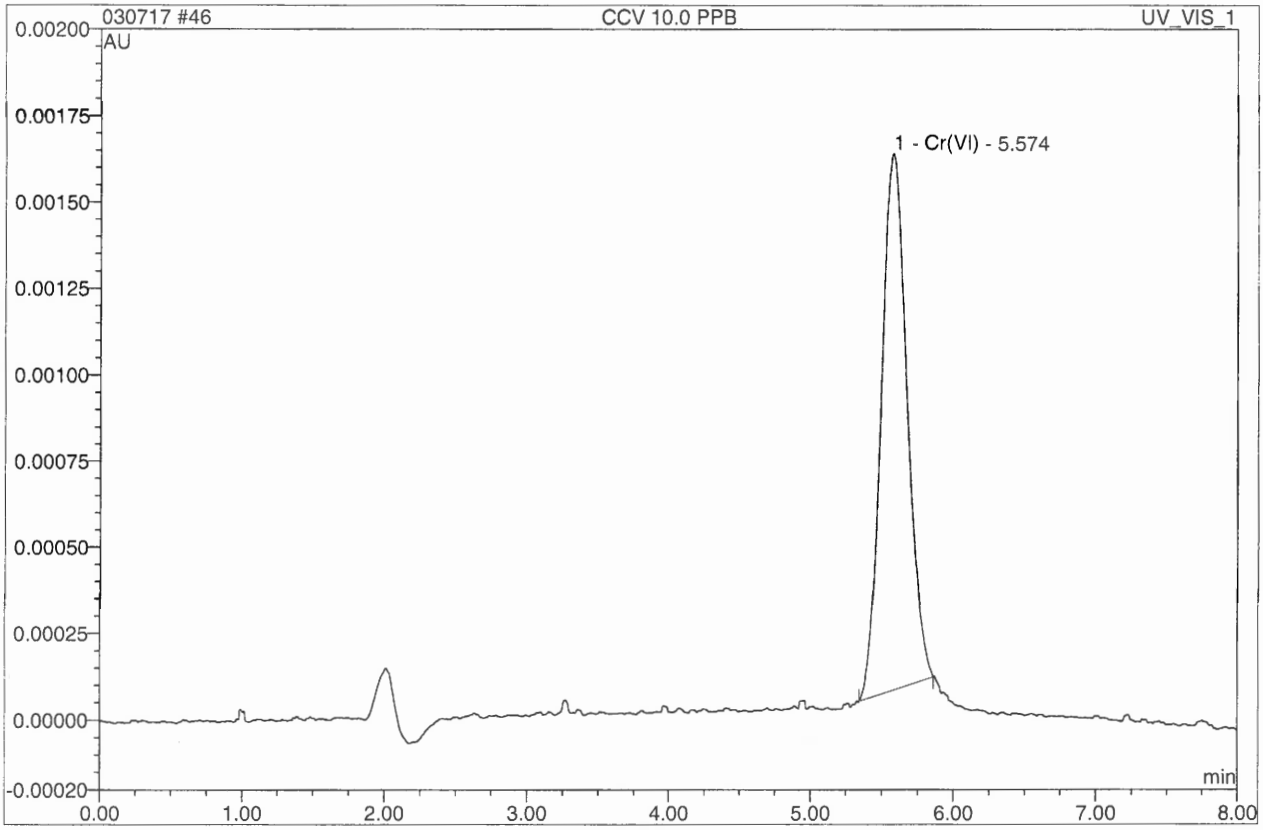
No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.57	Cr(VI)	0.0015880	0.0003488	100.00	9.312	99.988
Total:			0.002	0.000	100.00	9.312	

$\frac{9.31}{10} = 93.1$ ✓

46 CCV 10.0 PPB

7199 run by MK

Sample Name:	**CCV 10.0 PPB**	*Injection Volume:*	**1000.0**
Vial Number:	**46**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**99.975**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:25**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

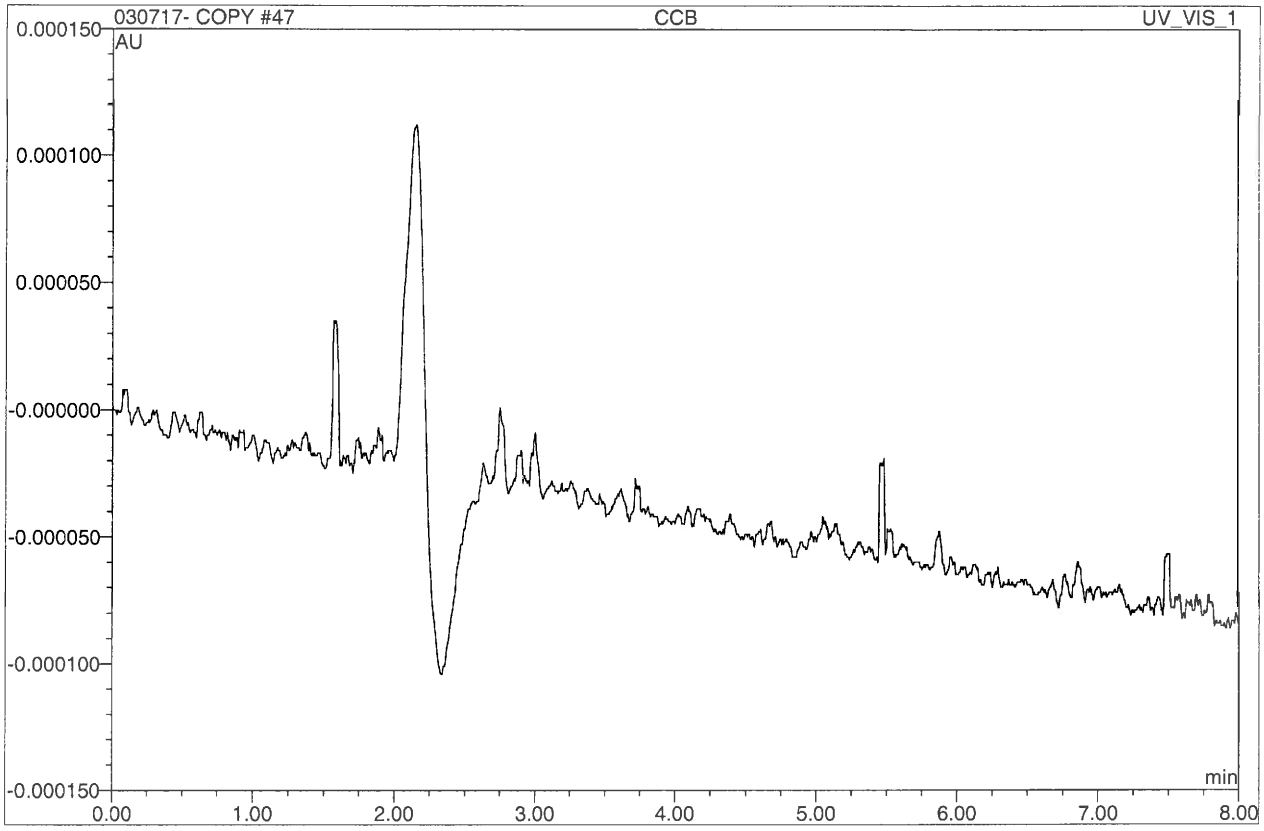


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
1	5.57	Cr(VI)	0.0015540	0.0003235	100.00	8.631	99.988
Total:			0.002	0.000	100.00	8.631	

47 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**47**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:35**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

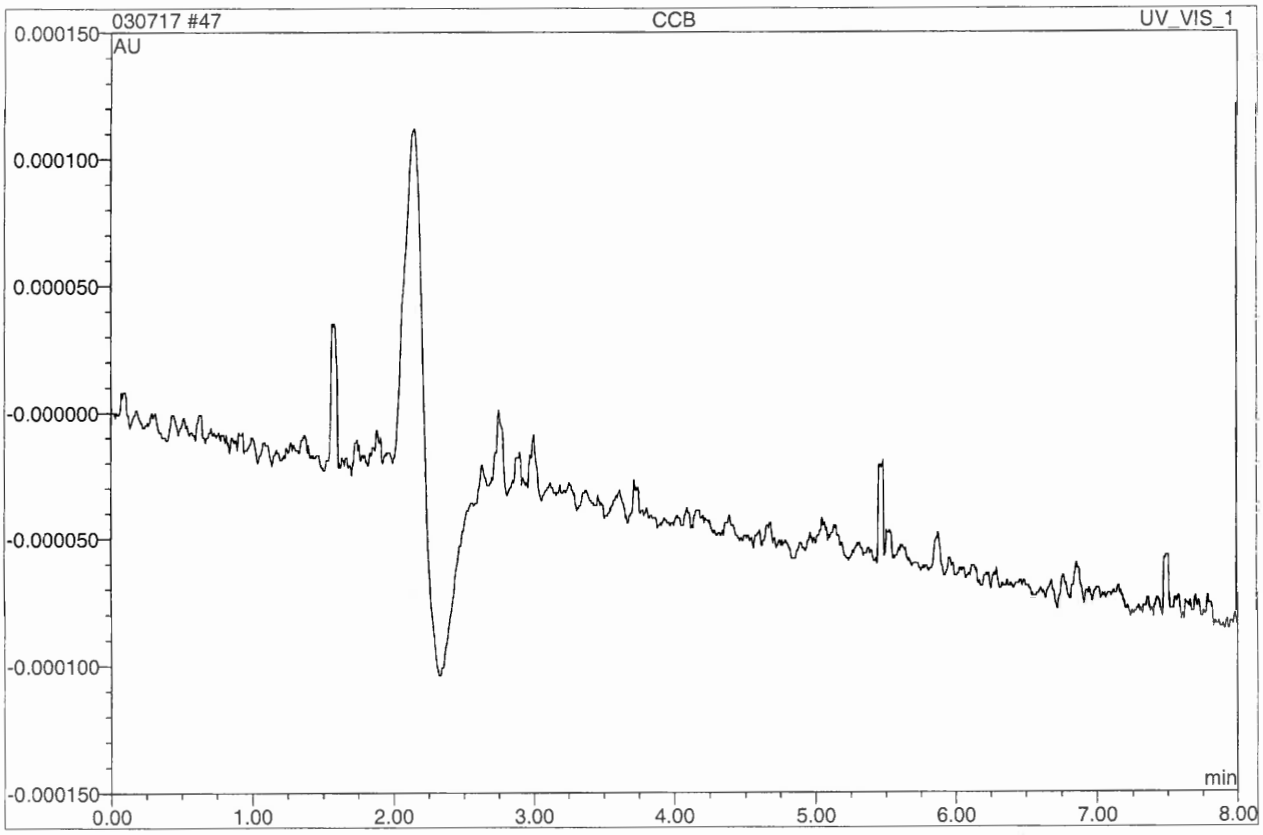


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

47 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**47**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Chromium (VI)**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:35**	*Sample Weight:*	**1.0000**
Run Time (min):	**8.00**	*Sample Amount:*	**1.0000**

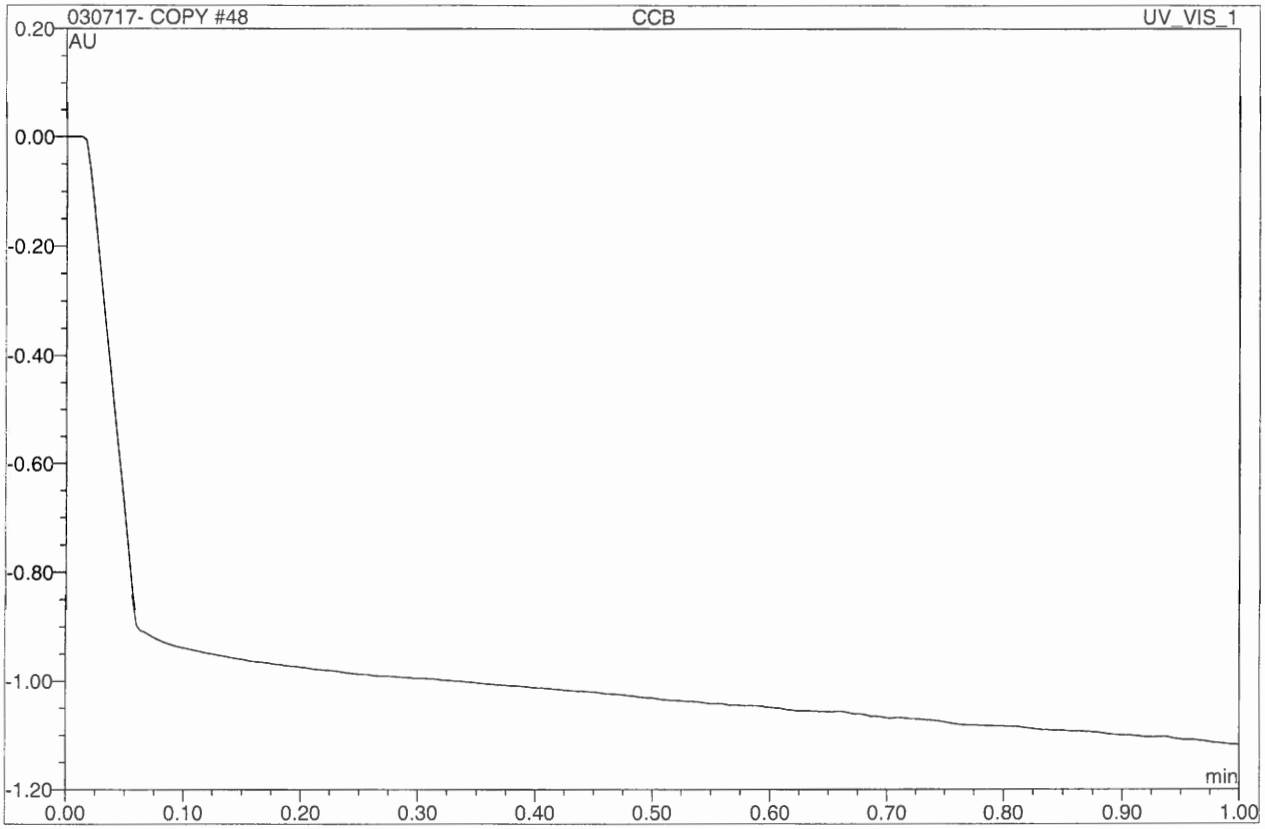


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

48 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**48**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Shutdown Program**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:46**	*Sample Weight:*	**1.0000**
Run Time (min):	**1.00**	*Sample Amount:*	**1.0000**

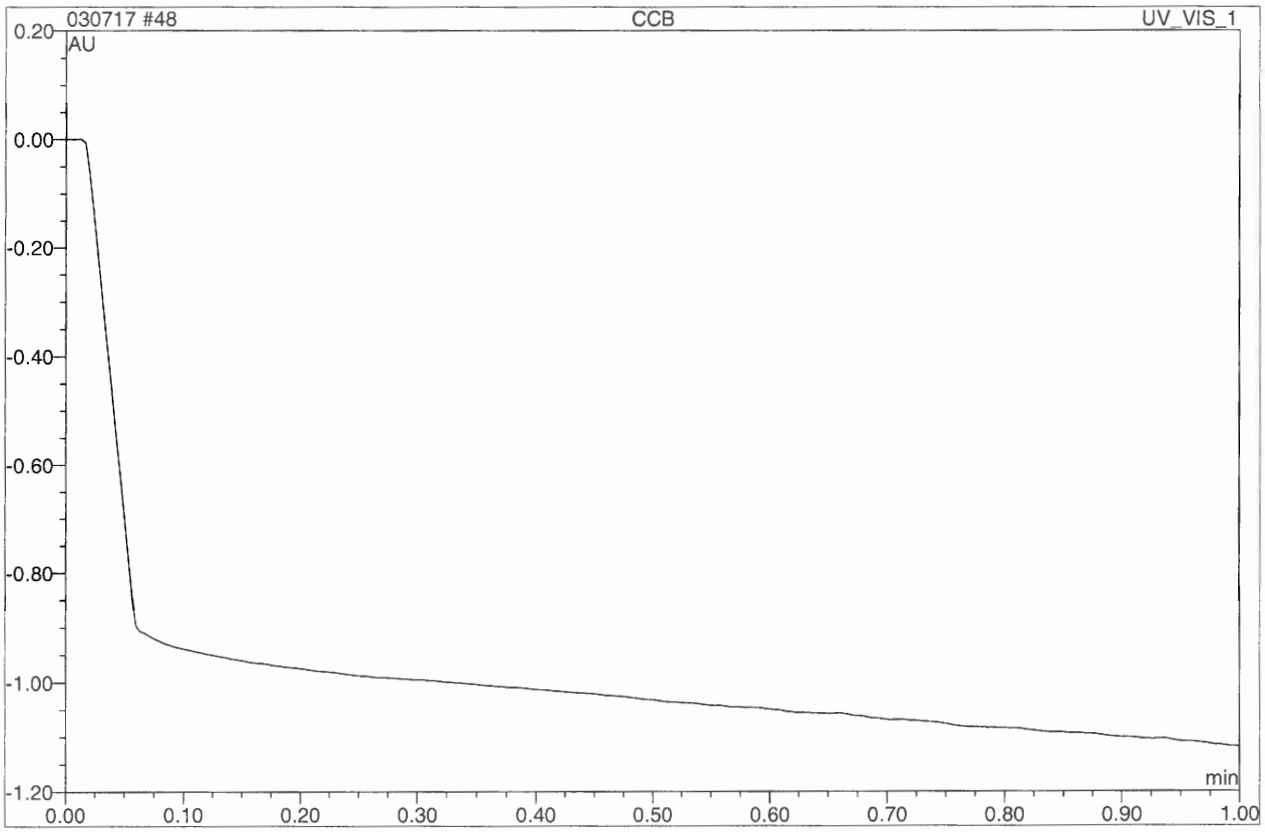


No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

48 CCB

7199 run by MK

Sample Name:	**CCB**	*Injection Volume:*	**1000.0**
Vial Number:	**48**	*Channel:*	**UV_VIS_1**
Sample Type:	**unknown**	*Wavelength:*	**520**
Control Program:	**Shutdown Program**	*Coeeficient of Determi*	**n.a.**
Quantif. Method:	**Cr(VI) High range calibration**	*Dilution Factor:*	**1.0000**
Recording Time:	**3/7/2017 17:46**	*Sample Weight:*	**1.0000**
Run Time (min):	**1.00**	*Sample Amount:*	**1.0000**



No.	Ret.Time min	Peak Name	Height AU	Area AU*min	Rel.Area %	Amount ppb	Corr.Coeff. %
Total:			0.000	0.000	0.00	0.000	

AETL Job Number 86879

Chromium Hexavalent by 7199

ANALYTICAL LOGS

AETL Job Number 86879

Chromium Hexavalent by 7199

RUN LOG

Sequence: 030717
Operator: AMER ENVIRON TEST LA
Printed: 4/4/2017 12:33:31 PM

Title:
Datasource: DDZ91X11_local
Location: March 2017
Timebase: CrVI
#Samples: 48

Created: 3/7/2017 9:09:21 AM by AMER ENVIRON TEST LA
Last Update: 4/4/2017 12:28:31 PM by AMER ENVIRON TEST LA

No.	Name	Type	Pos.	Inj. Vol.	Program	Method
1	blank	Unknown	1	1000.0	Chromium (VI)	Cr(VI) High range calibration
2	1.000 ppb	Standard	2	1000.0	Chromium (VI)	Cr(VI) High range calibration
3	5.000 ppb	Standard	3	1000.0	Chromium (VI)	Cr(VI) High range calibration
4	10.0 ppb	Standard	4	1000.0	Chromium (VI)	Cr(VI) High range calibration
5	20.0 ppb	Standard	5	1000.0	Chromium (VI)	Cr(VI) High range calibration
6	50.0 ppb	Standard	6	1000.0	Chromium (VI)	Cr(VI) High range calibration
7	100.0 ppb	Standard	7	1000.0	Chromium (VI)	Cr(VI) High range calibration
8	CCB	Unknown	8	1000.0	Chromium (VI)	Cr(VI) High range calibration
9	ICV10.0 ppb	Unknown	9	1000.0	Chromium (VI)	Cr(VI) High range calibration
10	MB	Unknown	10	1000.0	Chromium (VI)	Cr(VI) High range calibration
11	LCS 50.0 PPB	Unknown	11	1000.0	Chromium (VI)	Cr(VI) High range calibration
12	LCS DUP 50.0 PPB	Unknown	12	1000.0	Chromium (VI)	Cr(VI) High range calibration
13	CCB	Unknown	13	1000.0	Chromium (VI)	Cr(VI) High range calibration
14	S-86879.01	Unknown	14	1000.0	Chromium (VI)	Cr(VI) High range calibration
15	S-86879.01 DUP	Unknown	15	1000.0	Chromium (VI)	Cr(VI) High range calibration
16	S-86879.01 MS 50.0 PPB	Unknown	16	1000.0	Chromium (VI)	Cr(VI) High range calibration
17	S-86879.01 MSD 50.0 PPB	Unknown	17	1000.0	Chromium (VI)	Cr(VI) High range calibration
18	S-86827.08 D=100	Unknown	18	1000.0	Chromium (VI)	Cr(VI) High range calibration
19	CCB	Unknown	19	1000.0	Chromium (VI)	Cr(VI) High range calibration
20	S-86827.08 D=5000	Unknown	20	1000.0	Chromium (VI)	Cr(VI) High range calibration
21	S-86879.02	Unknown	21	1000.0	Chromium (VI)	Cr(VI) High range calibration
22	S-86879.03	Unknown	22	1000.0	Chromium (VI)	Cr(VI) High range calibration
23	S-86879.04	Unknown	23	1000.0	Chromium (VI)	Cr(VI) High range calibration
24	S-86879.05	Unknown	24	1000.0	Chromium (VI)	Cr(VI) High range calibration
25	S-86879.06	Unknown	25	1000.0	Chromium (VI)	Cr(VI) High range calibration
26	S-86879.07	Unknown	26	1000.0	Chromium (VI)	Cr(VI) High range calibration
27	S-86879.08	Unknown	27	1000.0	Chromium (VI)	Cr(VI) High range calibration
28	S-86879.09	Unknown	28	1000.0	Chromium (VI)	Cr(VI) High range calibration
29	S-86879.10	Unknown	29	1000.0	Chromium (VI)	Cr(VI) High range calibration
30	MB	Unknown	30	1000.0	Chromium (VI)	Cr(VI) High range calibration
31	LCS 50.0 PPB	Unknown	31	1000.0	Chromium (VI)	Cr(VI) High range calibration
32	LCS DUP 50.0 PPB	Unknown	32	1000.0	Chromium (VI)	Cr(VI) High range calibration
33	CCB	Unknown	33	1000.0	Chromium (VI)	Cr(VI) High range calibration
34	S-86879.11	Unknown	34	1000.0	Chromium (VI)	Cr(VI) High range calibration
35	S-86879.11 DUP	Unknown	35	1000.0	Chromium (VI)	Cr(VI) High range calibration
36	S-86879.11 MS 50.0PPB	Unknown	36	1000.0	Chromium (VI)	Cr(VI) High range calibration
37	S-86879.11 MSD 50.0 PPB	Unknown	37	1000.0	Chromium (VI)	Cr(VI) High range calibration
38	CCB	Unknown	38	1000.0	Chromium (VI)	Cr(VI) High range calibration
39	S-86879.12	Unknown	39	1000.0	Chromium (VI)	Cr(VI) High range calibration
40	S-86879.13	Unknown	40	1000.0	Chromium (VI)	Cr(VI) High range calibration
41	S-86879.14	Unknown	41	1000.0	Chromium (VI)	Cr(VI) High range calibration
42	S-86879.15	Unknown	42	1000.0	Chromium (VI)	Cr(VI) High range calibration
43	S-86879.16	Unknown	43	1000.0	Chromium (VI)	Cr(VI) High range calibration
44	S-86879.17	Unknown	44	1000.0	Chromium (VI)	Cr(VI) High range calibration

Sequence: 030717
Operator: AMER ENVIRON TEST LA
Printed: 4/4/2017 12:33:31 PM

Title:
Datasource: DDZ91X11_local
Location: March 2017
Timebase: CrVI
#Samples: 48

Created: 3/7/2017 9:09:21 AM by AMER ENVIRON TEST LA
Last Update: 4/4/2017 12:28:31 PM by AMER ENVIRON TEST LA

No.	Name	Status	Inj. Date/Time	Weight	Dil. Factor	ISTD Amount	Sample ID	Replicate ID
1	blank	Finished	3/7/2017 9:27:30 AM	1.0000	1.0000	1.0000		01
2	1.000 ppb	Finished	3/7/2017 9:38:00 AM	1.0000	1.0000	1.0000		01
3	5.000 ppb	Finished	3/7/2017 9:48:30 AM	1.0000	1.0000	1.0000		01
4	10.0 ppb	Finished	3/7/2017 9:59:00 AM	1.0000	1.0000	1.0000		01
5	20.0 ppb	Finished	3/7/2017 10:09:30 AM	1.0000	1.0000	1.0000		01
6	50.0 ppb	Finished	3/7/2017 10:20:00 AM	1.0000	1.0000	1.0000		01
7	100.0 ppb	Finished	3/7/2017 10:30:30 AM	1.0000	1.0000	1.0000		01
8	CCB	Finished	3/7/2017 10:41:01 AM	1.0000	1.0000	1.0000		01
9	ICV10.0 ppb	Finished	3/7/2017 10:51:31 AM	1.0000	1.0000	1.0000		01
10	MB	Finished	3/7/2017 11:02:01 AM	1.0000	1.0000	1.0000		01
11	LCS 50.0 PPB	Finished	3/7/2017 11:12:31 AM	1.0000	1.0000	1.0000		01
12	LCS DUP 50.0 PPB	Finished	3/7/2017 11:23:01 AM	1.0000	1.0000	1.0000		01
13	CCB	Finished	3/7/2017 11:33:31 AM	1.0000	1.0000	1.0000		01
14	S-86879.01	Finished	3/7/2017 11:44:01 AM	1.0000	1.0000	1.0000		01
15	S-86879.01 DUP	Finished	3/7/2017 11:54:31 AM	1.0000	1.0000	1.0000		01
16	S-86879.01 MS 50.0 PPB	Finished	3/7/2017 12:05:01 PM	1.0000	1.0000	1.0000		01
17	S-86879.01 MSD 50.0 PPB	Finished	3/7/2017 12:15:32 PM	1.0000	1.0000	1.0000		01
18	S-86827.08 D=100	Finished	3/7/2017 12:26:02 PM	1.0000	1.0000	1.0000		01
19	CCB	Finished	3/7/2017 12:36:32 PM	1.0000	1.0000	1.0000		01
20	S-86827.08 D=5000	Finished	3/7/2017 12:47:02 PM	1.0000	1.0000	1.0000		01
21	S-86879.02	Finished	3/7/2017 12:57:33 PM	1.0000	1.0000	1.0000		01
22	S-86879.03	Finished	3/7/2017 1:08:03 PM	1.0000	1.0000	1.0000		01
23	S-86879.04	Finished	3/7/2017 1:18:33 PM	1.0000	1.0000	1.0000		01
24	S-86879.05	Finished	3/7/2017 1:29:03 PM	1.0000	1.0000	1.0000		01
25	S-86879.06	Finished	3/7/2017 1:44:56 PM	1.0000	1.0000	1.0000		01
26	S-86879.07	Finished	3/7/2017 1:55:26 PM	1.0000	1.0000	1.0000		01
27	S-86879.08	Finished	3/7/2017 2:05:56 PM	1.0000	1.0000	1.0000		01
28	S-86879.09	Finished	3/7/2017 2:16:26 PM	1.0000	1.0000	1.0000		01
29	S-86879.10	Finished	3/7/2017 2:26:56 PM	1.0000	1.0000	1.0000		01
30	MB	Finished	3/7/2017 2:37:26 PM	1.0000	1.0000	1.0000		01
31	LCS 50.0 PPB	Finished	3/7/2017 2:47:56 PM	1.0000	1.0000	1.0000		01
32	LCS DUP 50.0 PPB	Finished	3/7/2017 2:58:26 PM	1.0000	1.0000	1.0000		01
33	CCB	Finished	3/7/2017 3:08:57 PM	1.0000	1.0000	1.0000		01
34	S-86879.11	Finished	3/7/2017 3:19:27 PM	1.0000	1.0000	1.0000		01
35	S-86879.11 DUP	Finished	3/7/2017 3:29:57 PM	1.0000	1.0000	1.0000		01
36	S-86879.11 MS 50.0PPB	Finished	3/7/2017 3:40:27 PM	1.0000	1.0000	1.0000		01
37	S-86879.11 MSD 50.0 PPB	Finished	3/7/2017 3:50:57 PM	1.0000	1.0000	1.0000		01
38	CCB	Finished	3/7/2017 4:01:27 PM	1.0000	1.0000	1.0000		01
39	S-86879.12	Finished	3/7/2017 4:11:57 PM	1.0000	1.0000	1.0000		01
40	S-86879.13	Finished	3/7/2017 4:22:27 PM	1.0000	1.0000	1.0000		01
41	S-86879.14	Finished	3/7/2017 4:32:57 PM	1.0000	1.0000	1.0000		01
42	S-86879.15	Finished	3/7/2017 4:43:28 PM	1.0000	1.0000	1.0000		01
43	S-86879.16	Finished	3/7/2017 4:53:58 PM	1.0000	1.0000	1.0000		01
44	S-86879.17	Finished	3/7/2017 5:04:28 PM	1.0000	1.0000	1.0000		01

Sequence: 030717
Operator: AMER ENVIRON TEST LA
Printed: 4/4/2017 12:33:31 PM

Title:
Datasource: DDZ91X11_local
Location: March 2017
Timebase: CrVI
#Samples: 48

Created: 3/7/2017 9:09:21 AM by AMER ENVIRON TEST LA
Last Update: 4/4/2017 12:28:31 PM by AMER ENVIRON TEST LA

No.	Name	Comment
1	blank	7199 run by MK
2	1.000 ppb	7199 run by MK
3	5.000 ppb	7199 run by MK
4	10.0 ppb	7199 run by MK
5	20.0 ppb	7199 run by MK
6	50.0 ppb	7199 run by MK
7	100.0 ppb	7199 run by MK
8	CCB	7199 run by MK
9	ICV10.0 ppb	7199 run by MK
10	MB	7199 run by MK
11	LCS 50.0 PPB	7199 run by MK
12	LCS DUP 50.0 PPB	7199 run by MK
13	CCB	7199 run by MK
14	S-86879.01	7199 run by MK
15	S-86879.01 DUP	7199 run by MK
16	S-86879.01 MS 50.0 PPB	7199 run by MK
17	S-86879.01 MSD 50.0 PPB	7199 run by MK
18	S-86827.08 D=100	7199 run by MK
19	CCB	7199 run by MK
20	S-86827.08 D=5000	7199 run by MK
21	S-86879.02	7199 run by MK
22	S-86879.03	7199 run by MK
23	S-86879.04	7199 run by MK
24	S-86879.05	7199 run by MK
25	S-86879.06	7199 run by MK
26	S-86879.07	7199 run by MK
27	S-86879.08	7199 run by MK
28	S-86879.09	7199 run by MK
29	S-86879.10	7199 run by MK
30	MB	7199 run by MK
31	LCS 50.0 PPB	7199 run by MK
32	LCS DUP 50.0 PPB	7199 run by MK
33	CCB	7199 run by MK
34	S-86879.11	7199 run by MK
35	S-86879.11 DUP	7199 run by MK
36	S-86879.11 MS 50.0PPB	7199 run by MK
37	S-86879.11 MSD 50.0 PPB	7199 run by MK
38	CCB	7199 run by MK
39	S-86879.12	7199 run by MK
40	S-86879.13	7199 run by MK
41	S-86879.14	7199 run by MK
42	S-86879.15	7199 run by MK
43	S-86879.16	7199 run by MK
44	S-86879.17	7199 run by MK

Title:
Datasource: DDZ91X11_local
Location: March 2017
Timebase: CrVI
#Samples: 48
Created: 3/7/2017 9:09:21 AM by AMER ENVIRON TEST LA
Last Update: 4/4/2017 12:28:31 PM by AMER ENVIRON TEST LA

No.	Name	Type	Pos.	Inj. Vol.	Program	Method
45	CCB	Unknown	45	1000.0	Chromium (VI)	Cr(VI) High range calibration
46	CCV 10.0 PPB	Unknown	46	1000.0	Chromium (VI)	Cr(VI) High range calibration
47	CCB	Unknown	47	1000.0	Chromium (VI)	Cr(VI) High range calibration
48	CCB	Unknown	48	1000.0	Shutdown Program	Cr(VI) High range calibration

Title:
Datasource: DDZ91X11_local
Location: March 2017
Timebase: CrVI
#Samples: 48

Created: 3/7/2017 9:09:21 AM by AMER ENVIRON TEST LA
Last Update: 4/4/2017 12:28:31 PM by AMER ENVIRON TEST LA

No.	Name	Status	Inj. Date/Time	Weight	Dil. Factor	ISTD Amount	Sample ID	Replicate ID
45	CCB	Finished	3/7/2017 5:14:58 PM	1.0000	1.0000	1.0000		01
46	CCV 10.0 PPB	Finished	3/7/2017 5:25:29 PM	1.0000	1.0000	1.0000		01
47	CCB	Finished	3/7/2017 5:35:59 PM	1.0000	1.0000	1.0000		01
48	CCB	Finished	3/7/2017 5:46:29 PM	1.0000	1.0000	1.0000		01

Title:
Datasource: DDZ91X11_local
Location: March 2017
Timebase: CrVI
#Samples: 48

Created: 3/7/2017 9:09:21 AM by AMER ENVIRON TEST LA
Last Update: 4/4/2017 12:28:31 PM by AMER ENVIRON TEST LA

No.	Name	Comment
45	CCB	7199 run by MK
46	CCV 10.0 PPB	7199 run by MK
47	CCB	7199 run by MK
48	CCB	7199 run by MK

AETL Job Number 86879

Chromium Hexavalent by 7199

SAMPLE AND STANDARD PREPARATION LOG AND REFERENCES

Sample Digestion Log Book for Method 3060A

Sample ID	Digestion Method	Final PH	Wt. of Sample	Final Vol. Of digestion	Vol. of Spike	Spike ID	Date	Sign
MB	3060A	9-9.5		50 ml	~~3 ml of 1ppm/50 ml~~	PR-13-226 ~~ST-09-146~~	03/06/17	M.Z
LCS								
LCS dup								
Sample 86879.01			2.5g		12.5ml x 1000µg/L / 50 = 250µg/L			
S-Dup 01			2.5g					
Spike 01								
Sp Dup 01					10ml x 250µg/L / 50 = 50µg/L			
2) 86879.02								
3) 86879.03								
4) 86879.04								
5) 86879.05								
6) 86879.06								
7) 86879.07								
8) 86879.08								
9) 86879.09								
10) 86879.10								
11) 86879.11								
12) .11dup								
13) .11MS								
14) .11MSD								
15) 86879.12								
16) 86879.13								
17) 86879.14								
18) 86879.15								
19) 86879.16								
20) 86879.17								

06/08/16 PR-13-316 1.00 µg/L 06/08/16

g/L Exp: Sep 2016

$$\frac{5ml \times 10 \mu g/L}{50} = 1.00 \mu g/L$$ (for MDL verification)

PR-13-317 0.500 µg/L 06/08/16

06/08/16

$$\frac{2.5ml \times 10 \mu g/L}{50} = 0.500 \mu g/L$$ (for MDL verification)

PR-13-318 06/09/16

06/08/16 spex 1000mg/L Cr^{+6} std (St-13-326)

conc = 10.0 mg/L Exp: Sep 16

06/08/16

$$\frac{\text{take } 10ml \text{ of } 1000 mg/L\ Cr^{+6} \text{ std}}{1000ml\ DIW} = 10.0 mg/L$$

PR-13-319 Cr^{+6} 06/09/16

06/08/16 conc = 500 µg/L spex

$$\frac{10ml \text{ of } 10 mg/L}{200ml} = 500 \mu g/L$$

$$10ml \times 10 mg/L \times \frac{1}{200ml} \times \frac{1000 \mu g}{1 mg} = 500 \mu g/L$$

06/08/16

PR-13-320 conc = 100 µg/L Cr^{+6} 06/09/16

spex

$$\frac{10ml \text{ of } 500 \mu g/L}{50ml} = 100 \mu g/L$$

06/08/16

PR-13-321 conc = 50 µg/L Cr^{+6} 06/09/16

spex

06/08/16

$$\frac{5ml \times 500 \mu g/L}{50ml} = 50 \mu g/L$$

PR-13-322 conc = 20.0 µg/L Cr^{+6} 06/09/16 PR-13-329

spex

$$\frac{10ml \times 100 \mu g/L}{50ml} = 20 \mu g/L$$

PR-13-323 conc = 10.0 µg/L Cr^{+6} spex 06/09/16 PR-13-3

$$\frac{5ml \times 100 \mu g/L}{50ml} = 10 \mu g/L$$

PR-13-324 conc = 5.00 µg/L Cr^{+6} spex 06/09/16

PR-13-33

$$\frac{5ml \times 50 \mu g/L}{50} = 5.00 \mu g/L$$

PR-13-325 Cr^{+6} conc = 1.00 µg/L spex 06/09/16

PR-13-33

$$\frac{5ml \times 10 \mu g/L}{50} = 1.00 \mu g/L$$

PR-13-326 Cr^{+6} conc = 0.500 µg/L spex 06/09/16

PR-13-33

$$\frac{2.5ml \times 10 \mu g/L}{50} = 0.500 \mu g/L$$

PR-13-327 Cr^{+6} conc = 0.200 µg/L spex 06/09/16

PR-13-33

$$\frac{10ml \times 1.00 \mu g/L}{50 ml} = 0.200 \mu g/L$$

000173

PR-13-328 Cr^{+6} conc = 0.100 µg/L spex 06/09/16 PR-13-33

06/09/16 PR-13-329 Cr^{+6} Conc = 0.05 µg/L 06/09/16

X SpCX

$$\frac{2.5ml \times 1.00 \mu g/L}{50} = 0.05 \mu g/L$$

06/09/16 PR-13-330 Cr^{+6} Conc = 0.02 µg/L 06/09/16

$$\frac{1ml \times 1.00 \mu g/L}{50} = 0.02 \mu g/L$$

06/09/16

PR-13-331 HACH 1000 mg/L Cr^{+6} 06/09/16

1st-13-3351 Conc: 10.0 mg/L Exp: Jul 20

$$\frac{10ml \text{ of } 1000 mg/L}{1000ml} = 10.0 mg/L$$

06/09/16

PR-13-332 500 µg/L Cr^{+6} HACH 06/09/16

$$\frac{10ml \text{ of } 10 mg/L}{200ml} = 500 \mu g/L$$

06/09/16 $$10ml \times 10 mg/L \times \frac{1}{200ml} \times \frac{1000 \mu g}{1 mg} = 500 \mu g/L$$

PR-13-333 100 µg/L Cr^{+6} HACH 06/09/16

$$\frac{10ml \times 500 \mu g/L}{50} = 100 \mu g/L$$

ex 06/09/16

PR-13-334 50 µg/L Cr^{+6} HACH 06/09/16

$$\frac{5ml \times 500 \mu g/L}{50} = 50 \mu g/L$$

06/09/16 PR-13-335 20 µg/L Cr^{+6} HACH 06/09/16

$$\frac{10ml \times 100 \mu g/L}{50} = 20 \mu g/L$$

PR-13_336 10 µg/L HACH Cr^{+6} 06/09/16

$$\frac{5\,ml \times 100\,\mu g/L}{50} = 10\,\mu g/L$$

PR-13_337 5.00 µg/L HACH Cr^{+6} 06/09/16

$$\frac{5\,ml \times 50.0\,\mu g/L}{50} = 5.00\,\mu g/L$$

PR-13_338 1.00 µg/L HACH Cr^{+6} 06/09/16

$$\frac{5\,ml \times 10.0\,\mu g/L}{50} = 1.00\,\mu g/L$$

PR-13_339 0.500 µg/L HACH Cr^{+6} 06/09/16

$$\frac{2.5\,ml \times 10\,\mu g/L}{50} = 0.500\,\mu g/L$$

PR-13_340 0.200 µg/L HACH Cr^{+6} 06/09/16

$$\frac{10\,ml \times 1\,\mu g/L}{50} = 0.200\,\mu g/L$$

PR-13_341 0.100 µg/L HACH Cr^{+6} 06/09/16

$$\frac{5\,ml \times 1.00\,\mu g/L}{50} = 0.1\,\mu g/L$$

PR-13_342 0.05 µg/L HACH Cr^{+6} 06/09/16

$$\frac{2.5\,ml \times 1.00\,\mu g/L}{} = 0.05\,\mu g/L$$

000175

Cr^{+6} 06/09/16 PR-13-343 0.02 µg/L 06/09/16

$$\frac{1ml \times 1.00 \mu g/L}{50} = 0.02 \mu g/L$$

PR-13-344 HACH 1000 mg/L Cr^{+6} std (ST-13-387) 02/02/17

Cr^{+6} 06/09/16 conc = 10.0 mg/L Exp date: Dec.20

$$\frac{\text{take 10ml of 1000 mg/L } Cr^{+6} \text{ std}}{1000ml \text{ DIW}} = 10.0 mg/L$$

Cr^{+6} 06/09/16

PR-13-345 conc = 500 µg/L HACH 02/02/17

$$\frac{10ml \text{ of } 10 mg/L}{200ml} = 500 \mu g/L$$

Cr^{+6} 06/09/16

$$10ml \times 10 mg/L \times \frac{1}{200ml} \times \frac{1000 \mu g}{1mg} = 500 \mu g/L$$

PR-13-346 conc = 100 µg/L HACH 02/02/17

Cr^{+6} 06/09/16

$$\frac{10ml \times 500 \mu g/L}{50ml} = 100 \mu g/L$$

PR-13-347 conc = 50 µg/L HACH 02/02/17

Cr^{+6} 06/09/16

$$\frac{5ml \times 500 \mu g/L}{50ml} = 50 \mu g/L$$

PR-13-348 conc = 20 µg/L HACH 02/02/17

Cr^{+6} 06/09/16

$$\frac{10ml \times 100 \mu g/L}{50ml} = 20 \mu g/L$$

PR-13-349 10.0 µg/L HACH 02/02/17

$$\frac{5\,ml \times 100\,\mu g/L}{50\,ml} = 10.0\,\mu g/L$$

PR-13-350 5.00 µg/L HACH 02/02/17

$$\frac{5\,ml \times 50\,\mu g/L}{50} = 5.00\,\mu g/L$$

PR-13-351 1.00 µg/L HACH 02/02/17

$$\frac{5\,ml \times 10\,\mu g/L}{50\,ml} = 1.00\,\mu g/L$$

for soil cal. points → added 1 ml of 10 ml/50 ml diluted Alkaline digestion sol to all the calibration points

For making soil sample LCS and Blank according to Method 3060A for soil samples take 2.5 gr of "Blank soil" added 10 ml Alkaline digestion solution which is 20 gr NaOH and 30 gr Na_2CO_3 in to 1000 ml DIW then add 0.5 g $MgCl_2$ and digested for 60 min, 90-95°C the add 1 ml of 0.5 M K_2HPO_4 / 0.5 M KH_2PO_4 buffer.

and then ... for 7199 Method

PR-17-352
PUCCA NO_3
NO_2 (
PO_4 (
Br^- (
F^- (
Cl (
SO_4 (

NO_3 = 11.
NO_2 = 8
PO_4 = 7
Br = 2
F = 2

PR-17-353
2ml M

PR-17-354
BFS NO_3 (St-
NO_2 (St-
PO_4 (St-
Br (St-1
F (St-1
SO_4 (St
Cl (St

PR-17-355
2ml

7. AETL Package Nos. 86878 and 86879

4/7/2017

File Name: Supplementary DP-EPA7196A-8687886879-05162017.pdf

Level IV Report of SW7196 Data for Samples

Originally Reported on 4/7/16

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Cover Page

Supplementary Information for

DATA PACKAGE
LEVEL IV
For Analysis of Chromium Hexavalent by EPA 7196 Only

OF

AETL Job Number 86878 & 86879
Dated 04/06/2017

FOR

Tetra Tech
5383 Hollister Ave, Ste 130
Santa Barbara, CA 9311

Project ID: 100-SBA-T36771-02
Project Name: Village Park S1

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AETL Job Number 86878 and 86879

Supplementary Information for Analysis of Chromium Hexavalent by EPA 7196A by Spectrophotometer

		Page Number
Introduction	✓	1
1.Matrix Spike Analysis Soluble and Insoluble Cr (VI)	✓	2-4
2.Post Digestion Spike Analysis	✓	5-6
3.Measurement of pH and Oxidation-Reduction Potential (ORP)	✓	7-10
4.Measurement of Ferrous Iron, Sulfides, and COD	✓	11-14
5.Mass Balance Analysis	✓	15-76
Conclusion and Recommendation	✓	77

Introduction

During the preparation of samples by EPA Method 3060A in AETL Job numbers 86878 and 86879 for analysis of chromium hexavalent by EPA Method 7196A Matrix Spike and Matrix Spike Duplicate recoveries were not within the acceptable limits of 80-120%. The low MS/MSD recoveries may have been due to the reducing tendency of sample matrix. Therefore in accordance with the guidelines of EPA Method 3060A, supplemental analysis have been conducted to determine the reducing tendency of the sample matrix and the quality of the generated data.

The following supplemental analyses have been performed:

1. Soluble and Insoluble Cr (VI) spiking analysis.
2. Post digestion spiking analysis.
3. Eh and pH analysis.
4. Ferrous iron, COD, and sulfide analysis.
5. Mass balance analysis.

Results of supplemental analysis have been presented in this report.

1. Matrix Spike analysis Soluble and Insoluble Cr (VI)

In Accordance with section 8.5 of EPA Method 3060A, a selected number of samples were spiked with soluble and insoluble Cr (VI) ($PbCrO_4$).

Results have been submitted in Table 1A, Table 1B, and Table 1C.

Table 1A: Results of Matrix Spike analysis for the Soluble Cr (VI)

Sample ID	Amount Taken g/100ml	Spiked Concentration mg/Kg	Recovered Concentration mg/Kg	Percent Recovery
86878.04	1.02	100	0.00	0.0
86878.04	1.03	1000	97.0	9.70
86879.01	1.04	100	0.00	0.0
86879.01	1.02	1000	76.0	7.60
86879.11	1.01	100	0.00	0.0
86879.11	1.05	1000	655	65.5
87184.04*	1.05	100	117	117

* Sample 87184.04 is a non-client sample from different location.

Table 1B: Results of Matrix Spike analysis for the Insoluble Cr (VI)

Sample ID	Amount Taken g/100ml	Spiked Concentration mg/Kg	Recovered Concentration mg/Kg	Percent Recovery
86878.04	1.01	9,616	5,700	59.3
86878.04	1.02	3,472	1,755	50.5
86879.01	1.06	9,488	2,035	21.4
86879.01	1.06	3,056	1,500	49.1
86879.11	1.01	8,992	6,600	73.4
86879.11	1.06	4,736	2,110	44.6
87184.04	1.04	6,160	5,315	86.3

* Sample 87184.04 is a non-client sample from different location.

Table 1C: Results of LCS analysis for the Insoluble Cr (VI)

Sample ID	Amount Taken g/100ml	Spiked Concentration mg/Kg	Recovered Concentration mg/Kg	Percent Recovery
LCS	NA	3,650	3,360	92.1
LCS	NA	8,140	7,600	93.4

Raw data is attached.

Hexavalent Chromium (Water/Soil) Analyses Worksheet

DATE: 04/17/17

METHOD:7196A

Calibration		mL Stock	Final Volum	Abs
	Standard 1: 0.01 mg/L	5ml*0.10mg/l	50	0.007
	Standard 2: 0.02 mg/L	10ml*0.10mg/l	50	0.014
	Standard 3: 0.05 mg/L	5ml*0.50mg/l	50	0.036
	Standard 4: 0.10 mg/L	10ml*0.50mg/l	50	0.074
	Standard 5: 0.20 mg/L	10ml*1.00mg/l	50	0.154
	Standard 6: 0.50 mg/L	25ml*1.00mg/l	50	0.370
	Standard 7: 1.00 mg/L	5ml*10mg/l	50	0.737
	R2			

calculation for $PbCrO_4$

$$\frac{0.0601g}{100ml} \times \frac{52.1 mol}{323.1 g/mol} \times \frac{1000ml}{1L} \times \frac{1000 mg}{1g}$$

$PbCrO_4$

$= 96.17 mg/L$

NSTRUMENT USED: HACH DR /4000

Wavelenght: 540 nm

Reagents Used

	Name	Reference Num	Exp. Date	Volume Used
1	Sulfuric Acid 10.0 %	ST-16-38	N/A	to give a PH of 2+/- 0.5
2	Diphenylcarbazide Solution	CP-13-313	Jun-17	0.5 ml
3	ICV STD : CONC 0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml
4	LCS/LCS DUP STD:CONC0.05 mg/l	ST-13-335	Jul-20	10 ml* 0.25 mg/l in50ml
5	CCV STD: CONC0.05 mg/l	ST-13-326	Sep-16	10 ml* 0.25 mg/l in50ml
6	MS / MSD : CONC0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml

ANALYSES DATA:

Spike amount	Sample ID	Volume	Dilution Factor	PH Adjusted	Conc: mg/l	abs	recovery
	Blank	25ml			0.00		
	~~ICV~~						
0.0227g	LCS 0.02g		50		0.672	0.496	91.9%
0.0509g	LCS DUP 0.04g		250		0.304	0.225	93.3%
	SP						
Spike amount	SP DUP						
1mg/L	1 86878.04		1		0.00	0.00	0.00
10mg/L	~~DUP~~ 86878.04		10		0.097	0.073	9.70
0.0601g	2 86878.04		50		1.14	0.841	59.3
0.0217g	3 86878.04		50		0.351	0.259	50.6
	4						
1.00mg/L	5 86879.01		1		0.0	0.00	0.00
10 mg/L	6 86879.01		10		0.076	0.057	76.0
0.0593g	7 86879.01		50		0.407	0.301	21.4
0.0181g	8 86879.01		50		0.300	0.222	50.0
	9						
1.00mg/L	10 86879.11		1		0.0	0.00	0.00
10mg/L	11 86879.11		50		0.131	0.098	65.5
0.0296g	12 86879.11		50		0.422	0.312	44.5
0.0562g	13 86879.11		50		1.32	0.974	73.4
	14						
0.0385g	15 87184.04		50		1.063	0.785	86.3%
1.00mg/L	CCV 87184.04		1		0.233	0.173	11.6%

$\frac{1.14 \times 50}{96.17}$

QC CALCULATIONS:

Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120
Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120

Performed By: _____

Date: _____

Reviewed By: _____

Date: _____

2. Post digestion Spike Analysis

In accordance with section 8.6 of EPA Method 3060A, a selected number of samples were spiked with soluble Cr (VI) post digestion.

Results have been submitted in Table 2.

Table 2: Results of Post-Digestion Spike

Sample ID	Amount Taken g/100ml	Spiked Concentration mg/Kg	Recovered Concentration mg/Kg	Percent Recovery
86878.04	1.00	40.0	39.2	98.0
86878.02	1.00	40.0	37.8	94.5
86879.01	1.00	40.0	41.1	103
86879.11	1.00	40.0	36.4	91.0
86878.05	1.00	40.0	42.9	107

Raw data is attached.

Hexavalent Chromium (Water/Soil) Analyses Worksheet

DATE: 04/17/17

METHOD:7196A

Calibration

	mL Stock	Final Volum	Abs
Standard 1: 0.01 mg/L	5ml*0.10mg/l	50	0.007
Standard 2: 0.02 mg/L	10ml*0.10mg/l	50	0.014
Standard 3: 0.05 mg/L	5ml*0.50mg/l	50	0.036
Standard 4: 0.10 mg/L	10ml*0.50mg/l	50	0.074
Standard 5: 0.20 mg/L	10ml*1.00mg/l	50	0.154
Standard 6: 0.50 mg/L	25ml*1.00mg/l	50	0.370
Standard 7: 1.00 mg/L	5ml*10mg/l	50	0.737
R2			

NSTRUMENT USED: **HACH DR /4000**

Reagents Used P03+ spike Wavelenght: 540 nm

	Name	Reference Num	Exp. Date	Volume Used
1	Sulfuric Acid 10.0 %	ST-16-38	N/A	to give a PH of 2+/- 0.5
2	Diphenylcarbazide Solution	CP-13-313	Jun-17	0.5 ml
3	ICV STD : CONC 0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml
4	LCS/LCS DUP STD:CONC0.05 mg/l	ST-13-335	Jul-20	10 ml* 0.25 mg/l in50ml
5	CCV STD: CONC0.05 mg/l	ST-13-326	Sep-16	10 ml* 0.25 mg/l in50ml
6	MS / MSD : CONC0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml

ANALYSES DATA:

Spike amount 0.4mg/L = 40mg/kg

Sample ID	Volume	Dilution Factor	PH Adjusted	Conc: mg/l	abs	recovery
Blank	25					
ICV						
LCS						
LCS DUP		First deleted the sample then spike				
SP						
SP DUP						
1 86878.04		50		0.392	0.289	0.392/0.4 = 98%
~~DUP~~ 86879.01		50		0.411	0.305	0.411/0.4 = 103
2 86879.11		50		0.364	0.269	0.364/0.4 = 91%
3 86878.05		250		0.429	0.318	0.429/0.4 = 107
4 86878.02		250		0.378	0.280	0.378/0.4 = 94.5
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
CCV						

QC CALCULATIONS:

Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120
Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120

Performed By: M.K
Date: 04/17/17

Reviewed By:
Date:

000006

3. Measurement of pH and Oxidation-Reduction Potential (ORP)

In accordance with section 8.5.1 of EPA Method 3060A, the Oxidation-Reduction Potential (ORP) and pH for a selected number of samples were measured by ASTM Method D1498-93 and EPA Method 9045 respectively.

Results of these measurements have been given the Table 3. The intersections of Eh and pH have been plotted on Figure 1.

Table 3: Results of Eh and pH

Sample ID	Eh (mV)	pH @ Temperature (°C)
86878.02	220	6.65 @ 19.8
86879.01	210	7.79 @ 19.6
86879.08	245	7.87 @ 19.6
86879.11	205	8.71 @ 19.6
86879.17	215	7.71 @ 19.6

Raw data and Graph- Figure 1- are attached.

pH (Water/Soil) ANALYSES WORKSHEET

Calibration | Slope: | |

DATE: 04/25/17

METHOD: 150.1/9045

Water Sample ☐
Soil Sample ☑

INSTRUMENT USED: ORION

Buffers Used

Name	Manf.	Ref/Lot Number	Exp Date
Standard 1: pH 4	Orion	St-13-352	Oct-17
Standard 2: pH 7	Orion	St-13-353	Nov-17
Standard 3: pH 10	Orion	St-13-354	Nov-17
Reference buffer used:	HACH	St-13-383	MAR-18

ANALYSES DATA:

SAMPLE ID	Sample wt (g)	Volume of water	Temp. C°	pH	
LCS 7.00				7.02/7.00	100%
1 86878.02	20g/20ml		19.8°C	6.65	1
86879.01 ~~Dup.~~			19.6°C	7.79	Dup
2 86879.08			19.6	7.87	2
3 86879.11			19.6	8.71	3
4 86879.17			19.6	7.71	4
5					5
6					6
7					7
8					8
9					9
10					10
11					11
12					12
13					13
14					14
15					15

Performed By: M.X

Reviewed By: _____

Date: 04/25/17

Date: _____

Oxidation-Reduction Potential Analyses Worksheet

ment Used: ORP Tester™

Date: 04/25/17

·l: 35650-00

Method: SM-2580B

GENT USED:

	Name	Reference Number	Exp. Date
1	ZoBell's Solution	54-11-036	03/28/18

.YSES DATA:

Sample ID	$E_{observed} + E_{reference\ std} - E_{reference\ observed}$	Result	
Blank	220 +160 - 225	155	
LCS	220+ 225 - 225	220/220=	100%
1 86878.02	220 +225 -225	220	1
86879.01 ~~Dup~~	220 + 215 - 225	210	~~Dup~~
2 86879.08	220 +250 -225	245	2
3 86879-11	220 +210 - 225	205	3
4 86879.17	220 +220 - 225	215	4
5			5
6			6
7			7
8			8
9			9
10			10
11			11
12			12
13			13
14			14
15			15

:ALCULATIONS:

Sample/Sample Dup RPD	QC Range

ɔrmed By: M.K

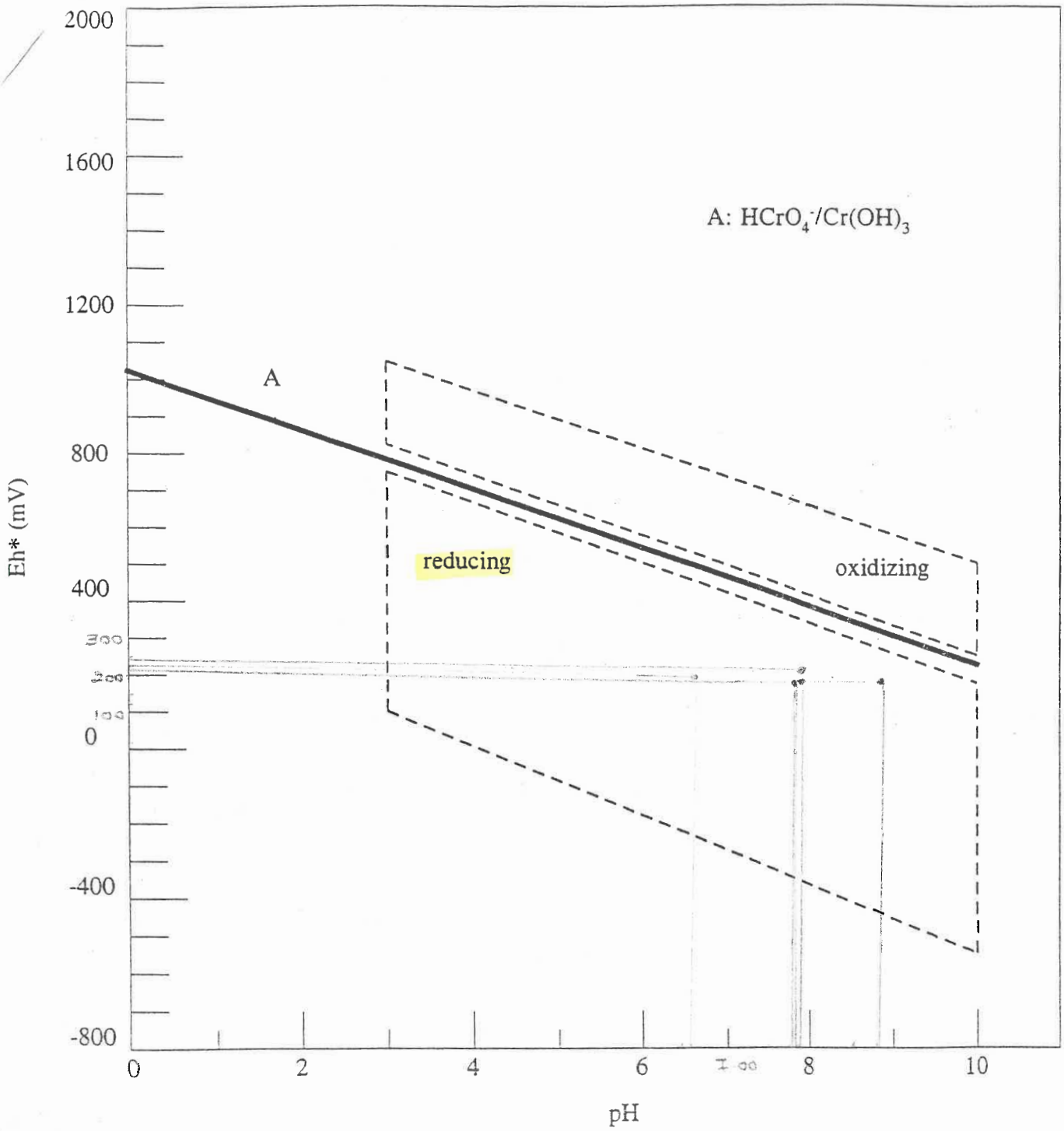
: 04/25/17

Reviewed By:

Date:

FIGURE 1
Eh/pH PHASE DIAGRAM

The dashed lines define Eh-pH boundaries commonly encountered in soils and sediments.



* Note the Eh values plotted on this diagram are corrected for the reference electrode voltage: 244 mV units must be added to the measured value when a separate calomel electrode is used, or 199 mV units must be added if a combination platinum electrode is used.

4. Measurement of Ferrous Iron, Sulfides, and COD

In accordance with section 8.5.1 of EPA Method 3060A, a few samples were analyzed for Ferrous Iron, Sulfides, and COD by ASTM Method D3872-86, EPA Method 9030, and Modified EPA Method 410.4 respectively.

Results of these analyses have been presented in Table 4.

Table 4: Results of Ferrous Iron, Sulfides, and COD

Sample ID	Ferrous Iron (mg/L)	Sulfides (m/Kg)	COD (mg/ L)
86878.02	ND	ND	ND
86879.01	ND	ND	ND
86879.08	ND	ND	ND
86879.11	ND	ND	ND
86879.17	ND	ND	ND

Raw data is attached.

FERROUS IRON (WATER) ANALYSES WORKSHEET

DATE: 04/25/17

METHOD: SM 3500-Fe

Calibration

	mL Stock	Volume	Abs
Standard 1: 0.0 ppm		25	
Standard 2: 0.05 ppm	0.625ml x 200	50/25	0.02
Standard 3: 0.10 ppm	1.25ml x 2.00	50/25	0.05
Standard 4: 0.40 ppm	5ml x 2.00	50/25	0.100
Standard 5: 0.80 ppm	10ml x 2.00	50/25	0.200
R			

INSTRUMENT USED: HACH Dr/4000

Wavelength: 510 nm

Reagents Used

	Name	Reference Number	Exp date	Volume Used
1	Ferrous Iron Reagent Powder Pillow	5+-13-193	May 19	1 pillow/25ml
2				
	LCS Std : CONC	5+-05-298	NA	1.4g Fe(NH4)2(SO4)2 6H2O / 1000 = 200 mg/L
	CCV Std: CONC			
	Amount of Standard Used for MS/MSD SAMPLE (mL)			

5ml x 200/50 = 20 mg/L

5ml x 20 / 50 = 2.0 mg/L

2.5 x 2.00 / 25 = 0.2 mg/L Fe

ANALYSES DATA:

Sample ID	Volume (ml)	Dilution	Absorbance	Concentration (mg/L)	
Blank	25			ND	
LCS				0.178 89.0%	
Sp Lcsd				0.182 91.0%	
SpDup					
1 86878.02				ND	1
86879.01 ~~Dup~~				ND	Dup
2 86879.08				ND	2
3 86879.11				ND	3
4 86879.17				ND	4
5					5
6					6
7					7
8					8
9					9
10					10
11					11
12					12
13					13
14					14
15					15
CCV					CCV

QC CALCULATIONS:

Spike Recovery (mg/L)	Expected Conc. (mg/L)	Percent Recovery	QC Range
			80-120
Spike Recovery Duplicate (mg/L)	**Expected Conc. (mg/L)**	**Percent Recovery**	**QC Range**
			80-120
Spike/SpikeDup RPD:			

Performed By: M.K.

Date: 04/25/17

Reviewed By: _____

Date: _____

SULFIDE (TOTAL/DISSOLVED) ANALYSES WORKSHEET

DATE: 04/25/17

METHOD: **376.2**

Calibration

	ml Stock	Fin. Vol.	Abs.
Standard 1: 0.000	0.00	50	0.000
Standard 2: 0.080	1.00	50	0.168
Standard 3: 0.160	2.00	50	0.386
Standard 4: 0.320	4.00	50	0.662
Standard 5: 0.400	5.00	50	0.857
Standard 6: 0.640	8.00	50	1.168
Standard 7: 0.800	10.0	50	1.595

Wave Length: 665 nm

INSTRUMENT USED: **HACH DR/4000**

Reagents Used

	Name	Reference Number	Exp. Date	Volume Used
1	Reagent 1 Sulfuric Acid	St-16-436	May 2020	1ml
2	Reagent 2 Potassium Dichromate	St-16-433	Sep 2021	1ml
	LCS Standard	St-13-413	May 2018	1vial 1000ml =4 ppm
	CCV Standard			2.5ml X 4.00 ppm / 50 = 0.2 ppm

ANALYSES DATA:

Sample ID	Volume (mL) Weigh (g)	Dilution Factor	Reading	Concentration (mg/L) or (mg/kg)
Blank	25ml			ND
LCS				0.178 89.0%
Sp/LCS dup				0.189 94.5%
Sp Dup				
1 86878.02				ND 1
86879.01 ~~Dup~~				ND Dup
2 86879.08				ND 2
3 86879.11				ND 3
4 86879.17				ND 4
5				5
6				6
7				7
8				8
9				9
10				10
11				11
12				12
13				13
14				14
15				15
CCV				CCV

QC CALCULATIONS:

Spike Recovery (mg/L) or (mg/kg)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			90-110
Spike Recovery (mg/L) or (mg/kg)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			90-110

Performed By: M.K
Date: 04/25/17

Reviewed By: _____
Date: _____

COD-WORKSHEET

DATE: 04/25/17
METHOD: 410.4

Calibration:

LOW RANGE	Abs	
Standard 1: 0 mg/L	0.000	R = 1.000
Standard 2: 5.0 mg/L	0.008	
Standard 3: 10 mg/L	0.310	
Standard 4: 100 mg/L	—	
Standard 5: 150 mg/L	—	

Wavelength: 420 nm
Instrument Used: Spectrophotometer HACH/4000

HIGH RANGE	Abs	
Standard 1: 0 mg/L	0.000	R = 1.000 (0.9996)
Standard 2: 25 mg/L	0.012	
Standard 3: 50 mg/L	0.023	
Standard 4: 100 mg/L	0.046	
Standard 5: 500 mg/L	0.216	
Standard 6: 1000 mg/L	0.432	

Wavelength: 640 nm
Instrument Used: Spectrophotometer HACH/4000

Reagents Used:

Name	Ref/LOT#	Exp. Date	Volume Used
LCS	CP-13-365	Sep. 2017	20ml x 1000 ppm/100 = 200ppm
CCV			
COD Reagent Tubes 1-150mg/ml			
COD Reagent Tubes 0-1500mg/ml	5+-16-431	Nov 2021	—
Amount of Standard Used for MS/MSD SAMPLE (mL)			

Analysis Data:

Sample ID	Volume (mL)	Dil. Factors	Concentration (mg/L)	
Blank	2ml		ND	
LCS ~~Low~~ high Range ~~50~~ 200			196 = 98%	
LCS High Range ~~500~~ 200			197 = 98.5%	
Sp				
SpDup				
1 86878.02			ND	1
86879.01 ~~Dup~~			ND	Dup
2 86879.08			ND	2
3 86879.11			ND	3
4 86879.17			ND	4
5			ND	5
6				6
7				7
8				8
9				9
10				10
11				11
12				12
13				13
14				14
15				15
CCV				CCV

QC CALCULATIONS:

Spike Recovery (mg/L)	Expected Conc. (mg/L)	PercentRecovery	QC Range
			80-120
Spike Recovery Duplicate (mg/L)	Expected Conc. (mg/L)	PercentRecovery	QC Range
			80-120
Spike/Spike Dup RPD:			

Performed By: M.K
Date: 04/25/17

Reviewed By: _____
Date: _____

5. Mass Balance Analysis

In accordance with section 8.5.2 of EPA Method 3060A, Mass Balance analysis was performed on a few selected samples.

Results of these analyses have been presented in Table 5A, Table 5B, and Table 5C.

Table 5A: Results of Mass Balance Analysis for Sample ID 86878.04

Spike Amount (mg/Kg)	Solubility	Recovered Cr (VI) (mg/Kg)	Recovered Cr (Total) (mg/Kg)	Recovered Cr(VI)+Cr(Total) (mg/Kg)	Percent Recovery
100	Soluble	ND	105	105	105
1000	Soluble	97.0	1,060	1,157	116
9616	Insoluble	5,700	4,340	10,040	104
3472	Insoluble	1,755	2,630	4,385	126

Table 5B: Results of Mass Balance Analysis for Sample ID 86879.01

Spike Amount (mg/Kg)	Solubility	Recovered Cr (VI) (mg/Kg)	Recovered Cr (Total) (mg/Kg)	Recovered Cr(VI)+Cr(Total) (mg/Kg)	Percent Recovery
100	Soluble	ND	120	120	120
1000	Soluble	76.0	426	502	50.2
9488	Insoluble	2,035	3,780	5,815	61.3
3056	Insoluble	1,500	2,559	4,059	133

Table 5C: Results of Mass Balance Analysis for Sample ID 86879.11

Spike Amount (mg/Kg)	Solubility	Recovered Cr (VI) (mg/Kg)	Recovered Cr (Total) (mg/Kg)	Recovered Cr(VI)+Cr(Total) (mg/Kg)	Percent Recovery
100	Soluble	ND	101	101	101
1000	Soluble	655	406	1,061	106
8992	Insoluble	6,600	3,677	10,277	114
4736	Insoluble	2,110	2,680	4,750	101

Raw data is attached.

Hexavalent Chromium (Water/Soil) Analyses Worksheet

DATE: 04/17/17

METHOD:7196A

Sol = Soluble (Cr^{+6})

insol = insoluble (Cr^{+6})

Calibration		mL Stock	Final Volum	Abs
	Standard 1: 0.01 mg/L	5ml*0.10mg/l	50	0.007
	Standard 2: 0.02 mg/L	10ml*0.10mg/l	50	0.014
	Standard 3: 0.05 mg/L	5ml*0.50mg/l	50	0.036
	Standard 4: 0.10 mg/L	10ml*0.50mg/l	50	0.074
	Standard 5: 0.20 mg/L	10ml*1.00mg/l	50	0.154
	Standard 6: 0.50 mg/L	25ml*1.00mg/l	50	0.370
	Standard 7: 1.00 mg/L	5ml*10mg/l	50	0.737
	R2			

NSTRUMENT USED: **HACH DR /4000**

Wavelenght: 540 nm

Reagents Used

for mass balence

	Name	Reference Num	Exp. Date	Volume Used
1	Sulfuric Acid 10.0 %	ST-16-38	N/A	to give a PH of 2+/- 0.5
2	Diphenylcarbazide Solution	CP-13-313	Jun-17	0.5 ml
3	ICV STD : CONC 0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml
4	LCS/LCS DUP STD:CONC0.05 mg/l	ST-13-335	Jul-20	10 ml* 0.25 mg/l in50ml
5	CCV STD: CONC0.05 mg/l	ST-13-326	Sep-16	10 ml* 0.25 mg/l in50ml
6	MS / MSD : CONC0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml

ANALYSES DATA:

	Sample ID	Volume	Dilution Factor	PH Adjusted	Conc: mg/l	abs	recovery
	Blank	25	1		ND	0.00	
	ICV						
	LCS 0.02g ins		50		0.672	0.496	91.9%
	LCS DUP 0.04 ins		250		0.304	0.225	93.3%
	SP						
	SP DUP						
1.00mg/L	1 86878.04	25	1		0.00	0.00	
10.0mg/L	DUP 86878.04 (sol)		10		0.097	0.073	
	2						
	3						
76.16mg/L	4 (insol) 86878.04		50		1.14	0.842	
34.72mg/L	5 86878.04		50		0.351	0.260	
	6						
	7						
	8						
	9						
	10						
	11						
	12						
	13						
	14						
	15						
	CCV						

spike amount

QC CALCULATIONS:

Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120
Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120

Performed By: M.K

Date: 04/17/17

Reviewed By:

Date:

000016

Hexavalent Chromium (Water/Soil) Analyses Worksheet

DATE: 04/17/17

METHOD:7196A

		mL Stock	Final Volum	Abs
Calibration	Standard 1: 0.01 mg/L	5ml*0.10mg/l	50	0.007
	Standard 2: 0.02 mg/L	10ml*0.10mg/l	50	0.014
	Standard 3: 0.05 mg/L	5ml*0.50mg/l	50	0.036
	Standard 4: 0.10 mg/L	10ml*0.50mg/l	50	0.074
	Standard 5: 0.20 mg/L	10ml*1.00mg/l	50	0.154
	Standard 6: 0.50 mg/L	25ml*1.00mg/l	50	0.370
	Standard 7: 1.00 mg/L	5ml*10mg/l	50	0.737
	R2			

NSTRUMENT USED: **HACH DR /4000**

Wavelenght: 540 nm

Reagents Used

for mass balance

	Name	Reference Num	Exp. Date	Volume Used
1	Sulfuric Acid 10.0 %	ST-16-38	N/A	to give a PH of 2+/- 0.5
2	Diphenylcarbazide Solution	CP-13-313	Jun-17	0.5 ml
3	ICV STD : CONC 0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml
4	LCS/LCS DUP STD:CONC0.05 mg/l	ST-13-335	Jul-20	10 ml* 0.25 mg/l in50ml
5	CCV STD: CONC0.05 mg/l	ST-13-326	Sep-16	10 ml* 0.25 mg/l in50ml
6	MS / MSD : CONC0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml

ANALYSES DATA:

	Sample ID	Volume	Dilution Factor	PH Adjusted	Conc: mg/l	abs
	Blank	25				
	ICV					
	LCS					
amount spike	LCS DUP					
	SP					
	SP DUP					
1.00mg/L	1 86879.01		1		0.00	0.00
10mg/L	DUP 86879.01 (x)		10		0.076	0.057
	2					
	3					
94.88mg/L	4 86879.01		50		0.407	0.301
30.56mg/L	5 86879.01 (1:50)		50		0.300	0.222
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	CCV					

QC CALCULATIONS:

Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120
Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120

Performed By: M.X

Date: 04/17/17

Reviewed By: 000017

Date:

Hexavalent Chromium (Water/Soil) Analyses Worksheet

DATE: 04/17/17

METHOD:7196A

Calibration

	mL Stock	Final Volum	Abs
Standard 1: 0.01 mg/L	5ml*0.10mg/l	50	0.007
Standard 2: 0.02 mg/L	10ml*0.10mg/l	50	0.014
Standard 3: 0.05 mg/L	5ml*0.50mg/l	50	0.036
Standard 4: 0.10 mg/L	10ml*0.50mg/l	50	0.074
Standard 5: 0.20 mg/L	10ml*1.00mg/l	50	0.154
Standard 6: 0.50 mg/L	25ml*1.00mg/l	50	0.370
Standard 7: 1.00 mg/L	5ml*10mg/l	50	0.737
R2			

NSTRUMENT USED: **HACH DR /4000**

Wavelenght: 540 nm

Reagents Used

for massbalence

	Name	Reference Num	Exp. Date	Volume Used
1	Sulfuric Acid 10.0 %	ST-16-38	N/A	to give a PH of 2+/- 0.5
2	Diphenylcarbazide Solution	CP-13-313	Jun-17	0.5 ml
3	ICV STD : CONC 0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml
4	LCS/LCS DUP STD:CONC0.05 mg/l	ST-13-335	Jul-20	10 ml* 0.25 mg/l in50ml
5	CCV STD: CONC0.05 mg/l	ST-13-326	Sep-16	10 ml* 0.25 mg/l in50ml
6	MS / MSD : CONC0.05 mg/l	ST-13-387	Dec-20	10 ml* 0.25 mg/l in50ml

ANALYSES DATA:

	Sample ID	Volume	Dilution Factor	PH Adjusted	Conc: mg/l	abs
	Blank	25				
	ICV					
	LCS					
	LCS DUP					
	SP					
	SP DUP					
1.00mg/L ←	1 86879.11		1		0.00	0.00
10.0mg/L ←	DUP 86879.11		50		0.131	0.097
	2					
	3					
	4					
←	5 86879.11		50		0.422	0.312
←	6 86879.11		50		1.32	0.975
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	CCV					

QC CALCULATIONS:

Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120
Spike Recovery (mg/L)	Exp. Conc. (mg/L)	Percent Recovery	QC Range
			80-120

Performed By: M.K

Date: 04/17/17

Reviewed By: 000018

Date:

Analytical Sequence

Method : 04012017

04/25/17

Seq.	Loc.	Type	Sample ID	Status
1	1		Calib Blank 1	
2	2		STD 1 PR-02-17-14	
3	3		STD 2 PR-02-17-15	
4	4		STD 3 PR-02-17-16	
5	5		STD 4 PR-02-17-17	
6	6		STD 5 PR-02-17-18	
7	7		STD 6 PR-02-17-19	
8	8		STD 7 PR-02-17-20	
9	9		STD 8 PR-02-17-21	
10	10		STD 9 PR-02-17-22	
11	11		STD 10 PR-02-17-23	
12	1	QC	ICB	
13	2	QC	ICV 1.00 PPM/ PR-02-17-24	
14	3	QC	INTERF CHK B	
15	4	QC	INTERF CHK A+B	
16	10		CCB	
17	11		MB#04252017	
18	12		LCS 0.020 g	
19	13		LCS 0.040 g	
20	14		CCB	
21	15		86878.04 1.00 mg/L	
22	5	QC	CCV 1.00 PPM/ PR-02-17-25	
23	16		86878.04 10.0 mg/L	
24	17		86878.04 0.060 g	
25	18		86878.04 0.020 g	
26	19		86878.04	
27	20		CCB	
28	21		86879.01 1.00 mg/L	
29	22		86879.01 10.0 mg/L	
30	23		86879.01 0.060 g	
31	24		86879.01 0.020 g	
32	5	QC	CCV 1.00 PPM/ PR-02-17-25	
33	25		86879.01	
34	26		CCB	
35	27		86879.11 1.00 mg/L	
36	28		86879.11 10.0 mg/L	
37	29		86879.11 0.060 g	
38	30		86879.11 0.020 g	
39	31		86879.11	
40	32		87184.04 0.020 g	
41	33		87184.04 1.00 mg/L	
42	5	QC	CCV 1.00 PPM/ PR-02-17-25	
43	34		87184.04	
44	35		CCB	
45	3	QC	INTERF CHK B	
46	4	QC	INTERF CHK A+B	
47	5	QC	CCV 1.00 PPM/ PR-02-17-25	
48				
49				
50				

000019

Sequence No.: 1
Sample ID: Calib Blank 1
Analyst:
Initial Sample Wt:
Dilution:
Wash Time:

Autosampler Location: 1
Date Collected: 4/25/2017 9:07:46 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Mean Data: Calib Blank 1

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sb 206.836	25.8	6.52	25.26%	[0.00]	mg/L
As 193.759	-23.9	3.20	13.42%	[0.00]	mg/L
Ba 233.527	-30.1	6.60	21.91%	[0.00]	mg/L
Be 313.042	27318.9	203.35	0.74%	[0.00]	mg/L
Cd 226.502	-43.6	9.94	22.78%	[0.00]	mg/L
Ca 315.887	-143.5	10.31	7.18%	[0.00]	mg/L
Cr 205.552	-27.3	2.66	9.73%	[0.00]	mg/L
Co 228.616	-15.6	3.55	22.79%	[0.00]	mg/L
Cu 324.752	6983.7	47.39	0.68%	[0.00]	mg/L
Fe 259.939	62.0	104.97	169.23%	[0.00]	mg/L
Pb 220.353	-13.1	5.82	44.25%	[0.00]	mg/L
Mg 279.077	-5.7	9.75	170.35%	[0.00]	mg/L
Mn 257.610	525.9	31.35	5.96%	[0.00]	mg/L
Mo 203.844	62.1	9.19	14.80%	[0.00]	mg/L
Ni 231.604	284.5	23.76	8.35%	[0.00]	mg/L
K 766.490	925.6	3.01	0.32%	[0.00]	mg/L
Se 196.099	21.3	1.16	5.44%	[0.00]	mg/L
Ag 328.068	-339.4	24.66	7.27%	[0.00]	mg/L
Na 588.995	-1529.7	254.42	16.63%	[0.00]	mg/L
Tl 190.864	-24.5	1.31	5.37%	[0.00]	mg/L
V 292.402	-205.7	4.51	2.19%	[0.00]	mg/L
Zn 213.856	436.8	13.17	3.01%	[0.00]	mg/L
Al 308.217	5072.8	79.44	1.57%	[0.00]	mg/L
As 188.976	-28.1	4.94	17.58%	[0.00]	mg/L
Zn 206.200	39.4	3.20	8.13%	[0.00]	mg/L

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 2
Sample ID: STD 1 PR-02-17-14
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 2
Date Collected: 4/25/2017 9:10:39 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: STD 1 PR-02-17-14

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Be 313.042	22832.6	280.32	1.23%	[0.005]	mg/L
Ca 315.887	5304.8	13.64	0.26%	[0.5]	mg/L
Fe 259.939	7470.6	23.37	0.31%	[0.5]	mg/L
Mg 279.077	781.5	4.97	0.64%	[0.5]	mg/L
K 766.490	1819.5	18.96	1.04%	[0.5]	mg/L
Na 588.995	15935.2	216.56	1.36%	[0.5]	mg/L
Al 308.217	18594.8	166.74	0.90%	[0.5]	mg/L

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Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

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Sequence No.: 3
Sample ID: STD 2 PR-02-17-15
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 3
Date Collected: 4/25/2017 9:13:08 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: STD 2 PR-02-17-15

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Be 313.042	237744.7	2642.36	1.11%	[0.050]	mg/L
Ca 315.887	52296.0	265.19	0.51%	[5]	mg/L
Fe 259.939	73655.9	389.44	0.53%	[5]	mg/L
Mg 279.077	7925.8	39.87	0.50%	[5]	mg/L
K 766.490	18199.7	112.59	0.62%	[5]	mg/L
Na 588.995	156954.9	2827.71	1.80%	[5]	mg/L
Al 308.217	189711.1	5118.58	2.70%	[5]	mg/L

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 4
Sample ID: STD 3 PR-02-17-16
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 4
Date Collected: 4/25/2017 9:15:26 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: STD 3 PR-02-17-16

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Be 313.042	2245966.0	12457.54	0.55%	[0.5]	mg/L
Ca 315.887	509313.2	2475.40	0.49%	[50]	mg/L
Fe 259.939	697635.1	3566.24	0.51%	[50]	mg/L
Mg 279.077	77095.0	323.92	0.42%	[50]	mg/L
K 766.490	181255.5	957.22	0.53%	[50]	mg/L
Na 588.995	1515591.9	14262.26	0.94%	[50]	mg/L
Al 308.217	1907070.6	21984.82	1.15%	[50]	mg/L

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 5
Sample ID: STD 4 PR-02-17-17
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 5
Date Collected: 4/25/2017 9:17:46 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: STD 4 PR-02-17-17

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Be 313.042	4228778.4	4564.83	0.11%	[1.00]	mg/L
Ca 315.887	997072.1	3384.14	0.34%	[100]	mg/L
Fe 259.939	1344314.9	6137.47	0.46%	[100]	mg/L
Mg 279.077	152315.9	658.03	0.43%	[100]	mg/L
K 766.490	362894.1	1623.12	0.45%	[100]	mg/L
Na 588.995	3022509.8	93004.82	3.08%	[100]	mg/L
Al 308.217	3815724.7	8436.02	0.22%	[100]	mg/L

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 6
Sample ID: STD 5 PR-02-17-18
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 6
Date Collected: 4/25/2017 9:20:10 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: STD 5 PR-02-17-18

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sb 206.836	51.1	11.39	22.29%	[0.010]	mg/L
As 193.759	15.6	3.51	22.55%	[0.010]	mg/L
Ba 233.527	1142.4	12.39	1.08%	[0.010]	mg/L
Cd 226.502	437.2	8.58	1.96%	[0.010]	mg/L
Cr 205.552	165.6	7.83	4.73%	[0.010]	mg/L
Co 228.616	210.5	7.41	3.52%	[0.010]	mg/L
Cu 324.752	1358.9	33.47	2.46%	[0.010]	mg/L
Pb 220.353	47.5	9.05	19.06%	[0.010]	mg/L
Mn 257.610	6268.9	31.63	0.50%	[0.010]	mg/L
Mo 203.844	61.3	3.43	5.60%	[0.010]	mg/L
Ni 231.604	287.0	14.19	4.94%	[0.010]	mg/L
Se 196.099	0.4	5.94	>999.9%	[0.010]	mg/L
Ag 328.068	3151.0	38.64	1.23%	[0.010]	mg/L
Tl 190.864	25.0	4.86	19.41%	[0.010]	mg/L
V 292.402	1499.1	20.85	1.39%	[0.010]	mg/L
Zn 213.856	304.9	7.31	2.40%	[0.010]	mg/L
As 188.976	15.5	9.44	60.77%	[0.010]	mg/L
Zn 206.200	129.8	1.94	1.50%	[0.010]	mg/L

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 7
Sample ID: STD 6 PR-02-17-19
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 7
Date Collected: 4/25/2017 9:22:20 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: STD 6 PR-02-17-19

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sb 206.836	181.5	3.52	1.94%	[0.100]	mg/L
As 193.759	73.9	7.18	9.71%	[0.100]	mg/L
Ba 233.527	11989.6	111.24	0.93%	[0.100]	mg/L
Cd 226.502	4583.6	47.86	1.04%	[0.100]	mg/L
Cr 205.552	1791.3	20.21	1.13%	[0.100]	mg/L
Co 228.616	2166.3	26.64	1.23%	[0.100]	mg/L
Cu 324.752	33684.8	673.02	2.00%	[0.100]	mg/L
Pb 220.353	357.3	5.96	1.67%	[0.100]	mg/L
Mn 257.610	63636.2	887.82	1.40%	[0.100]	mg/L
Mo 203.844	454.7	4.69	1.03%	[0.100]	mg/L
Ni 231.604	3041.2	9.66	0.32%	[0.100]	mg/L
Se 196.099	93.3	3.64	3.90%	[0.100]	mg/L
Ag 328.068	30137.9	438.84	1.46%	[0.100]	mg/L
Tl 190.864	167.1	3.87	2.31%	[0.100]	mg/L
V 292.402	14821.9	209.06	1.41%	[0.100]	mg/L
Zn 213.856	3284.5	29.94	0.91%	[0.100]	mg/L
As 188.976	145.9	4.14	2.84%	[0.100]	mg/L
Zn 206.200	1467.0	5.80	0.40%	[0.100]	mg/L

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 8
Sample ID: STD 7 PR-02-17-20
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 8
Date Collected: 4/25/2017 9:24:37 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: STD 7 PR-02-17-20

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sb 206.836	876.8	14.68	1.67%	[0.500]	mg/L
As 193.759	374.3	10.99	2.94%	[0.500]	mg/L
Ba 233.527	56133.4	487.53	0.87%	[0.500]	mg/L
Cd 226.502	22027.4	210.48	0.96%	[0.500]	mg/L
Cr 205.552	9024.2	89.06	0.99%	[0.500]	mg/L
Co 228.616	10895.5	94.45	0.87%	[0.500]	mg/L
Cu 324.752	177525.2	3868.15	2.18%	[0.500]	mg/L
Pb 220.353	1764.1	9.05	0.51%	[0.500]	mg/L
Mn 257.610	306635.0	3375.68	1.10%	[0.500]	mg/L
Mo 203.844	2248.7	21.42	0.95%	[0.500]	mg/L
Ni 231.604	14476.3	179.63	1.24%	[0.500]	mg/L
Se 196.099	498.7	11.12	2.23%	[0.500]	mg/L
Ag 328.068	145020.6	1963.75	1.35%	[0.500]	mg/L
Tl 190.864	781.5	14.76	1.89%	[0.500]	mg/L
V 292.402	71770.3	866.59	1.21%	[0.500]	mg/L
Zn 213.856	15728.6	144.12	0.92%	[0.500]	mg/L
As 188.976	675.1	16.40	2.43%	[0.500]	mg/L
Zn 206.200	7421.6	59.67	0.80%	[0.500]	mg/L

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Method Loaded
Method Name: 04012017 Method Last Saved: 4/10/2017 8:26:46 AM
IEC File: MSF File:
Method Description: 03312017

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Sequence No.: 9 Autosampler Location: 9
Sample ID: STD 8 PR-02-17-21 Date Collected: 4/25/2017 9:26:56 AM
Analyst: Data Type: Original
Initial Sample Wt: Initial Sample Vol:
Dilution: Sample Prep Vol:
Wash Time: 60 Auto Dilution Factor: 1

Mean Data: STD 8 PR-02-17-21

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sb 206.836	1776.3	11.82	0.67%	[1]	mg/L
As 193.759	741.5	12.88	1.74%	[1.0]	mg/L
Ba 233.527	112183.4	541.36	0.48%	[1.0]	mg/L
Cd 226.502	44258.6	292.41	0.66%	[1]	mg/L
Cr 205.552	17322.8	62.98	0.36%	[1]	mg/L
Co 228.616	20900.0	128.16	0.61%	[1]	mg/L
Cu 324.752	360546.8	3806.55	1.06%	[1]	mg/L
Pb 220.353	3528.8	20.10	0.57%	[1]	mg/L
Mn 257.610	612363.9	4179.67	0.68%	[1]	mg/L
Mo 203.844	4463.9	25.55	0.57%	[1]	mg/L
Ni 231.604	29028.3	170.23	0.59%	[1]	mg/L
Se 196.099	1001.9	2.14	0.21%	[1]	mg/L
Ag 328.068	290582.7	2477.23	0.85%	[1]	mg/L
Tl 190.864	1576.8	5.85	0.37%	[1]	mg/L
V 292.402	143221.9	1211.04	0.85%	[1]	mg/L
Zn 213.856	31953.9	153.71	0.48%	[1]	mg/L
As 188.976	1342.2	8.01	0.60%	[1]	mg/L
Zn 206.200	14463.2	57.66	0.40%	[1]	mg/L

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Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

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Sequence No.: 10
Sample ID: STD 9 PR-02-17-22
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 10
Date Collected: 4/25/2017 9:29:15 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: STD 9 PR-02-17-22

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sb 206.836	3616.1	35.30	0.98%	[2]	mg/L
As 193.759	1476.5	20.94	1.42%	[2]	mg/L
Ba 233.527	221130.2	3119.29	1.41%	[2]	mg/L
Cd 226.502	87080.5	1128.37	1.30%	[2]	mg/L
Cr 205.552	34322.8	505.39	1.47%	[2]	mg/L
Co 228.616	41314.5	505.47	1.22%	[2]	mg/L
Cu 324.752	719882.4	15809.49	2.20%	[2]	mg/L
Pb 220.353	7080.4	26.63	0.38%	[2]	mg/L
Mn 257.610	1206204.0	17949.32	1.49%	[2]	mg/L
Mo 203.844	9039.5	24.16	0.27%	[2]	mg/L
Ni 231.604	57171.5	804.59	1.41%	[2]	mg/L
Se 196.099	1991.2	31.57	1.59%	[2]	mg/L
Ag 328.068	572581.0	9312.04	1.63%	[2]	mg/L
Tl 190.864	3152.8	3.48	0.11%	[2]	mg/L
V 292.402	284158.5	4473.11	1.57%	[2]	mg/L
Zn 213.856	62808.7	748.74	1.19%	[2]	mg/L
As 188.976	2684.8	7.02	0.26%	[2]	mg/L
Zn 206.200	28602.8	259.54	0.91%	[2]	mg/L

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 11
Sample ID: STD 10 PR-02-17-23
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 11
Date Collected: 4/25/2017 9:31:35 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: STD 10 PR-02-17-23

Analyte	Mean Corrected Intensity	Std.Dev.	RSD	Conc.	Calib Units
Sb 206.836	9429.2	129.91	1.38%	[5]	mg/L
As 193.759	3753.3	31.67	0.84%	[5]	mg/L
Ba 233.527	562980.4	2263.22	0.40%	[5]	mg/L
Cd 226.502	221654.4	719.36	0.32%	[5]	mg/L
Cr 205.552	87530.4	236.82	0.27%	[5]	mg/L
Co 228.616	105625.0	371.24	0.35%	[5]	mg/L
Cu 324.752	1869478.0	14040.38	0.75%	[5]	mg/L
Pb 220.353	17983.3	147.99	0.82%	[5]	mg/L
Mn 257.610	3048335.6	12597.00	0.41%	[5]	mg/L
Mo 203.844	23167.8	289.03	1.25%	[5]	mg/L
Ni 231.604	146039.3	679.53	0.47%	[5]	mg/L
Se 196.099	5119.6	66.42	1.30%	[5]	mg/L
Ag 328.068	1460551.0	7194.41	0.49%	[5]	mg/L
Tl 190.864	7958.1	62.63	0.79%	[5]	mg/L
V 292.402	730998.6	4062.81	0.56%	[5]	mg/L
Zn 213.856	158980.5	556.71	0.35%	[5]	mg/L
As 188.976	6843.6	72.97	1.07%	[5]	mg/L
Zn 206.200	72770.0	55.29	0.08%	[5]	mg/L

Calibration Summary

Analyte	Stds.	Equation	Intercept	Slope	Curvature	Corr. Coef.	Reslope
Sb 206.836	6	Lin, Calc Int	-38.9	1882	0.00000	0.999799	
As 193.759	6	Lin Thru 0	0.0	748.7	0.00000	0.999981	
Ba 233.527	6	Lin Thru 0	0.0	112300	0.00000	0.999981	
Be 313.042	4	Lin Thru 0	0.0	4282000	0.00000	0.999686	
Cd 226.502	6	Lin Thru 0	0.0	44220	0.00000	0.999981	
Ca 315.887	4	Lin Thru 0	0.0	10010	0.00000	0.999961	
Cr 205.552	6	Lin Thru 0	0.0	17460	0.00000	0.999972	
Co 228.616	6	Lin Thru 0	0.0	21060	0.00000	0.999966	
Cu 324.752	6	Lin Thru 0	0.0	371400	0.00000	0.999894	
Fe 259.939	4	Lin Thru 0	0.0	13550	0.00000	0.999879	
Pb 220.353	6	Lin Thru 0	0.0	3586	0.00000	0.999980	
Mg 279.077	4	Lin Thru 0	0.0	1527	0.00000	0.999987	
Mn 257.610	6	Lin Thru 0	0.0	608900	0.00000	0.999992	
Mo 203.844	6	Lin Thru 0	0.0	4612	0.00000	0.999945	
Ni 231.604	6	Lin Thru 0	0.0	29120	0.00000	0.999973	
K 766.490	4	Lin Thru 0	0.0	3628	0.00000	1.000000	
Se 196.099	6	Lin Thru 0	0.0	1019	0.00000	0.999946	
Ag 328.068	6	Lin Thru 0	0.0	291300	0.00000	0.999977	
Na 588.995	4	Lin Thru 0	0.0	30240	0.00000	0.999998	
Tl 190.864	6	Lin Thru 0	0.0	1589	0.00000	0.999992	
V 292.402	6	Lin Thru 0	0.0	145500	0.00000	0.999949	
Zn 213.856	6	Lin Thru 0	0.0	31750	0.00000	0.999990	
Al 308.217	4	Lin, Calc Int	-583.0	38160	0.00000	1.000000	
As 188.976	6	Lin Thru 0	0.0	1364	0.00000	0.999973	
Zn 206.200	6	Lin, Calc Int	-35.9	14530	0.00000	0.999971	

Sequence No.: 1
Sample ID: ICB
Analyst:
Initial Sample Wt:
Dilution:
Wash Time:

Autosampler Location: 1
Date Collected: 4/25/2017 9:38:09 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:

Mean Data: ICB

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Sb 206.836	8.8	0.025	mg/L	0.0050	0.025	mg/L	0.0050	19.92%
As 193.759	-1.3	-0.002	mg/L	0.0043	-0.002	mg/L	0.0043	248.48%
QC value within limits for As 193.759 Recovery = Not calculated								
Ba 233.527	11.4	0.000	mg/L	0.0000	0.000	mg/L	0.0000	39.06%
QC value within limits for Ba 233.527 Recovery = Not calculated								
Be 313.042	962.0	0.000	mg/L	0.0001	0.000	mg/L	0.0001	29.52%
QC value within limits for Be 313.042 Recovery = Not calculated								
Cd 226.502	-11.1	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	35.91%
QC value within limits for Cd 226.502 Recovery = Not calculated								
Ca 315.887	13.1	0.001	mg/L	0.0019	0.001	mg/L	0.0019	145.48%
QC value within limits for Ca 315.887 Recovery = Not calculated								
Cr 205.552	1.5	0.000	mg/L	0.0003	0.000	mg/L	0.0003	359.23%
QC value within limits for Cr 205.552 Recovery = Not calculated								
Co 228.616	0.9	0.000	mg/L	0.0004	0.000	mg/L	0.0004	816.58%
QC value within limits for Co 228.616 Recovery = Not calculated								
Cu 324.752	-29.8	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	148.90%
QC value within limits for Cu 324.752 Recovery = Not calculated								
Fe 259.939	223.1	0.016	mg/L	0.0031	0.016	mg/L	0.0031	18.74%
QC value within limits for Fe 259.939 Recovery = Not calculated								
Pb 220.353	3.8	0.001	mg/L	0.0012	0.001	mg/L	0.0012	114.75%
QC value within limits for Pb 220.353 Recovery = Not calculated								
Mg 279.077	-5.7	-0.004	mg/L	0.0065	-0.004	mg/L	0.0065	173.30%
QC value within limits for Mg 279.077 Recovery = Not calculated								
Mn 257.610	82.6	0.000	mg/L	0.0000	0.000	mg/L	0.0000	22.44%
QC value within limits for Mn 257.610 Recovery = Not calculated								
Mo 203.844	13.3	0.003	mg/L	0.0009	0.003	mg/L	0.0009	30.28%
QC value within limits for Mo 203.844 Recovery = Not calculated								
Ni 231.604	2.0	0.000	mg/L	0.0001	0.000	mg/L	0.0001	125.29%
QC value within limits for Ni 231.604 Recovery = Not calculated								
K 766.490	48.9	0.013	mg/L	0.0051	0.013	mg/L	0.0051	37.91%
QC value within limits for K 766.490 Recovery = Not calculated								
Se 196.099	-10.5	-0.010	mg/L	0.0129	-0.010	mg/L	0.0129	124.52%
QC value within limits for Se 196.099 Recovery = Not calculated								
Ag 328.068	90.2	0.000	mg/L	0.0001	0.000	mg/L	0.0001	30.43%
QC value within limits for Ag 328.068 Recovery = Not calculated								
Na 588.995	1142.3	0.038	mg/L	0.0010	0.038	mg/L	0.0010	2.58%
QC value within limits for Na 588.995 Recovery = Not calculated								
Tl 190.864	6.0	0.004	mg/L	0.0029	0.004	mg/L	0.0029	77.93%
QC value within limits for Tl 190.864 Recovery = Not calculated								
V 292.402	47.5	0.000	mg/L	0.0002	0.000	mg/L	0.0002	56.31%
QC value within limits for V 292.402 Recovery = Not calculated								
Zn 213.856	-0.4	-0.000	mg/L	0.0003	-0.000	mg/L	0.0003	>999.9%
QC value within limits for Zn 213.856 Recovery = Not calculated								
Al 308.217	-64.0	0.014	mg/L	0.0021	0.014	mg/L	0.0021	15.26%
As 188.976	-2.4	-0.002	mg/L	0.0026	-0.002	mg/L	0.0026	149.11%
Zn 206.200	2.3	0.003	mg/L	0.0001	0.003	mg/L	0.0001	5.01%

All analyte(s) passed QC.

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 2
Sample ID: ICV 1.00 PPM/ PR-02-17-24
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 2
Date Collected: 4/25/2017 9:41:02 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: ICV 1.00 PPM/ PR-02-17-24

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Sb 206.836	1758.7	0.955	mg/L	0.0203	0.955	mg/L	0.0203	2.13%
As 193.759	719.7	0.961	mg/L	0.0107	0.961	mg/L	0.0107	1.11%
QC value within limits for As 193.759 Recovery = 96.13%								
Ba 233.527	104037.5	0.926	mg/L	0.0070	0.926	mg/L	0.0070	0.75%
QC value within limits for Ba 233.527 Recovery = 92.63%								
Be 313.042	4526931.5	1.057	mg/L	0.0055	1.057	mg/L	0.0055	0.52%
QC value within limits for Be 313.042 Recovery = 105.71%								
Cd 226.502	40938.0	0.926	mg/L	0.0061	0.926	mg/L	0.0061	0.66%
QC value within limits for Cd 226.502 Recovery = 92.57%								
Ca 315.887	507348.3	50.66	mg/L	0.350	50.66	mg/L	0.350	0.69%
QC value within limits for Ca 315.887 Recovery = 101.32%								
Cr 205.552	15844.6	0.908	mg/L	0.0071	0.908	mg/L	0.0071	0.78%
QC value within limits for Cr 205.552 Recovery = 90.75%								
Co 228.616	19738.4	0.937	mg/L	0.0019	0.937	mg/L	0.0019	0.20%
QC value within limits for Co 228.616 Recovery = 93.72%								
Cu 324.752	325723.8	0.877	mg/L	0.0133	0.877	mg/L	0.0133	1.51%
QC value within limits for Cu 324.752 Recovery = 87.69%								
Fe 259.939	700736.6	51.72	mg/L	0.431	51.72	mg/L	0.431	0.83%
QC value within limits for Fe 259.939 Recovery = 103.45%								
Pb 220.353	3129.9	0.873	mg/L	0.0101	0.873	mg/L	0.0101	1.16%
QC value within limits for Pb 220.353 Recovery = 87.27%								
Mg 279.077	76715.9	50.24	mg/L	0.295	50.24	mg/L	0.295	0.59%
QC value within limits for Mg 279.077 Recovery = 100.48%								
Mn 257.610	533721.0	0.876	mg/L	0.0045	0.876	mg/L	0.0045	0.52%
QC value within limits for Mn 257.610 Recovery = 87.65%								
Mo 203.844	4185.0	0.907	mg/L	0.0083	0.907	mg/L	0.0083	0.91%
QC value within limits for Mo 203.844 Recovery = 90.75%								
Ni 231.604	25309.9	0.869	mg/L	0.0084	0.869	mg/L	0.0084	0.97%
QC value within limits for Ni 231.604 Recovery = 86.92%								
K 766.490	182857.4	50.40	mg/L	0.435	50.40	mg/L	0.435	0.86%
QC value within limits for K 766.490 Recovery = 100.80%								
Se 196.099	964.3	0.946	mg/L	0.0307	0.946	mg/L	0.0307	3.24%
Ag 328.068	276755.0	0.950	mg/L	0.0090	0.950	mg/L	0.0090	0.95%
QC value within limits for Ag 328.068 Recovery = 95.01%								
Na 588.995	1567332.1	51.82	mg/L	0.473	51.82	mg/L	0.473	0.91%
QC value within limits for Na 588.995 Recovery = 103.64%								
Tl 190.864	1373.7	0.865	mg/L	0.0031	0.865	mg/L	0.0031	0.36%
QC value within limits for Tl 190.864 Recovery = 86.45%								
V 292.402	135191.3	0.929	mg/L	0.0076	0.929	mg/L	0.0076	0.81%
QC value within limits for V 292.402 Recovery = 92.89%								
Zn 213.856	31081.5	0.979	mg/L	0.0074	0.979	mg/L	0.0074	0.75%
QC value within limits for Zn 213.856 Recovery = 97.90%								
Al 308.217	1901019.5	49.83	mg/L	0.128	49.83	mg/L	0.128	0.26%
As 188.976	1307.2	0.958	mg/L	0.0068	0.958	mg/L	0.0068	0.71%
Zn 206.200	13259.1	0.915	mg/L	0.0037	0.915	mg/L	0.0037	0.41%

All analyte(s) passed QC.

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 3
Sample ID: INTERF CHK B
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 3
Date Collected: 4/25/2017 9:43:42 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: INTERF CHK B

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	33.2	0.038	mg/L	0.0054	0.038	mg/L	0.0054	14.22%
As 193.759	-36.7	-0.049	mg/L	0.0261	-0.049	mg/L	0.0261	53.13%
QC value within limits for As 193.759 Recovery = Not calculated								
Ba 233.527	1072.4	0.010	mg/L	0.0001	0.010	mg/L	0.0001	0.83%
QC value within limits for Ba 233.527 Recovery = Not calculated								
Be 313.042	487.1	0.000	mg/L	0.0001	0.000	mg/L	0.0001	46.06%
QC value within limits for Be 313.042 Recovery = Not calculated								
Cd 226.502	1231.6	0.028	mg/L	0.0005	0.028	mg/L	0.0005	1.62%
QC value within limits for Cd 226.502 Recovery = Not calculated								
Ca 315.887	1988797.9	198.6	mg/L	0.93	198.6	mg/L	0.93	0.47%
QC value within limits for Ca 315.887 Recovery = 99.29%								
Cr 205.552	-75.1	-0.004	mg/L	0.0009	-0.004	mg/L	0.0009	21.16%
QC value within limits for Cr 205.552 Recovery = Not calculated								
Co 228.616	38.2	0.002	mg/L	0.0004	0.002	mg/L	0.0004	23.90%
QC value within limits for Co 228.616 Recovery = Not calculated								
Cu 324.752	-7921.0	-0.021	mg/L	0.0002	-0.021	mg/L	0.0002	0.77%
QC value within limits for Cu 324.752 Recovery = Not calculated								
Fe 259.939	2630204.6	194.1	mg/L	1.22	194.1	mg/L	1.22	0.63%
QC value within limits for Fe 259.939 Recovery = 97.07%								
Pb 220.353	-70.3	-0.020	mg/L	0.0065	-0.020	mg/L	0.0065	33.02%
QC value within limits for Pb 220.353 Recovery = Not calculated								
Mg 279.077	309864.5	202.9	mg/L	1.11	202.9	mg/L	1.11	0.55%
QC value within limits for Mg 279.077 Recovery = 101.46%								
Mn 257.610	-3032.1	-0.005	mg/L	0.0001	-0.005	mg/L	0.0001	2.54%
QC value within limits for Mn 257.610 Recovery = Not calculated								
Mo 203.844	-17.2	-0.004	mg/L	0.0026	-0.004	mg/L	0.0026	69.28%
QC value within limits for Mo 203.844 Recovery = Not calculated								
Ni 231.604	-157.7	-0.005	mg/L	0.0010	-0.005	mg/L	0.0010	18.91%
QC value within limits for Ni 231.604 Recovery = Not calculated								
K 766.490	765253.1	210.9	mg/L	2.05	210.9	mg/L	2.05	0.97%
QC value within limits for K 766.490 Recovery = 105.46%								
Se 196.099	-112.8	-0.111	mg/L	0.0246	-0.111	mg/L	0.0246	22.27%
Ag 328.068	-4569.5	-0.016	mg/L	0.0001	-0.016	mg/L	0.0001	0.86%
QC value within limits for Ag 328.068 Recovery = Not calculated								
Na 588.995	6150413.3	203.4	mg/L	0.90	203.4	mg/L	0.90	0.44%
QC value within limits for Na 588.995 Recovery = 101.68%								
Tl 190.864	14.0	0.009	mg/L	0.0030	0.009	mg/L	0.0030	33.85%
QC value within limits for Tl 190.864 Recovery = Not calculated								
V 292.402	-1428.7	-0.010	mg/L	0.0003	-0.010	mg/L	0.0003	2.76%
QC value within limits for V 292.402 Recovery = Not calculated								
Zn 213.856	1481.0	0.047	mg/L	0.0008	0.047	mg/L	0.0008	1.69%
QC value within limits for Zn 213.856 Recovery = Not calculated								
Al 308.217	7849910.5	205.7	mg/L	1.81	205.7	mg/L	1.81	0.88%
As 188.976	-37.2	-0.027	mg/L	0.0029	-0.027	mg/L	0.0029	10.65%
Zn 206.200	118.8	0.011	mg/L	0.0014	0.011	mg/L	0.0014	13.00%

All analyte(s) passed QC.

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 4
Sample ID: INTERF CHK A+B
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 4
Date Collected: 4/25/2017 9:46:25 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: INTERF CHK A+B

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Sb 206.836	1687.5	0.917	mg/L	0.0135	0.917	mg/L	0.0135	1.47%
As 193.759	669.1	0.894	mg/L	0.0050	0.894	mg/L	0.0050	0.56%
QC value within limits for As 193.759 Recovery = 89.36%								
Ba 233.527	94156.0	0.838	mg/L	0.0047	0.838	mg/L	0.0047	0.56%
QC value within limits for Ba 233.527 Recovery = 83.83%								
Be 313.042	4108650.5	0.959	mg/L	0.0019	0.959	mg/L	0.0019	0.20%
QC value within limits for Be 313.042 Recovery = 95.94%								
Cd 226.502	38511.5	0.871	mg/L	0.0038	0.871	mg/L	0.0038	0.44%
QC value within limits for Cd 226.502 Recovery = 87.09%								
Ca 315.887	1988845.4	198.6	mg/L	0.06	198.6	mg/L	0.06	0.03%
QC value within limits for Ca 315.887 Recovery = 99.30%								
Cr 205.552	14742.9	0.844	mg/L	0.0046	0.844	mg/L	0.0046	0.55%
QC value within limits for Cr 205.552 Recovery = 84.44%								
Co 228.616	16789.0	0.797	mg/L	0.0057	0.797	mg/L	0.0057	0.71%
QC value within limits for Co 228.616 Recovery = 79.71%								
Cu 324.752	304145.6	0.819	mg/L	0.0118	0.819	mg/L	0.0118	1.44%
QC value within limits for Cu 324.752 Recovery = 81.88%								
Fe 259.939	2605531.6	192.3	mg/L	0.18	192.3	mg/L	0.18	0.09%
QC value within limits for Fe 259.939 Recovery = 96.16%								
Pb 220.353	2632.1	0.734	mg/L	0.0048	0.734	mg/L	0.0048	0.65%
QC value within limits for Pb 220.353 Recovery = 73.39%								
Mg 279.077	310144.7	203.1	mg/L	0.12	203.1	mg/L	0.12	0.06%
QC value within limits for Mg 279.077 Recovery = 101.55%								
Mn 257.610	494059.2	0.811	mg/L	0.0048	0.811	mg/L	0.0048	0.59%
QC value within limits for Mn 257.610 Recovery = 81.14%								
Mo 203.844	3741.4	0.811	mg/L	0.0037	0.811	mg/L	0.0037	0.46%
QC value within limits for Mo 203.844 Recovery = 81.13%								
Ni 231.604	22546.5	0.774	mg/L	0.0030	0.774	mg/L	0.0030	0.38%
QC value within limits for Ni 231.604 Recovery = 77.43%								
K 766.490	769212.2	212.0	mg/L	0.79	212.0	mg/L	0.79	0.37%
QC value within limits for K 766.490 Recovery = 106.00%								
Se 196.099	822.8	0.807	mg/L	0.0100	0.807	mg/L	0.0100	1.24%
Ag 328.068	263974.1	0.906	mg/L	0.0088	0.906	mg/L	0.0088	0.97%
QC value within limits for Ag 328.068 Recovery = 90.63%								
Na 588.995	6069281.9	200.7	mg/L	1.50	200.7	mg/L	1.50	0.75%
QC value within limits for Na 588.995 Recovery = 100.34%								
Tl 190.864	1121.4	0.706	mg/L	0.0056	0.706	mg/L	0.0056	0.80%
QC value within limits for Tl 190.864 Recovery = 70.58%								
V 292.402	121867.0	0.837	mg/L	0.0049	0.837	mg/L	0.0049	0.59%
QC value within limits for V 292.402 Recovery = 83.74%								
Zn 213.856	31310.3	0.986	mg/L	0.0028	0.986	mg/L	0.0028	0.29%
QC value within limits for Zn 213.856 Recovery = 98.62%								
Al 308.217	7867706.4	206.2	mg/L	0.82	206.2	mg/L	0.82	0.40%
As 188.976	1205.1	0.883	mg/L	0.0127	0.883	mg/L	0.0127	1.44%
Zn 206.200	11861.1	0.819	mg/L	0.0028	0.819	mg/L	0.0028	0.34%

All analyte(s) passed QC.

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Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

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Sequence No.: 5
Sample ID: CCB
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 10
Date Collected: 4/25/2017 9:49:13 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCB

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	14.7	0.028	mg/L	0.0010	0.028	mg/L	0.0010	3.35%
As 193.759	2.9	0.004	mg/L	0.0059	0.004	mg/L	0.0059	154.37%
Ba 233.527	10.1	0.000	mg/L	0.0001	0.000	mg/L	0.0001	85.37%
Be 313.042	989.9	0.000	mg/L	0.0000	0.000	mg/L	0.0000	14.46%
Cd 226.502	-4.5	-0.000	mg/L	0.0002	-0.000	mg/L	0.0002	173.37%
Ca 315.887	268.6	0.027	mg/L	0.0016	0.027	mg/L	0.0016	5.99%
Cr 205.552	0.0	0.000	mg/L	0.0006	0.000	mg/L	0.0006	>999.9%
Co 228.616	-1.1	-0.000	mg/L	0.0004	-0.000	mg/L	0.0004	751.79%
Cu 324.752	324.7	0.001	mg/L	0.0001	0.001	mg/L	0.0001	10.92%
Fe 259.939	555.3	0.041	mg/L	0.0068	0.041	mg/L	0.0068	16.47%
Pb 220.353	-5.5	-0.002	mg/L	0.0011	-0.002	mg/L	0.0011	73.01%
Mg 279.077	22.2	0.015	mg/L	0.0143	0.015	mg/L	0.0143	98.75%
Mn 257.610	23.3	0.000	mg/L	0.0000	0.000	mg/L	0.0000	65.35%
Mo 203.844	16.8	0.004	mg/L	0.0015	0.004	mg/L	0.0015	40.79%
Ni 231.604	17.5	0.001	mg/L	0.0001	0.001	mg/L	0.0001	17.42%
K 766.490	639.6	0.176	mg/L	0.0119	0.176	mg/L	0.0119	6.77%
Se 196.099	-5.1	-0.005	mg/L	0.0062	-0.005	mg/L	0.0062	123.25%
Ag 328.068	93.0	0.000	mg/L	0.0001	0.000	mg/L	0.0001	29.44%
Na 588.995	7002.2	0.232	mg/L	0.0055	0.232	mg/L	0.0055	2.37%
Tl 190.864	5.1	0.003	mg/L	0.0013	0.003	mg/L	0.0013	40.29%
V 292.402	16.2	0.000	mg/L	0.0000	0.000	mg/L	0.0000	20.16%
Zn 213.856	0.1	0.000	mg/L	0.0001	0.000	mg/L	0.0001	>999.9%
Al 308.217	633.0	0.032	mg/L	0.0010	0.032	mg/L	0.0010	3.26%
As 188.976	-0.1	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	142.66%
Zn 206.200	-1.1	0.002	mg/L	0.0006	0.002	mg/L	0.0006	23.89%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 6
Sample ID: MB#04252017
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 11
Date Collected: 4/25/2017 9:52:07 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: MB#04252017

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	3.1	0.022	mg/L	0.0017	0.022	mg/L	0.0017	7.49%
As 193.759	1.9	0.003	mg/L	0.0031	0.003	mg/L	0.0031	121.97%
Ba 233.527	12.0	0.000	mg/L	0.0001	0.000	mg/L	0.0001	51.74%
Be 313.042	590.3	0.000	mg/L	0.0000	0.000	mg/L	0.0000	22.97%
Cd 226.502	-8.5	-0.000	mg/L	0.0002	-0.000	mg/L	0.0002	121.95%
Ca 315.887	58.8	0.006	mg/L	0.0010	0.006	mg/L	0.0010	17.31%
Cr 205.552	-0.6	-0.000	mg/L	0.0005	-0.000	mg/L	0.0005	>999.9%
Co 228.616	-2.9	-0.000	mg/L	0.0002	-0.000	mg/L	0.0002	148.14%
Cu 324.752	-30.1	-0.000	mg/L	0.0002	-0.000	mg/L	0.0002	234.97%
Fe 259.939	348.4	0.026	mg/L	0.0143	0.026	mg/L	0.0143	55.48%
Pb 220.353	-1.9	-0.001	mg/L	0.0025	-0.001	mg/L	0.0025	484.96%
Mg 279.077	-1.3	-0.001	mg/L	0.0054	-0.001	mg/L	0.0054	632.99%
Mn 257.610	-17.8	-0.000	mg/L	0.0000	-0.000	mg/L	0.0000	148.14%
Mo 203.844	8.1	0.002	mg/L	0.0032	0.002	mg/L	0.0032	180.91%
Ni 231.604	2.9	0.000	mg/L	0.0002	0.000	mg/L	0.0002	208.19%
K 766.490	341.1	0.094	mg/L	0.0025	0.094	mg/L	0.0025	2.68%
Se 196.099	-5.1	-0.005	mg/L	0.0067	-0.005	mg/L	0.0067	133.09%
Ag 328.068	51.8	0.000	mg/L	0.0001	0.000	mg/L	0.0001	73.27%
Na 588.995	3636.8	0.120	mg/L	0.0099	0.120	mg/L	0.0099	8.23%
Tl 190.864	12.0	0.008	mg/L	0.0007	0.008	mg/L	0.0007	8.98%
V 292.402	-12.0	-0.000	mg/L	0.0000	-0.000	mg/L	0.0000	40.45%
Zn 213.856	-4.1	-0.000	mg/L	0.0006	-0.000	mg/L	0.0006	448.65%
Al 308.217	43.2	0.016	mg/L	0.0002	0.016	mg/L	0.0002	1.10%
As 188.976	6.8	0.005	mg/L	0.0037	0.005	mg/L	0.0037	74.37%
Zn 206.200	2.3	0.003	mg/L	0.0002	0.003	mg/L	0.0002	5.97%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 7
Sample ID: LCS 0.020 g
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 12
Date Collected: 4/25/2017 9:55:02 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: LCS 0.020 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	147.3	0.099	mg/L	0.0056	0.099	mg/L	0.0056	5.67%
As 193.759	-16.2	-0.022	mg/L	0.0096	-0.022	mg/L	0.0096	44.29%
Ba 233.527	2912.9	0.026	mg/L	0.0002	0.026	mg/L	0.0002	0.94%
Be 313.042	-1936.8	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	32.48%
Cd 226.502	527.4	0.012	mg/L	0.0013	0.012	mg/L	0.0013	10.79%
Ca 315.887	5700.7	0.569	mg/L	0.0038	0.569	mg/L	0.0038	0.67%
Cr 205.552	48323.3	2.768	mg/L	0.0545	2.768	mg/L	0.0545	1.97%
Co 228.616	9.9	0.000	mg/L	0.0003	0.000	mg/L	0.0003	73.26%
Cu 324.752	75780.2	0.204	mg/L	0.0033	0.204	mg/L	0.0033	1.64%
Fe 259.939	2022.9	0.149	mg/L	0.0045	0.149	mg/L	0.0045	3.01%
Pb 220.353	411051.9	114.6	mg/L	1.78	114.6	mg/L	1.78	1.55%
Mg 279.077	134905.9	88.35	mg/L	1.274	88.35	mg/L	1.274	1.44%
Mn 257.610	4675.8	0.008	mg/L	0.0002	0.008	mg/L	0.0002	2.32%
Mo 203.844	36.4	0.008	mg/L	0.0021	0.008	mg/L	0.0021	26.65%
Ni 231.604	324.4	0.011	mg/L	0.0002	0.011	mg/L	0.0002	1.88%
K 766.490	19574.1	5.395	mg/L	0.0945	5.395	mg/L	0.0945	1.75%
Se 196.099	9.8	0.010	mg/L	0.0058	0.010	mg/L	0.0058	60.18%
Ag 328.068	460.3	0.002	mg/L	0.0001	0.002	mg/L	0.0001	8.39%
Na 588.995	1007041.1	33.30	mg/L	0.164	33.30	mg/L	0.164	0.49%
Tl 190.864	3.7	0.002	mg/L	0.0028	0.002	mg/L	0.0028	122.30%
V 292.402	-863.2	-0.006	mg/L	0.0001	-0.006	mg/L	0.0001	1.97%
Zn 213.856	6415.2	0.202	mg/L	0.0013	0.202	mg/L	0.0013	0.64%
Al 308.217	34030.5	0.907	mg/L	0.0298	0.907	mg/L	0.0298	3.28%
As 188.976	-18.4	-0.013	mg/L	0.0031	-0.013	mg/L	0.0031	22.70%
Zn 206.200	2534.9	0.177	mg/L	0.0027	0.177	mg/L	0.0027	1.52%

Expected LCS conc → $\frac{0.0227 \times 32.2}{0.02} = 36.5$ mg/L

$Cr^{+6} = 33.6$ mg/L
$TCr = 2.768$
} + 36.36

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 8
Sample ID: LCS 0.040 g
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 13
Date Collected: 4/25/2017 9:57:49 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: LCS 0.040 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	570.4	0.324	mg/L	0.0032	0.324	mg/L	0.0032	0.99%
As 193.759	-6.1	-0.008	mg/L	0.0081	-0.008	mg/L	0.0081	99.71%
Ba 233.527	1909.7	0.017	mg/L	0.0001	0.017	mg/L	0.0001	0.37%
Be 313.042	-2399.1	-0.001	mg/L	0.0000	-0.001	mg/L	0.0000	3.53%
Cd 226.502	308.8	0.007	mg/L	0.0003	0.007	mg/L	0.0003	3.78%
Ca 315.887	5756.7	0.575	mg/L	0.0009	0.575	mg/L	0.0009	0.15%
Cr 205.552	355814.6	20.38	mg/L	0.192	20.38	mg/L	0.192	0.94%
Co 228.616	141.9	0.007	mg/L	0.0005	0.007	mg/L	0.0005	7.28%
Cu 324.752	90350.1	0.243	mg/L	0.0023	0.243	mg/L	0.0023	0.96%
Fe 259.939	2947.3	0.218	mg/L	0.0034	0.218	mg/L	0.0034	1.56%
Pb 220.353	1241467.7	346.2	mg/L	3.10	346.2	mg/L	3.10	0.90%
Mg 279.077	92338.5	60.47	mg/L	1.049	60.47	mg/L	1.049	1.73%
Mn 257.610	3994.9	0.007	mg/L	0.0001	0.007	mg/L	0.0001	1.79%
Mo 203.844	3.8	0.001	mg/L	0.0010	0.001	mg/L	0.0010	118.43%
Ni 231.604	320.2	0.011	mg/L	0.0003	0.011	mg/L	0.0003	3.15%
K 766.490	9101.4	2.509	mg/L	0.0353	2.509	mg/L	0.0353	1.41%
Se 196.099	8.1	0.008	mg/L	0.0079	0.008	mg/L	0.0079	99.63%
Ag 328.068	436.4	0.001	mg/L	0.0002	0.001	mg/L	0.0002	10.14%
Na 588.995	600393.1	19.85	mg/L	0.474	19.85	mg/L	0.474	2.39%
Tl 190.864	3.7	0.002	mg/L	0.0058	0.002	mg/L	0.0058	249.33%
V 292.402	-7016.2	-0.048	mg/L	0.0002	-0.048	mg/L	0.0002	0.47%
Zn 213.856	8378.9	0.264	mg/L	0.0018	0.264	mg/L	0.0018	0.69%
Al 308.217	11918.7	0.328	mg/L	0.0041	0.328	mg/L	0.0041	1.24%
As 188.976	-133.2	-0.098	mg/L	0.0037	-0.098	mg/L	0.0037	3.80%
Zn 206.200	1307.6	0.092	mg/L	0.0039	0.092	mg/L	0.0039	4.26%

Les → $\frac{0.0509 \times 322}{0.02} = 81.9$ mg/L

$Cr^{+6} = 76.0$ mg/L

T Cr = 20.38 } $+ \frac{96.4}{81.9} = 117\%$

↓ over range

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 34
Sample ID: LCS 0.040 g D=10
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 6
Date Collected: 4/25/2017 11:08:58 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: LCS 0.040 g D=10

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	61.3	0.053	mg/L	0.0044	0.053	mg/L	0.0044	8.33%
As 193.759	-6.9	-0.009	mg/L	0.0085	-0.009	mg/L	0.0085	92.18%
Ba 233.527	234.2	0.002	mg/L	0.0001	0.002	mg/L	0.0001	3.01%
Be 313.042	-809.7	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	35.96%
Cd 226.502	3.8	0.000	mg/L	0.0001	0.000	mg/L	0.0001	162.59%
Ca 315.887	845.2	0.084	mg/L	0.0026	0.084	mg/L	0.0026	3.10%
Cr 205.552	39582.0	2.267	mg/L	0.0102	2.267	mg/L	0.0102	0.45%
Co 228.616	8.1	0.000	mg/L	0.0004	0.000	mg/L	0.0004	105.64%
Cu 324.752	5038.3	0.014	mg/L	0.0001	0.014	mg/L	0.0001	0.68%
Fe 259.939	342.9	0.025	mg/L	0.0007	0.025	mg/L	0.0007	2.86%
Pb 220.353	157162.4	43.82	mg/L	0.227	43.82	mg/L	0.227	0.52%
Mg 279.077	10595.0	6.938	mg/L	0.0559	6.938	mg/L	0.0559	0.80%
Mn 257.610	361.9	0.001	mg/L	0.0001	0.001	mg/L	0.0001	11.15%
Mo 203.844	1.4	0.000	mg/L	0.0003	0.000	mg/L	0.0003	113.53%
Ni 231.604	46.4	0.002	mg/L	0.0002	0.002	mg/L	0.0002	15.53%
K 766.490	1274.4	0.351	mg/L	0.0065	0.351	mg/L	0.0065	1.85%
Se 196.099	-1.2	-0.001	mg/L	0.0098	-0.001	mg/L	0.0098	836.70%
Ag 328.068	138.0	0.000	mg/L	0.0001	0.000	mg/L	0.0001	21.30%
Na 588.995	59206.6	1.958	mg/L	0.0471	1.958	mg/L	0.0471	2.40%
Tl 190.864	3.6	0.002	mg/L	0.0024	0.002	mg/L	0.0024	106.63%
V 292.402	-706.7	-0.005	mg/L	0.0001	-0.005	mg/L	0.0001	1.97%
Zn 213.856	146.4	0.005	mg/L	0.0005	0.005	mg/L	0.0005	10.01%
Al 308.217	972.9	0.041	mg/L	0.0033	0.041	mg/L	0.0033	8.03%
As 188.976	-9.0	-0.007	mg/L	0.0033	-0.007	mg/L	0.0033	50.07%
Zn 206.200	-217.7	-0.013	mg/L	0.0004	-0.013	mg/L	0.0004	3.33%

LCS → $\frac{0.509 \times 32.2}{0.02} = 819$ mg/L

$Cr^{+6} = 76.0$ mg/L

T Cr = 2.267 × 10 = 22.67

98.67

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 9
Sample ID: CCB
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 14
Date Collected: 4/25/2017 10:00:37 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCB

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	-6.3	0.017	mg/L	0.0009	0.017	mg/L	0.0009	4.95%
As 193.759	-0.5	-0.001	mg/L	0.0027	-0.001	mg/L	0.0027	429.37%
Ba 233.527	-15.4	-0.000	mg/L	0.0002	-0.000	mg/L	0.0002	110.60%
Be 313.042	286.4	0.000	mg/L	0.0001	0.000	mg/L	0.0001	87.39%
Cd 226.502	-22.0	-0.000	mg/L	0.0002	-0.000	mg/L	0.0002	40.44%
Ca 315.887	61.5	0.006	mg/L	0.0020	0.006	mg/L	0.0020	32.15%
Cr 205.552	18.2	0.001	mg/L	0.0003	0.001	mg/L	0.0003	30.22%
Co 228.616	-4.2	-0.000	mg/L	0.0004	-0.000	mg/L	0.0004	212.55%
Cu 324.752	426.4	0.001	mg/L	0.0001	0.001	mg/L	0.0001	7.14%
Fe 259.939	201.8	0.015	mg/L	0.0024	0.015	mg/L	0.0024	16.12%
Pb 220.353	194.8	0.054	mg/L	0.0052	0.054	mg/L	0.0052	9.57%
Mg 279.077	-2.8	-0.002	mg/L	0.0111	-0.002	mg/L	0.0111	593.51%
Mn 257.610	19.1	0.000	mg/L	0.0000	0.000	mg/L	0.0000	55.07%
Mo 203.844	3.5	0.001	mg/L	0.0012	0.001	mg/L	0.0012	162.58%
Ni 231.604	-1.3	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	316.55%
K 766.490	128.0	0.035	mg/L	0.0027	0.035	mg/L	0.0027	7.74%
Se 196.099	1.7	0.002	mg/L	0.0054	0.002	mg/L	0.0054	317.63%
Ag 328.068	67.7	0.000	mg/L	0.0002	0.000	mg/L	0.0002	66.25%
Na 588.995	-1018.2	-0.034	mg/L	0.0088	-0.034	mg/L	0.0088	26.04%
Tl 190.864	5.3	0.003	mg/L	0.0014	0.003	mg/L	0.0014	41.06%
V 292.402	1.3	0.000	mg/L	0.0000	0.000	mg/L	0.0000	550.90%
Zn 213.856	16.9	0.001	mg/L	0.0005	0.001	mg/L	0.0005	101.92%
Al 308.217	-125.3	0.012	mg/L	0.0002	0.012	mg/L	0.0002	1.33%
As 188.976	8.6	0.006	mg/L	0.0049	0.006	mg/L	0.0049	77.13%
Zn 206.200	2.0	0.003	mg/L	0.0002	0.003	mg/L	0.0002	5.81%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 10
Sample ID: 86878.04 1.00 mg/L =100 mg/kg
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 15
Date Collected: 4/25/2017 10:03:29 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86878.04 1.00 mg/L

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	97.3	0.072	mg/L	0.0015	0.072	mg/L	0.0015	2.04%
As 193.759	-15.3	-0.020	mg/L	0.0116	-0.020	mg/L	0.0116	56.72%
Ba 233.527	136368.8	1.214	mg/L	0.0039	1.214	mg/L	0.0039	0.33%
Be 313.042	-16371.1	-0.004	mg/L	0.0001	-0.004	mg/L	0.0001	1.93%
Cd 226.502	1220.8	0.028	mg/L	0.0002	0.028	mg/L	0.0002	0.84%
Ca 315.887	1740604.0	173.8	mg/L	0.67	173.8	mg/L	0.67	0.38%
Cr 205.552	24363.1	1.395	mg/L	0.0022	1.395	mg/L	0.0022	0.16%
Co 228.616	3133.2	0.149	mg/L	0.0011	0.149	mg/L	0.0011	0.76%
Cu 324.752	508662.8	1.369	mg/L	0.0027	1.369	mg/L	0.0027	0.19%
Fe 259.939	1631362.4	120.4	mg/L	0.49	120.4	mg/L	0.49	0.40%
Pb 220.353	1476.9	0.412	mg/L	0.0324	0.412	mg/L	0.0324	7.86%
Mg 279.077	141927.6	92.94	mg/L	0.294	92.94	mg/L	0.294	0.32%
Mn 257.610	783779.7	1.287	mg/L	0.0045	1.287	mg/L	0.0045	0.35%
Mo 203.844	344.7	0.075	mg/L	0.0031	0.075	mg/L	0.0031	4.14%
Ni 231.604	27309.9	0.938	mg/L	0.0047	0.938	mg/L	0.0047	0.50%
K 766.490	141729.9	39.06	mg/L	0.343	39.06	mg/L	0.343	0.88%
Se 196.099	-28.7	-0.028	mg/L	0.0119	-0.028	mg/L	0.0119	42.15%
Ag 328.068	-2030.3	-0.007	mg/L	0.0002	-0.007	mg/L	0.0002	2.67%
Na 588.995	5767197.0	190.7	mg/L	4.20	190.7	mg/L	4.20	2.20%
Tl 190.864	-17.5	-0.011	mg/L	0.0038	-0.011	mg/L	0.0038	34.27%
V 292.402	20726.0	0.142	mg/L	0.0002	0.142	mg/L	0.0002	0.13%
Zn 213.856	257643.7	8.116	mg/L	0.0247	8.116	mg/L	0.0247	0.30%
Al 308.217	1820314.4	47.72	mg/L	0.065	47.72	mg/L	0.065	0.14%
As 188.976	-19.1	-0.014	mg/L	0.0024	-0.014	mg/L	0.0024	17.47%
Zn 206.200	113394.2	7.806	mg/L	0.0305	7.806	mg/L	0.0305	0.39%

spiked Cr^{+6} = 1.00 mg/L = 100 mg/kg

recovery Cr^{+6} = ND

recovery T Cr = 1.39 − 0.341 = $\frac{1.05}{1.00}$ = 105 %

sample result

sample result = 0.341

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 11
Sample ID: CCV 1.00 PPM/ PR-02-17-25
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 5
Date Collected: 4/25/2017 10:06:09 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCV 1.00 PPM/ PR-02-17-25

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Sb 206.836	1782.9	0.968	mg/L	0.0090	0.968	mg/L	0.0090	0.93%
As 193.759	726.2	0.970	mg/L	0.0066	0.970	mg/L	0.0066	0.68%
QC value within limits for As 193.759 Recovery = 96.99%								
Ba 233.527	106125.8	0.945	mg/L	0.0017	0.945	mg/L	0.0017	0.18%
QC value within limits for Ba 233.527 Recovery = 94.49%								
Be 313.042	4632400.1	1.082	mg/L	0.0046	1.082	mg/L	0.0046	0.42%
QC value within limits for Be 313.042 Recovery = 108.17%								
Cd 226.502	41220.2	0.932	mg/L	0.0016	0.932	mg/L	0.0016	0.17%
QC value within limits for Cd 226.502 Recovery = 93.21%								
Ca 315.887	525792.9	52.50	mg/L	0.196	52.50	mg/L	0.196	0.37%
QC value within limits for Ca 315.887 Recovery = 105.00%								
Cr 205.552	16201.1	0.928	mg/L	0.0022	0.928	mg/L	0.0022	0.24%
QC value within limits for Cr 205.552 Recovery = 92.79%								
Co 228.616	19080.2	0.906	mg/L	0.0031	0.906	mg/L	0.0031	0.34%
QC value within limits for Co 228.616 Recovery = 90.59%								
Cu 324.752	325735.6	0.877	mg/L	0.0059	0.877	mg/L	0.0059	0.68%
QC value within limits for Cu 324.752 Recovery = 87.70%								
Fe 259.939	735390.2	54.28	mg/L	0.279	54.28	mg/L	0.279	0.51%
QC value within limits for Fe 259.939 Recovery = 108.57%								
Pb 220.353	3186.7	0.889	mg/L	0.0075	0.889	mg/L	0.0075	0.85%
QC value within limits for Pb 220.353 Recovery = 88.86%								
Mg 279.077	80034.9	52.41	mg/L	0.191	52.41	mg/L	0.191	0.36%
QC value within limits for Mg 279.077 Recovery = 104.82%								
Mn 257.610	545312.7	0.896	mg/L	0.0033	0.896	mg/L	0.0033	0.36%
QC value within limits for Mn 257.610 Recovery = 89.55%								
Mo 203.844	4279.8	0.928	mg/L	0.0102	0.928	mg/L	0.0102	1.10%
QC value within limits for Mo 203.844 Recovery = 92.80%								
Ni 231.604	25968.5	0.892	mg/L	0.0014	0.892	mg/L	0.0014	0.16%
QC value within limits for Ni 231.604 Recovery = 89.18%								
K 766.490	194266.4	53.54	mg/L	0.361	53.54	mg/L	0.361	0.67%
QC value within limits for K 766.490 Recovery = 107.09%								
Se 196.099	979.3	0.961	mg/L	0.0080	0.961	mg/L	0.0080	0.83%
Ag 328.068	284113.9	0.975	mg/L	0.0017	0.975	mg/L	0.0017	0.18%
QC value within limits for Ag 328.068 Recovery = 97.54%								
Na 588.995	1572955.1	52.01	mg/L	1.164	52.01	mg/L	1.164	2.24%
QC value within limits for Na 588.995 Recovery = 104.02%								
Tl 190.864	1388.7	0.874	mg/L	0.0044	0.874	mg/L	0.0044	0.50%
QC value within limits for Tl 190.864 Recovery = 87.40%								
V 292.402	138654.0	0.953	mg/L	0.0007	0.953	mg/L	0.0007	0.07%
QC value within limits for V 292.402 Recovery = 95.27%								
Zn 213.856	31706.6	0.999	mg/L	0.0005	0.999	mg/L	0.0005	0.05%
QC value within limits for Zn 213.856 Recovery = 99.87%								
Al 308.217	1954971.3	51.25	mg/L	0.250	51.25	mg/L	0.250	0.49%
As 188.976	1344.1	0.985	mg/L	0.0034	0.985	mg/L	0.0034	0.34%
Zn 206.200	13307.6	0.918	mg/L	0.0036	0.918	mg/L	0.0036	0.39%

All analyte(s) passed QC.

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 12
Sample ID: 86878.04 10.0 mg/L
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 16
Date Collected: 4/25/2017 10:08:53 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86878.04 10.0 mg/L

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	285.2	0.172	mg/L	0.0072	0.172	mg/L	0.0072	4.20%
As 193.759	-15.2	-0.020	mg/L	0.0078	-0.020	mg/L	0.0078	38.53%
Ba 233.527	112955.4	1.006	mg/L	0.0021	1.006	mg/L	0.0021	0.21%
Be 313.042	-17162.0	-0.004	mg/L	0.0001	-0.004	mg/L	0.0001	2.22%
Cd 226.502	849.0	0.019	mg/L	0.0005	0.019	mg/L	0.0005	2.55%
Ca 315.887	1293434.7	129.2	mg/L	1.29	129.2	mg/L	1.29	1.00%
Cr 205.552	159928.4	9.160	mg/L	0.0296	9.160	mg/L	0.0296	0.32%
Co 228.616	1928.9	0.092	mg/L	0.0010	0.092	mg/L	0.0010	1.10%
Cu 324.752	573095.9	1.543	mg/L	0.0098	1.543	mg/L	0.0098	0.63%
Fe 259.939	1186155.0	87.56	mg/L	0.931	87.56	mg/L	0.931	1.06%
Pb 220.353	679.8	0.190	mg/L	0.0008	0.190	mg/L	0.0008	0.40%
Mg 279.077	175772.2	115.1	mg/L	1.21	115.1	mg/L	1.21	1.05%
Mn 257.610	558275.9	0.917	mg/L	0.0027	0.917	mg/L	0.0027	0.30%
Mo 203.844	177.1	0.038	mg/L	0.0030	0.038	mg/L	0.0030	7.88%
Ni 231.604	13718.8	0.471	mg/L	0.0025	0.471	mg/L	0.0025	0.54%
K 766.490	138527.5	38.18	mg/L	0.474	38.18	mg/L	0.474	1.24%
Se 196.099	-37.3	-0.037	mg/L	0.0166	-0.037	mg/L	0.0166	45.36%
Ag 328.068	-564.8	-0.002	mg/L	0.0001	-0.002	mg/L	0.0001	6.70%
Na 588.995	6163379.3	203.8	mg/L	0.64	203.8	mg/L	0.64	0.31%
Tl 190.864	-3.9	-0.002	mg/L	0.0019	-0.002	mg/L	0.0019	76.19%
V 292.402	11529.8	0.079	mg/L	0.0007	0.079	mg/L	0.0007	0.92%
Zn 213.856	225594.4	7.106	mg/L	0.0198	7.106	mg/L	0.0198	0.28%
Al 308.217	1953055.7	51.19	mg/L	0.367	51.19	mg/L	0.367	0.72%
As 188.976	-61.6	-0.045	mg/L	0.0126	-0.045	mg/L	0.0126	27.92%
Zn 206.200	97745.1	6.729	mg/L	0.0118	6.729	mg/L	0.0118	0.17%

spiked amount 10.0 mg/L

Cr^{+6} recovery = 0.970 mg/L

T Cr = 9.160 mg/L − 0.341 = 8.819

T Cr sample result = 0.341

Cr^{+6} + CrT = 8.819 + 0.970 = $\frac{9.789}{10.0}$ = 97.9%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 35
Sample ID: 86878.04 10.0 mg/L D=10
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 7
Date Collected: 4/25/2017 11:11:38 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86878.04 10.0 mg/L D=10

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	34.6	0.039	mg/L	0.0046	0.039	mg/L	0.0046	11.91%
As 193.759	2.1	0.003	mg/L	0.0034	0.003	mg/L	0.0034	120.53%
Ba 233.527	13761.2	0.123	mg/L	0.0006	0.123	mg/L	0.0006	0.53%
Be 313.042	-2622.6	-0.001	mg/L	0.0001	-0.001	mg/L	0.0001	9.93%
Cd 226.502	81.8	0.002	mg/L	0.0003	0.002	mg/L	0.0003	15.70%
Ca 315.887	146037.0	14.58	mg/L	0.148	14.58	mg/L	0.148	1.02%
Cr 205.552	19112.5	1.095	mg/L	0.0093	1.095	mg/L	0.0093	0.85%
Co 228.616	246.1	0.012	mg/L	0.0002	0.012	mg/L	0.0002	1.56%
Cu 324.752	57145.3	0.154	mg/L	0.0008	0.154	mg/L	0.0008	0.51%
Fe 259.939	138209.0	10.20	mg/L	0.108	10.20	mg/L	0.108	1.06%
Pb 220.353	119.3	0.033	mg/L	0.0027	0.033	mg/L	0.0027	8.12%
Mg 279.077	19454.0	12.74	mg/L	0.151	12.74	mg/L	0.151	1.19%
Mn 257.610	66471.7	0.109	mg/L	0.0008	0.109	mg/L	0.0008	0.76%
Mo 203.844	27.4	0.006	mg/L	0.0017	0.006	mg/L	0.0017	28.37%
Ni 231.604	1801.9	0.062	mg/L	0.0005	0.062	mg/L	0.0005	0.83%
K 766.490	15380.0	4.239	mg/L	0.0420	4.239	mg/L	0.0420	0.99%
Se 196.099	2.4	0.002	mg/L	0.0076	0.002	mg/L	0.0076	331.32%
Ag 328.068	30.3	0.000	mg/L	0.0002	0.000	mg/L	0.0002	209.70%
Na 588.995	703544.2	23.26	mg/L	0.424	23.26	mg/L	0.424	1.82%
Tl 190.864	12.2	0.008	mg/L	0.0034	0.008	mg/L	0.0034	44.20%
V 292.402	1355.7	0.009	mg/L	0.0001	0.009	mg/L	0.0001	1.50%
Zn 213.856	28007.5	0.882	mg/L	0.0047	0.882	mg/L	0.0047	0.54%
Al 308.217	214805.2	5.644	mg/L	0.0048	5.644	mg/L	0.0048	0.08%
As 188.976	-3.9	-0.003	mg/L	0.0074	-0.003	mg/L	0.0074	263.15%
Zn 206.200	12087.8	0.834	mg/L	0.0069	0.834	mg/L	0.0069	0.83%

T Cr = 1.095 x 10 = 10.95

$10.95 - 0.341 = \frac{10.6}{10} = 106\%$ ✓

sample result

$Cr^{+6} + Cr^{T} = 10.6 + 0.970 = 116\%$

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 13
Sample ID: 86878.04 0.060 g $PbCrO_4$
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 17
Date Collected: 4/25/2017 10:11:28 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86878.04 0.060 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	947.8	0.524	mg/L	0.0013	0.524	mg/L	0.0013	0.24%
As 193.759	-23.4	-0.031	mg/L	0.0086	-0.031	mg/L	0.0086	27.68%
Ba 233.527	146238.3	1.302	mg/L	0.0023	1.302	mg/L	0.0023	0.18%
Be 313.042	-16790.4	-0.004	mg/L	0.0000	-0.004	mg/L	0.0000	0.95%
Cd 226.502	**1015.3**	0.023	mg/L	0.0001	0.023	mg/L	0.0001	0.50%
Ca 315.887	1742698.0	174.0	mg/L	1.54	174.0	mg/L	1.54	0.89%
Cr 205.552	581988.9	33.33	mg/L	0.314	33.33	mg/L	0.314	0.94%
Co 228.616	3493.1	0.166	mg/L	0.0013	0.166	mg/L	0.0013	0.79%
Cu 324.752	379292.6	1.021	mg/L	0.0132	1.021	mg/L	0.0132	1.30%
Fe 259.939	1586211.0	117.1	mg/L	1.14	117.1	mg/L	1.14	0.97%
Pb 220.353	1147690.2	320.0	mg/L	2.87	320.0	mg/L	2.87	0.90%
Mg 279.077	176381.6	115.5	mg/L	1.08	115.5	mg/L	1.08	0.94%
Mn 257.610	767755.1	1.261	mg/L	0.0128	1.261	mg/L	0.0128	1.01%
Mo 203.844	326.9	0.071	mg/L	0.0010	0.071	mg/L	0.0010	1.43%
Ni 231.604	26513.6	0.911	mg/L	0.0031	0.911	mg/L	0.0031	0.34%
K 766.490	180435.4	49.73	mg/L	0.589	49.73	mg/L	0.589	1.18%
Se 196.099	-27.6	-0.027	mg/L	0.0049	-0.027	mg/L	0.0049	17.99%
Ag 328.068	-1060.4	-0.004	mg/L	0.0002	-0.004	mg/L	0.0002	5.76%
Na 588.995	9297737.7	307.4	mg/L	1.49	307.4	mg/L	1.49	0.49%
Tl 190.864	6.1	0.004	mg/L	0.0032	0.004	mg/L	0.0032	83.68%
V 292.402	10774.6	0.074	mg/L	0.0005	0.074	mg/L	0.0005	0.61%
Zn 213.856	276221.8	8.701	mg/L	0.0065	8.701	mg/L	0.0065	0.07%
Al 308.217	1901592.8	49.85	mg/L	0.790	49.85	mg/L	0.790	1.59%
As 188.976	-199.5	-0.146	mg/L	0.0072	-0.146	mg/L	0.0072	4.91%
Zn 206.200	112855.2	7.769	mg/L	0.0689	7.769	mg/L	0.0689	0.89%

spiked amount: $\frac{0.0601 \times 32.2}{0.02} = 96.76$ mg/L

Cr^{+6} result = 57.0 mg/L

T Cr result = 33.33

T Cr - sample = 33.33 - 0.341 = 32.99

Cr^{+6} + T Cr = $57.0 + 32.99 = \frac{89.99}{96.76} = 93.0\%$

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 36
Sample ID: 86878.04 0.060 g D=10
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 8
Date Collected: 4/25/2017 11:14:10 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86878.04 0.060 g D=10

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	117.8	0.083	mg/L	0.0090	0.083	mg/L	0.0090	10.80%
As 193.759	-2.5	-0.003	mg/L	0.0098	-0.003	mg/L	0.0098	293.14%
Ba 233.527	18165.9	0.162	mg/L	0.0015	0.162	mg/L	0.0015	0.95%
Be 313.042	-2235.4	-0.001	mg/L	0.0000	-0.001	mg/L	0.0000	2.79%
Cd 226.502	109.3	0.002	mg/L	0.0002	0.002	mg/L	0.0002	8.26%
Ca 315.887	204549.3	20.42	mg/L	0.213	20.42	mg/L	0.213	1.04%
Cr 205.552	76386.1	4.375	mg/L	0.0423	4.375	mg/L	0.0423	0.97%
Co 228.616	461.4	0.022	mg/L	0.0005	0.022	mg/L	0.0005	2.48%
Cu 324.752	36596.8	0.099	mg/L	0.0009	0.099	mg/L	0.0009	0.95%
Fe 259.939	194196.7	14.33	mg/L	0.146	14.33	mg/L	0.146	1.02%
Pb 220.353	170039.5	47.41	mg/L	0.412	47.41	mg/L	0.412	0.87%
Mg 279.077	20382.7	13.35	mg/L	0.151	13.35	mg/L	0.151	1.13%
Mn 257.610	96249.5	0.158	mg/L	0.0012	0.158	mg/L	0.0012	0.77%
Mo 203.844	47.8	0.010	mg/L	0.0007	0.010	mg/L	0.0007	6.99%
Ni 231.604	3716.1	0.128	mg/L	0.0007	0.128	mg/L	0.0007	0.53%
K 766.490	20518.6	5.655	mg/L	0.0705	5.655	mg/L	0.0705	1.25%
Se 196.099	-8.9	-0.009	mg/L	0.0220	-0.009	mg/L	0.0220	253.18%
Ag 328.068	-52.9	-0.000	mg/L	0.0000	-0.000	mg/L	0.0000	26.45%
Na 588.995	1130881.7	37.39	mg/L	0.777	37.39	mg/L	0.777	2.08%
Tl 190.864	3.0	0.002	mg/L	0.0041	0.002	mg/L	0.0041	221.10%
V 292.402	1326.3	0.009	mg/L	0.0001	0.009	mg/L	0.0001	1.53%
Zn 213.856	34443.2	1.085	mg/L	0.0084	1.085	mg/L	0.0084	0.77%
Al 308.217	224200.1	5.890	mg/L	0.0852	5.890	mg/L	0.0852	1.45%
As 188.976	-14.1	-0.010	mg/L	0.0026	-0.010	mg/L	0.0026	24.76%
Zn 206.200	14396.7	0.993	mg/L	0.0106	0.993	mg/L	0.0106	1.07%

TCr result +spike = 4.375 x10 = 43.75 mg/L

TCr result = 0.341

TCr - sample = 43.75 - 0.341 = 43.4 mg/L

Cr^{+6} + CrT = 57 + 43.4 = 100

$\frac{100}{96.16} = 104$

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 14
Sample ID: 86878.04 0.020 g
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 18
Date Collected: 4/25/2017 10:14:11 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86878.04 0.020 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	598.2	0.339	mg/L	0.0044	0.339	mg/L	0.0044	1.29%
As 193.759	-28.5	-0.038	mg/L	0.0085	-0.038	mg/L	0.0085	22.42%
Ba 233.527	133956.3	1.193	mg/L	0.0116	1.193	mg/L	0.0116	0.97%
Be 313.042	-14297.3	-0.003	mg/L	0.0000	-0.003	mg/L	0.0000	0.82%
Cd 226.502	981.4	0.022	mg/L	0.0003	0.022	mg/L	0.0003	1.39%
Ca 315.887	1661268.4	165.9	mg/L	1.91	165.9	mg/L	1.91	1.15%
Cr 205.552	370995.9	21.25	mg/L	0.208	21.25	mg/L	0.208	0.98%
Co 228.616	2745.8	0.130	mg/L	0.0013	0.130	mg/L	0.0013	1.00%
Cu 324.752	344583.6	0.928	mg/L	0.0124	0.928	mg/L	0.0124	1.34%
Fe 259.939	1583340.4	116.9	mg/L	1.43	116.9	mg/L	1.43	1.23%
Pb 220.353	464377.6	129.5	mg/L	1.28	129.5	mg/L	1.28	0.98%
Mg 279.077	260076.6	170.3	mg/L	1.94	170.3	mg/L	1.94	1.14%
Mn 257.610	738668.1	1.213	mg/L	0.0130	1.213	mg/L	0.0130	1.07%
Mo 203.844	280.5	0.061	mg/L	0.0020	0.061	mg/L	0.0020	3.25%
Ni 231.604	21583.8	0.741	mg/L	0.0059	0.741	mg/L	0.0059	0.80%
K 766.490	253737.3	69.93	mg/L	0.957	69.93	mg/L	0.957	1.37%
Se 196.099	-37.3	-0.037	mg/L	0.0303	-0.037	mg/L	0.0303	82.75%
Ag 328.068	-1109.1	-0.004	mg/L	0.0003	-0.004	mg/L	0.0003	8.37%
Na 588.995	12635390.7	417.8	mg/L	2.35	417.8	mg/L	2.35	0.56%
Tl 190.864	-3.2	-0.002	mg/L	0.0019	-0.002	mg/L	0.0019	95.69%
V 292.402	13973.1	0.096	mg/L	0.0012	0.096	mg/L	0.0012	1.26%
Zn 213.856	263519.4	8.301	mg/L	0.0825	8.301	mg/L	0.0825	0.99%
Al 308.217	1907221.5	49.99	mg/L	0.635	49.99	mg/L	0.635	1.27%
As 188.976	-121.9	-0.089	mg/L	0.0055	-0.089	mg/L	0.0055	6.19%
Zn 206.200	111077.9	7.647	mg/L	0.0781	7.647	mg/L	0.0781	1.02%

over

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 37
Sample ID: 86878.04 0.020 g D=10
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 36
Date Collected: 4/25/2017 11:16:44 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86878.04 0.020 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	73.0	0.059	mg/L	0.0034	0.059	mg/L	0.0034	5.77%
As 193.759	-5.3	-0.007	mg/L	0.0027	-0.007	mg/L	0.0027	37.49%
Ba 233.527	16784.9	0.149	mg/L	0.0009	0.149	mg/L	0.0009	0.61%
Be 313.042	-1754.2	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	35.89%
Cd 226.502	107.7	0.002	mg/L	0.0002	0.002	mg/L	0.0002	9.31%
Ca 315.887	194802.5	19.45	mg/L	0.245	19.45	mg/L	0.245	1.26%
Cr 205.552	46539.4	2.666	mg/L	0.0118	2.666	mg/L	0.0118	0.44%
Co 228.616	354.5	0.017	mg/L	0.0004	0.017	mg/L	0.0004	2.36%
Cu 324.752	33979.4	0.091	mg/L	0.0010	0.091	mg/L	0.0010	1.07%
Fe 259.939	193475.2	14.28	mg/L	0.188	14.28	mg/L	0.188	1.32%
Pb 220.353	65719.6	18.32	mg/L	0.068	18.32	mg/L	0.068	0.37%
Mg 279.077	29681.9	19.44	mg/L	0.203	19.44	mg/L	0.203	1.05%
Mn 257.610	90551.2	0.149	mg/L	0.0005	0.149	mg/L	0.0005	0.31%
Mo 203.844	45.7	0.010	mg/L	0.0026	0.010	mg/L	0.0026	26.46%
Ni 231.604	2965.7	0.102	mg/L	0.0003	0.102	mg/L	0.0003	0.30%
K 766.490	28559.9	7.872	mg/L	0.1042	7.872	mg/L	0.1042	1.32%
Se 196.099	3.9	0.004	mg/L	0.0025	0.004	mg/L	0.0025	64.28%
Ag 328.068	-35.9	-0.000	mg/L	0.0000	-0.000	mg/L	0.0000	32.84%
Na 588.995	1509154.7	49.90	mg/L	0.706	49.90	mg/L	0.706	1.41%
Tl 190.864	1.6	0.001	mg/L	0.0061	0.001	mg/L	0.0061	624.31%
V 292.402	1741.2	0.012	mg/L	0.0001	0.012	mg/L	0.0001	1.25%
Zn 213.856	33482.5	1.055	mg/L	0.0064	1.055	mg/L	0.0064	0.61%
Al 308.217	213755.3	5.617	mg/L	0.0802	5.617	mg/L	0.0802	1.43%
As 188.976	-7.9	-0.006	mg/L	0.0054	-0.006	mg/L	0.0054	92.19%
Zn 206.200	14119.7	0.974	mg/L	0.0041	0.974	mg/L	0.0041	0.42%

$Cr^T \rightarrow 2.666 \times 10 = 26.66$ mg/L

spike amount 0.02 $\longrightarrow \dfrac{0.0217 \times 32.2}{0.02} = 34.9$ mg/L

result $Cr^{+6} = 17.55$ mg/L

spike sample

Cr^T 26.66 − 0.341 = 26.32 mg/L

$= 26.3 + 17.55 = \dfrac{43.85}{34.9} = 125\%$

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 15
Sample ID: 86878.04
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 19
Date Collected: 4/25/2017 10:16:47 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86878.04

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	38.1	0.041	mg/L	0.0067	0.041	mg/L	0.0067	16.48%
As 193.759	-26.4	-0.035	mg/L	0.0146	-0.035	mg/L	0.0146	41.30%
Ba 233.527	138175.7	1.230	mg/L	0.0084	1.230	mg/L	0.0084	0.68%
Be 313.042	-14373.8	-0.003	mg/L	0.0001	-0.003	mg/L	0.0001	2.16%
Cd 226.502	905.1	0.020	mg/L	0.0006	0.020	mg/L	0.0006	2.93%
Ca 315.887	1745013.7	174.2	mg/L	2.40	174.2	mg/L	2.40	1.38%
Cr 205.552	5960.1	0.341	mg/L	0.0005	0.341	mg/L	0.0005	0.13%
Co 228.616	2169.6	0.103	mg/L	0.0004	0.103	mg/L	0.0004	0.42%
Cu 324.752	391502.7	1.054	mg/L	0.0069	1.054	mg/L	0.0069	0.66%
Fe 259.939	1424874.8	105.2	mg/L	1.51	105.2	mg/L	1.51	1.43%
Pb 220.353	1892.3	0.528	mg/L	0.0205	0.528	mg/L	0.0205	3.89%
Mg 279.077	303998.1	199.1	mg/L	2.67	199.1	mg/L	2.67	1.34%
Mn 257.610	731743.7	1.202	mg/L	0.0102	1.202	mg/L	0.0102	0.85%
Mo 203.844	195.2	0.042	mg/L	0.0032	0.042	mg/L	0.0032	7.61%
Ni 231.604	15515.2	0.533	mg/L	0.0048	0.533	mg/L	0.0048	0.90%
K 766.490	156256.9	43.07	mg/L	0.647	43.07	mg/L	0.647	1.50%
Se 196.099	-34.1	-0.033	mg/L	0.0102	-0.033	mg/L	0.0102	30.33%
Ag 328.068	-1442.7	-0.005	mg/L	0.0005	-0.005	mg/L	0.0005	9.38%
Na 588.995	12875912.6	425.7	mg/L	1.72	425.7	mg/L	1.72	0.40%
Tl 190.864	-13.7	-0.009	mg/L	0.0023	-0.009	mg/L	0.0023	26.25%
V 292.402	17773.3	0.122	mg/L	0.0012	0.122	mg/L	0.0012	1.01%
Zn 213.856	238573.8	7.515	mg/L	0.0534	7.515	mg/L	0.0534	0.71%
Al 308.217	1919827.7	50.32	mg/L	0.364	50.32	mg/L	0.364	0.72%
As 188.976	-14.0	-0.010	mg/L	0.0070	-0.010	mg/L	0.0070	68.03%
Zn 206.200	101483.5	6.987	mg/L	0.0640	6.987	mg/L	0.0640	0.92%

sample result = 0.341 ✓

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 16
Sample ID: CCB
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 20
Date Collected: 4/25/2017 10:19:24 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCB

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	-0.5	0.020	mg/L	0.0017	0.020	mg/L	0.0017	8.18%
As 193.759	-0.4	-0.001	mg/L	0.0105	-0.001	mg/L	0.0105	>999.9%
Ba 233.527	14.1	0.000	mg/L	0.0000	0.000	mg/L	0.0000	31.98%
Be 313.042	317.7	0.000	mg/L	0.0000	0.000	mg/L	0.0000	31.05%
Cd 226.502	-28.9	-0.001	mg/L	0.0002	-0.001	mg/L	0.0002	31.90%
Ca 315.887	243.7	0.024	mg/L	0.0016	0.024	mg/L	0.0016	6.68%
Cr 205.552	9.7	0.001	mg/L	0.0002	0.001	mg/L	0.0002	33.48%
Co 228.616	-0.2	-0.000	mg/L	0.0008	-0.000	mg/L	0.0008	>999.9%
Cu 324.752	2131.4	0.006	mg/L	0.0005	0.006	mg/L	0.0005	9.12%
Fe 259.939	384.4	0.028	mg/L	0.0026	0.028	mg/L	0.0026	9.30%
Pb 220.353	12.9	0.004	mg/L	0.0030	0.004	mg/L	0.0030	83.87%
Mg 279.077	27.5	0.018	mg/L	0.0070	0.018	mg/L	0.0070	38.80%
Mn 257.610	118.7	0.000	mg/L	0.0001	0.000	mg/L	0.0001	26.78%
Mo 203.844	8.3	0.002	mg/L	0.0015	0.002	mg/L	0.0015	84.38%
Ni 231.604	-11.1	-0.000	mg/L	0.0005	-0.000	mg/L	0.0005	122.66%
K 766.490	224.1	0.062	mg/L	0.0060	0.062	mg/L	0.0060	9.72%
Se 196.099	-3.3	-0.003	mg/L	0.0081	-0.003	mg/L	0.0081	254.44%
Ag 328.068	59.6	0.000	mg/L	0.0002	0.000	mg/L	0.0002	83.08%
Na 588.995	1022.5	0.034	mg/L	0.0005	0.034	mg/L	0.0005	1.51%
Tl 190.864	5.0	0.003	mg/L	0.0027	0.003	mg/L	0.0027	85.86%
V 292.402	-7.2	-0.000	mg/L	0.0000	-0.000	mg/L	0.0000	41.57%
Zn 213.856	181.8	0.006	mg/L	0.0007	0.006	mg/L	0.0007	12.28%
Al 308.217	13.1	0.016	mg/L	0.0034	0.016	mg/L	0.0034	21.60%
As 188.976	-5.6	-0.004	mg/L	0.0020	-0.004	mg/L	0.0020	49.15%
Zn 206.200	75.2	0.008	mg/L	0.0003	0.008	mg/L	0.0003	4.21%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 17
Sample ID: 86879.01 1.00 mg/L
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 21
Date Collected: 4/25/2017 10:22:18 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.01 1.00 mg/L

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	82.9	0.065	mg/L	0.0095	0.065	mg/L	0.0095	14.76%
As 193.759	-26.0	-0.035	mg/L	0.0141	-0.035	mg/L	0.0141	40.66%
Ba 233.527	215633.2	1.920	mg/L	0.0078	1.920	mg/L	0.0078	0.41%
Be 313.042	-41891.3	-0.010	mg/L	0.0002	-0.010	mg/L	0.0002	2.27%
Cd 226.502	2349.1	0.053	mg/L	0.0004	0.053	mg/L	0.0004	0.76%
Ca 315.887	1407541.0	140.5	mg/L	1.37	140.5	mg/L	1.37	0.98%
Cr 205.552	27184.7	1.557	mg/L	0.0043	1.557	mg/L	0.0043	0.28%
Co 228.616	3021.9	0.143	mg/L	0.0006	0.143	mg/L	0.0006	0.41%
Cu 324.752	271303.3	0.730	mg/L	0.0046	0.730	mg/L	0.0046	0.63%
Fe 259.939	3780209.4	279.0	mg/L	3.10	279.0	mg/L	3.10	1.11%
Pb 220.353	3228.4	0.900	mg/L	0.0082	0.900	mg/L	0.0082	0.92%
Mg 279.077	267818.8	175.4	mg/L	1.67	175.4	mg/L	1.67	0.95%
Mn 257.610	3005881.2	4.936	mg/L	0.0466	4.936	mg/L	0.0466	0.94%
Mo 203.844	93.1	0.020	mg/L	0.0007	0.020	mg/L	0.0007	3.22%
Ni 231.604	11292.1	0.388	mg/L	0.0043	0.388	mg/L	0.0043	1.10%
K 766.490	391328.3	107.9	mg/L	1.57	107.9	mg/L	1.57	1.46%
Se 196.099	-141.2	-0.139	mg/L	0.0042	-0.139	mg/L	0.0042	3.03%
Ag 328.068	-6587.7	-0.023	mg/L	0.0004	-0.023	mg/L	0.0004	1.73%
Na 588.995	7171638.8	237.1	mg/L	1.26	237.1	mg/L	1.26	0.53%
Tl 190.864	-39.3	-0.025	mg/L	0.0011	-0.025	mg/L	0.0011	4.48%
V 292.402	63956.6	0.439	mg/L	0.0016	0.439	mg/L	0.0016	0.37%
Zn 213.856	82364.6	2.594	mg/L	0.0147	2.594	mg/L	0.0147	0.57%
Al 308.217	7318385.8	191.8	mg/L	1.90	191.8	mg/L	1.90	0.99%
As 188.976	-50.1	-0.037	mg/L	0.0031	-0.037	mg/L	0.0031	8.45%
Zn 206.200	33342.8	2.297	mg/L	0.0040	2.297	mg/L	0.0040	0.18%

spike : 1.00 mg/L
TCr = 1.557 mg/L

sample result = 0.356 mg/L

TCr - sample = 1.557 - 0.356 = 1.201 mg/L

Cr^{+6} = ND

$\frac{1.201}{1.00}$ = 120%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 18
Sample ID: 86879.01 10.0 mg/L
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 22
Date Collected: 4/25/2017 10:25:02 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.01 10.0 mg/L

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	143.0	0.097	mg/L	0.0032	0.097	mg/L	0.0032	3.32%
As 193.759	-28.0	-0.037	mg/L	0.0151	-0.037	mg/L	0.0151	40.56%
Ba 233.527	75446.6	0.672	mg/L	0.0022	0.672	mg/L	0.0022	0.33%
Be 313.042	-20855.2	-0.005	mg/L	0.0001	-0.005	mg/L	0.0001	2.46%
Cd 226.502	723.7	0.016	mg/L	0.0006	0.016	mg/L	0.0006	3.64%
Ca 315.887	446129.4	44.55	mg/L	0.356	44.55	mg/L	0.356	0.80%
Cr 205.552	80620.6	4.618	mg/L	0.0220	4.618	mg/L	0.0220	0.48%
Co 228.616	950.9	0.045	mg/L	0.0005	0.045	mg/L	0.0005	1.18%
Cu 324.752	120149.6	0.323	mg/L	0.0021	0.323	mg/L	0.0021	0.66%
Fe 259.939	1213841.5	89.60	mg/L	0.920	89.60	mg/L	0.920	1.03%
Pb 220.353	1024.8	0.286	mg/L	0.0050	0.286	mg/L	0.0050	1.73%
Mg 279.077	118076.3	77.32	mg/L	0.609	77.32	mg/L	0.609	0.79%
Mn 257.610	974615.0	1.601	mg/L	0.0070	1.601	mg/L	0.0070	0.44%
Mo 203.844	43.1	0.009	mg/L	0.0015	0.009	mg/L	0.0015	16.03%
Ni 231.604	3454.5	0.119	mg/L	0.0008	0.119	mg/L	0.0008	0.68%
K 766.490	125523.1	34.60	mg/L	0.371	34.60	mg/L	0.371	1.07%
Se 196.099	-36.9	-0.036	mg/L	0.0143	-0.036	mg/L	0.0143	39.56%
Ag 328.068	-1797.1	-0.006	mg/L	0.0001	-0.006	mg/L	0.0001	1.64%
Na 588.995	2647496.4	87.54	mg/L	1.561	87.54	mg/L	1.561	1.78%
Tl 190.864	-11.7	-0.007	mg/L	0.0047	-0.007	mg/L	0.0047	64.35%
V 292.402	15894.7	0.109	mg/L	0.0006	0.109	mg/L	0.0006	0.54%
Zn 213.856	31224.1	0.984	mg/L	0.0073	0.984	mg/L	0.0073	0.75%
Al 308.217	2561673.8	67.14	mg/L	0.075	67.14	mg/L	0.075	0.11%
As 188.976	-50.3	-0.037	mg/L	0.0022	-0.037	mg/L	0.0022	6.03%
Zn 206.200	13029.1	0.899	mg/L	0.0026	0.899	mg/L	0.0026	0.29%

spike = 10 mg/L

sample + spike result = 4.618 mg/L

Cr^{+6} result = 0.76 mg/L

sample = 0.356

4.618 − 0.356 = 4.26

4.26 + 0.76 = 5.02

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 19
Sample ID: 86879.01 0.060 g
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 23
Date Collected: 4/25/2017 10:27:43 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.01 0.060 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	905.0	0.502	mg/L	0.0070	0.502	mg/L	0.0070	1.41%
As 193.759	-12.7	-0.017	mg/L	0.0075	-0.017	mg/L	0.0075	44.08%
Ba 233.527	41266.5	0.367	mg/L	0.0024	0.367	mg/L	0.0024	0.66%
Be 313.042	-10699.5	-0.002	mg/L	0.0001	-0.002	mg/L	0.0001	2.81%
Cd 226.502	405.4	0.009	mg/L	0.0006	0.009	mg/L	0.0006	6.23%
Ca 315.887	244117.6	24.38	mg/L	0.448	24.38	mg/L	0.448	1.84%
Cr 205.552	565491.4	32.39	mg/L	0.155	32.39	mg/L	0.155	0.48%
Co 228.616	691.4	0.033	mg/L	0.0010	0.033	mg/L	0.0010	3.13%
Cu 324.752	69319.5	0.187	mg/L	0.0013	0.187	mg/L	0.0013	0.69%
Fe 259.939	716253.4	52.87	mg/L	1.087	52.87	mg/L	1.087	2.06%
Pb 220.353	518742.7	144.6	mg/L	0.75	144.6	mg/L	0.75	0.52%
Mg 279.077	72593.3	47.54	mg/L	0.806	47.54	mg/L	0.806	1.70%
Mn 257.610	465848.4	0.765	mg/L	0.0037	0.765	mg/L	0.0037	0.49%
Mo 203.844	1.4	0.000	mg/L	0.0018	0.000	mg/L	0.0018	591.14%
Ni 231.604	1637.1	0.056	mg/L	0.0006	0.056	mg/L	0.0006	0.99%
K 766.490	113979.4	31.41	mg/L	0.631	31.41	mg/L	0.631	2.01%
Se 196.099	-21.4	-0.021	mg/L	0.0072	-0.021	mg/L	0.0072	34.22%
Ag 328.068	-871.5	-0.003	mg/L	0.0001	-0.003	mg/L	0.0001	4.48%
Na 588.995	4487050.2	148.4	mg/L	1.67	148.4	mg/L	1.67	1.13%
Tl 190.864	16.3	0.010	mg/L	0.0080	0.010	mg/L	0.0080	77.31%
V 292.402	-108.8	-0.001	mg/L	0.0001	-0.001	mg/L	0.0001	12.95%
Zn 213.856	19562.6	0.616	mg/L	0.0030	0.616	mg/L	0.0030	0.48%
Al 308.217	1597895.7	41.89	mg/L	0.299	41.89	mg/L	0.299	0.71%
As 188.976	-194.7	-0.143	mg/L	0.0092	-0.143	mg/L	0.0092	6.46%
Zn 206.200	4785.2	0.332	mg/L	0.0056	0.332	mg/L	0.0056	1.67%

spike amount = 9488 mg/kg

spike + Cr T = 32.39 - 0.356 = 32.0 mg/L

sample = 0.356

Cr^{+6} = 20.35 mg/L

20.35 + 32 = 52.35

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 38
Sample ID: 86879.01 0.060 g D=10
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 37
Date Collected: 4/25/2017 11:19:18 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.01 0.060 g D=10

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	99.1	0.073	mg/L	0.0035	0.073	mg/L	0.0035	4.75%
As 193.759	2.4	0.003	mg/L	0.0032	0.003	mg/L	0.0032	98.37%
Ba 233.527	4844.8	0.043	mg/L	0.0002	0.043	mg/L	0.0002	0.50%
Be 313.042	-1685.9	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	18.73%
Cd 226.502	42.5	0.001	mg/L	0.0001	0.001	mg/L	0.0001	11.75%
Ca 315.887	26716.4	2.668	mg/L	0.0081	2.668	mg/L	0.0081	0.30%
Cr 205.552	66563.3	3.813	mg/L	0.0393	3.813	mg/L	0.0393	1.03%
Co 228.616	83.7	0.004	mg/L	0.0002	0.004	mg/L	0.0002	4.10%
Cu 324.752	6272.8	0.017	mg/L	0.0002	0.017	mg/L	0.0002	1.48%
Fe 259.939	79267.3	5.851	mg/L	0.0161	5.851	mg/L	0.0161	0.27%
Pb 220.353	66577.7	18.56	mg/L	0.169	18.56	mg/L	0.169	0.91%
Mg 279.077	7996.3	5.237	mg/L	0.0120	5.237	mg/L	0.0120	0.23%
Mn 257.610	52787.0	0.087	mg/L	0.0009	0.087	mg/L	0.0009	1.03%
Mo 203.844	1.7	0.000	mg/L	0.0010	0.000	mg/L	0.0010	283.67%
Ni 231.604	209.2	0.007	mg/L	0.0004	0.007	mg/L	0.0004	5.06%
K 766.490	12823.5	3.534	mg/L	0.0173	3.534	mg/L	0.0173	0.49%
Se 196.099	-3.4	-0.003	mg/L	0.0074	-0.003	mg/L	0.0074	220.38%
Ag 328.068	-13.0	-0.000	mg/L	0.0000	-0.000	mg/L	0.0000	62.57%
Na 588.995	517916.5	17.12	mg/L	0.212	17.12	mg/L	0.212	1.24%
Tl 190.864	7.1	0.004	mg/L	0.0039	0.004	mg/L	0.0039	86.35%
V 292.402	-9.5	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	104.91%
Zn 213.856	1795.4	0.057	mg/L	0.0004	0.057	mg/L	0.0004	0.66%
Al 308.217	174715.1	4.594	mg/L	0.0422	4.594	mg/L	0.0422	0.92%
As 188.976	-16.6	-0.012	mg/L	0.0095	-0.012	mg/L	0.0095	78.33%
Zn 206.200	269.3	0.021	mg/L	0.0004	0.021	mg/L	0.0004	1.94%

3.813 X10 = 38.13

38.13 - 0.356 = 37.8 mg/L

Cr6 = 20.35

20.35 + 37.8 = 58.15 / 94.88 = 61.3

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 20
Sample ID: 86879.01 0.020 g
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 24
Date Collected: 4/25/2017 10:30:19 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.01 0.020 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	568.8	0.323	mg/L	0.0078	0.323	mg/L	0.0078	2.43%
As 193.759	-32.1	-0.043	mg/L	0.0140	-0.043	mg/L	0.0140	32.60%
Ba 233.527	195625.0	1.742	mg/L	0.0081	1.742	mg/L	0.0081	0.47%
Be 313.042	-40526.1	-0.009	mg/L	0.0002	-0.009	mg/L	0.0002	1.94%
Cd 226.502	2220.6	0.050	mg/L	0.0005	0.050	mg/L	0.0005	0.97%
Ca 315.887	1325841.7	132.4	mg/L	0.81	132.4	mg/L	0.81	0.61%
Cr 205.552	348222.0	19.95	mg/L	0.064	19.95	mg/L	0.064	0.32%
Co 228.616	2944.9	0.140	mg/L	0.0007	0.140	mg/L	0.0007	0.50%
Cu 324.752	219252.1	0.590	mg/L	0.0020	0.590	mg/L	0.0020	0.33%
Fe 259.939	3554722.5	262.4	mg/L	1.89	262.4	mg/L	1.89	0.72%
Pb 220.353	444976.6	124.1	mg/L	0.63	124.1	mg/L	0.63	0.51%
Mg 279.077	285071.1	186.7	mg/L	1.08	186.7	mg/L	1.08	0.58%
Mn 257.610	2794698.2	4.590	mg/L	0.0324	4.590	mg/L	0.0324	0.71%
Mo 203.844	65.4	0.014	mg/L	0.0021	0.014	mg/L	0.0021	15.10%
Ni 231.604	10462.4	0.359	mg/L	0.0004	0.359	mg/L	0.0004	0.10%
K 766.490	488428.2	134.6	mg/L	1.18	134.6	mg/L	1.18	0.88%
Se 196.099	-128.5	-0.126	mg/L	0.0063	-0.126	mg/L	0.0063	5.02%
Ag 328.068	-6227.7	-0.021	mg/L	0.0002	-0.021	mg/L	0.0002	1.01%
Na 588.995	13513475.6	446.8	mg/L	0.93	446.8	mg/L	0.93	0.21%
Tl 190.864	-36.6	-0.023	mg/L	0.0101	-0.023	mg/L	0.0101	44.08%
V 292.402	54263.6	0.373	mg/L	0.0012	0.373	mg/L	0.0012	0.32%
Zn 213.856	79129.1	2.492	mg/L	0.0100	2.492	mg/L	0.0100	0.40%
Al 308.217	7149681.6	187.4	mg/L	1.18	187.4	mg/L	1.18	0.63%
As 188.976	-128.0	-0.094	mg/L	0.0059	-0.094	mg/L	0.0059	6.30%
Zn 206.200	29713.4	2.047	mg/L	0.0165	2.047	mg/L	0.0165	0.80%

19.95 - 0.356 = 19.59

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 39
Sample ID: 86879.01 0.020 g D=10
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 38
Date Collected: 4/25/2017 11:21:54 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.01 0.020 g D=10

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	70.8	0.058	mg/L	0.0035	0.058	mg/L	0.0035	6.08%
As 193.759	-3.5	-0.005	mg/L	0.0093	-0.005	mg/L	0.0093	200.57%
Ba 233.527	25247.5	0.225	mg/L	0.0023	0.225	mg/L	0.0023	1.01%
Be 313.042	-5885.9	-0.001	mg/L	0.0001	-0.001	mg/L	0.0001	6.33%
Cd 226.502	243.0	0.005	mg/L	0.0001	0.005	mg/L	0.0001	1.53%
Ca 315.887	161637.2	16.14	mg/L	0.374	16.14	mg/L	0.374	2.32%
Cr 205.552	45304.5	2.595	mg/L	0.0267	2.595	mg/L	0.0267	1.03%
Co 228.616	398.3	0.019	mg/L	0.0003	0.019	mg/L	0.0003	1.69%
Cu 324.752	20819.0	0.056	mg/L	0.0011	0.056	mg/L	0.0011	1.98%
Fe 259.939	469690.1	34.67	mg/L	0.866	34.67	mg/L	0.866	2.50%
Pb 220.353	64371.2	17.95	mg/L	0.159	17.95	mg/L	0.159	0.89%
Mg 279.077	33750.2	22.10	mg/L	0.470	22.10	mg/L	0.470	2.12%
Mn 257.610	368519.5	0.605	mg/L	0.0056	0.605	mg/L	0.0056	0.92%
Mo 203.844	10.8	0.002	mg/L	0.0020	0.002	mg/L	0.0020	86.14%
Ni 231.604	1444.6	0.050	mg/L	0.0002	0.050	mg/L	0.0002	0.37%
K 766.490	56783.5	15.65	mg/L	0.401	15.65	mg/L	0.401	2.56%
Se 196.099	-22.7	-0.022	mg/L	0.0073	-0.022	mg/L	0.0073	32.94%
Ag 328.068	-690.3	-0.002	mg/L	0.0001	-0.002	mg/L	0.0001	4.26%
Na 588.995	1670386.2	55.23	mg/L	0.361	55.23	mg/L	0.361	0.65%
Tl 190.864	1.6	0.001	mg/L	0.0043	0.001	mg/L	0.0043	414.59%
V 292.402	7147.7	0.049	mg/L	0.0002	0.049	mg/L	0.0002	0.49%
Zn 213.856	9054.9	0.285	mg/L	0.0006	0.285	mg/L	0.0006	0.20%
Al 308.217	845076.8	22.16	mg/L	0.423	22.16	mg/L	0.423	1.91%
As 188.976	-14.1	-0.010	mg/L	0.0051	-0.010	mg/L	0.0051	49.62%
Zn 206.200	3359.7	0.234	mg/L	0.0036	0.234	mg/L	0.0036	1.52%

sample result = 0.356

2.595 X 10 = 25.95

25.95 - 0.356 = 25.59

25.59 + 15.0 (spk) = 40.59 / 30.56 = 133%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 21
Sample ID: CCV 1.00 PPM/ PR-02-17-25
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 5
Date Collected: 4/25/2017 10:33:07 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCV 1.00 PPM/ PR-02-17-25

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Sb 206.836	1766.5	0.959	mg/L	0.0128	0.959	mg/L	0.0128	1.34%
As 193.759	709.8	0.948	mg/L	0.0158	0.948	mg/L	0.0158	1.66%
QC value within limits for As 193.759 Recovery = 94.80%								
Ba 233.527	106517.2	0.948	mg/L	0.0091	0.948	mg/L	0.0091	0.96%
QC value within limits for Ba 233.527 Recovery = 94.84%								
Be 313.042	4621202.0	1.079	mg/L	0.0046	1.079	mg/L	0.0046	0.43%
QC value within limits for Be 313.042 Recovery = 107.91%								
Cd 226.502	41050.2	0.928	mg/L	0.0100	0.928	mg/L	0.0100	1.07%
QC value within limits for Cd 226.502 Recovery = 92.83%								
Ca 315.887	516669.5	51.59	mg/L	0.679	51.59	mg/L	0.679	1.32%
QC value within limits for Ca 315.887 Recovery = 103.18%								
Cr 205.552	16252.0	0.931	mg/L	0.0081	0.931	mg/L	0.0081	0.87%
QC value within limits for Cr 205.552 Recovery = 93.09%								
Co 228.616	19989.2	0.949	mg/L	0.0037	0.949	mg/L	0.0037	0.39%
QC value within limits for Co 228.616 Recovery = 94.91%								
Cu 324.752	342210.1	0.921	mg/L	0.0128	0.921	mg/L	0.0128	1.39%
QC value within limits for Cu 324.752 Recovery = 92.13%								
Fe 259.939	721326.3	53.24	mg/L	0.799	53.24	mg/L	0.799	1.50%
QC value within limits for Fe 259.939 Recovery = 106.49%								
Pb 220.353	3225.6	0.899	mg/L	0.0040	0.899	mg/L	0.0040	0.44%
QC value within limits for Pb 220.353 Recovery = 89.94%								
Mg 279.077	78774.5	51.59	mg/L	0.619	51.59	mg/L	0.619	1.20%
QC value within limits for Mg 279.077 Recovery = 103.17%								
Mn 257.610	543384.9	0.892	mg/L	0.0048	0.892	mg/L	0.0048	0.54%
QC value within limits for Mn 257.610 Recovery = 89.24%								
Mo 203.844	4255.8	0.923	mg/L	0.0054	0.923	mg/L	0.0054	0.59%
QC value within limits for Mo 203.844 Recovery = 92.28%								
Ni 231.604	26009.4	0.893	mg/L	0.0102	0.893	mg/L	0.0102	1.15%
QC value within limits for Ni 231.604 Recovery = 89.32%								
K 766.490	189637.4	52.27	mg/L	0.886	52.27	mg/L	0.886	1.69%
QC value within limits for K 766.490 Recovery = 104.54%								
Se 196.099	957.8	0.940	mg/L	0.0103	0.940	mg/L	0.0103	1.10%
Ag 328.068	283135.8	0.972	mg/L	0.0111	0.972	mg/L	0.0111	1.14%
QC value within limits for Ag 328.068 Recovery = 97.21%								
Na 588.995	1601290.3	52.94	mg/L	0.760	52.94	mg/L	0.760	1.44%
QC value within limits for Na 588.995 Recovery = 105.89%								
Tl 190.864	1359.4	0.856	mg/L	0.0036	0.856	mg/L	0.0036	0.42%
QC value within limits for Tl 190.864 Recovery = 85.56%								
V 292.402	138739.2	0.953	mg/L	0.0107	0.953	mg/L	0.0107	1.13%
QC value within limits for V 292.402 Recovery = 95.33%								
Zn 213.856	31384.7	0.989	mg/L	0.0097	0.989	mg/L	0.0097	0.98%
QC value within limits for Zn 213.856 Recovery = 98.86%								
Al 308.217	1950400.5	51.13	mg/L	0.513	51.13	mg/L	0.513	1.00%
As 188.976	1316.3	0.965	mg/L	0.0034	0.965	mg/L	0.0034	0.35%
Zn 206.200	13200.6	0.911	mg/L	0.0064	0.911	mg/L	0.0064	0.70%

All analyte(s) passed QC.

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 22
Sample ID: 86879.01
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 25
Date Collected: 4/25/2017 10:35:50 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.01

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	39.9	0.042	mg/L	0.0049	0.042	mg/L	0.0049	11.71%
As 193.759	-28.8	-0.038	mg/L	0.0032	-0.038	mg/L	0.0032	8.32%
Ba 233.527	196670.7	1.751	mg/L	0.0094	1.751	mg/L	0.0094	0.54%
Be 313.042	-40319.2	-0.009	mg/L	0.0001	-0.009	mg/L	0.0001	1.47%
Cd 226.502	2159.3	0.049	mg/L	0.0007	0.049	mg/L	0.0007	1.46%
Ca 315.887	1321856.5	132.0	mg/L	0.29	132.0	mg/L	0.29	0.22%
~~Cr 205.552~~	6223.6	0.356	mg/L	0.0030	0.356	mg/L	0.0030	0.85%
Co 228.616	2358.8	0.112	mg/L	0.0007	0.112	mg/L	0.0007	0.60%
Cu 324.752	274293.5	0.738	mg/L	0.0034	0.738	mg/L	0.0034	0.46%
Fe 259.939	3373008.8	249.0	mg/L	0.54	249.0	mg/L	0.54	0.22%
Pb 220.353	3018.0	0.842	mg/L	0.0298	0.842	mg/L	0.0298	3.55%
Mg 279.077	390711.5	255.9	mg/L	0.73	255.9	mg/L	0.73	0.28%
Mn 257.610	2522551.6	4.143	mg/L	0.0046	4.143	mg/L	0.0046	0.11%
Mo 203.844	56.4	0.012	mg/L	0.0040	0.012	mg/L	0.0040	33.00%
Ni 231.604	7262.5	0.249	mg/L	0.0002	0.249	mg/L	0.0002	0.09%
K 766.490	312665.0	86.18	mg/L	0.240	86.18	mg/L	0.240	0.28%
Se 196.099	-117.3	-0.115	mg/L	0.0052	-0.115	mg/L	0.0052	4.49%
Ag 328.068	-5728.4	-0.020	mg/L	0.0004	-0.020	mg/L	0.0004	1.86%
Na 588.995	10100590.1	334.0	mg/L	2.94	334.0	mg/L	2.94	0.88%
Tl 190.864	-45.2	-0.028	mg/L	0.0078	-0.028	mg/L	0.0078	27.50%
V 292.402	56730.2	0.390	mg/L	0.0028	0.390	mg/L	0.0028	0.71%
Zn 213.856	74722.0	2.354	mg/L	0.0036	2.354	mg/L	0.0036	0.15%
Al 308.217	6431557.9	168.6	mg/L	0.74	168.6	mg/L	0.74	0.44%
As 188.976	-40.7	-0.030	mg/L	0.0060	-0.030	mg/L	0.0060	20.09%
Zn 206.200	29913.6	2.061	mg/L	0.0033	2.061	mg/L	0.0033	0.16%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 23
Sample ID: CCB
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 26
Date Collected: 4/25/2017 10:38:35 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCB

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	1.6	0.021	mg/L	0.0018	0.021	mg/L	0.0018	8.61%
As 193.759	4.5	0.006	mg/L	0.0088	0.006	mg/L	0.0088	145.62%
Ba 233.527	20.2	0.000	mg/L	0.0001	0.000	mg/L	0.0001	35.01%
Be 313.042	-102.3	-0.000	mg/L	0.0000	-0.000	mg/L	0.0000	75.60%
Cd 226.502	-16.8	-0.000	mg/L	0.0002	-0.000	mg/L	0.0002	43.95%
Ca 315.887	250.2	0.025	mg/L	0.0024	0.025	mg/L	0.0024	9.69%
Cr 205.552	3.7	0.000	mg/L	0.0003	0.000	mg/L	0.0003	123.28%
Co 228.616	5.4	0.000	mg/L	0.0002	0.000	mg/L	0.0002	66.61%
Cu 324.752	2197.2	0.006	mg/L	0.0005	0.006	mg/L	0.0005	8.72%
Fe 259.939	821.5	0.061	mg/L	0.0145	0.061	mg/L	0.0145	23.84%
Pb 220.353	8.3	0.002	mg/L	0.0007	0.002	mg/L	0.0007	28.10%
Mg 279.077	39.1	0.026	mg/L	0.0058	0.026	mg/L	0.0058	22.77%
Mn 257.610	303.2	0.000	mg/L	0.0001	0.000	mg/L	0.0001	12.05%
Mo 203.844	7.0	0.002	mg/L	0.0007	0.002	mg/L	0.0007	46.53%
Ni 231.604	13.6	0.000	mg/L	0.0001	0.000	mg/L	0.0001	19.74%
K 766.490	389.6	0.107	mg/L	0.0103	0.107	mg/L	0.0103	9.61%
Se 196.099	-11.2	-0.011	mg/L	0.0076	-0.011	mg/L	0.0076	68.94%
Ag 328.068	77.4	0.000	mg/L	0.0001	0.000	mg/L	0.0001	38.36%
Na 588.995	311.7	0.010	mg/L	0.0059	0.010	mg/L	0.0059	57.18%
Tl 190.864	4.9	0.003	mg/L	0.0029	0.003	mg/L	0.0029	94.55%
V 292.402	16.7	0.000	mg/L	0.0002	0.000	mg/L	0.0002	176.52%
Zn 213.856	128.1	0.004	mg/L	0.0003	0.004	mg/L	0.0003	8.50%
Al 308.217	175.1	0.020	mg/L	0.0027	0.020	mg/L	0.0027	13.79%
As 188.976	-2.4	-0.002	mg/L	0.0035	-0.002	mg/L	0.0035	202.51%
Zn 206.200	54.1	0.006	mg/L	0.0004	0.006	mg/L	0.0004	6.34%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 24
Sample ID: 86879.11 1.00 mg/L
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 27
Date Collected: 4/25/2017 10:41:28 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.11 1.00 mg/L

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	49.6	0.047	mg/L	0.0129	0.047	mg/L	0.0129	27.48%
As 193.759	-31.3	-0.042	mg/L	0.0261	-0.042	mg/L	0.0261	62.37%
Ba 233.527	229615.5	2.044	mg/L	0.0320	2.044	mg/L	0.0320	1.56%
Be 313.042	-56229.1	-0.013	mg/L	0.0001	-0.013	mg/L	0.0001	1.02%
Cd 226.502	2670.3	0.060	mg/L	0.0005	0.060	mg/L	0.0005	0.83%
Ca 315.887	1794230.3	179.2	mg/L	2.42	179.2	mg/L	2.42	1.35%
Cr 205.552	17618.0	1.009	mg/L	0.0179	1.009	mg/L	0.0179	1.78%
Co 228.616	3027.5	0.144	mg/L	0.0012	0.144	mg/L	0.0012	0.86%
Cu 324.752	279535.6	0.753	mg/L	0.0103	0.753	mg/L	0.0103	1.37%
Fe 259.939	4275036.1	315.6	mg/L	4.10	315.6	mg/L	4.10	1.30%
Pb 220.353	3758.3	1.048	mg/L	0.0019	1.048	mg/L	0.0019	0.18%
Mg 279.077	323699.7	212.0	mg/L	2.90	212.0	mg/L	2.90	1.37%
Mn 257.610	3035222.2	4.985	mg/L	0.0410	4.985	mg/L	0.0410	0.82%
Mo 203.844	74.6	0.016	mg/L	0.0010	0.016	mg/L	0.0010	5.93%
Ni 231.604	9448.4	0.324	mg/L	0.0025	0.324	mg/L	0.0025	0.78%
K 766.490	395479.8	109.0	mg/L	1.46	109.0	mg/L	1.46	1.34%
Se 196.099	-174.3	-0.171	mg/L	0.0169	-0.171	mg/L	0.0169	9.91%
Ag 328.068	-8152.5	-0.028	mg/L	0.0007	-0.028	mg/L	0.0007	2.38%
Na 588.995	6461489.0	213.6	mg/L	2.12	213.6	mg/L	2.12	0.99%
Tl 190.864	-48.5	-0.031	mg/L	0.0031	-0.031	mg/L	0.0031	10.11%
V 292.402	80098.1	0.550	mg/L	0.0087	0.550	mg/L	0.0087	1.59%
Zn 213.856	63951.5	2.014	mg/L	0.0177	2.014	mg/L	0.0177	0.88%
Al 308.217	9000784.3	235.9	mg/L	3.23	235.9	mg/L	3.23	1.37%
As 188.976	-49.7	-0.036	mg/L	0.0066	-0.036	mg/L	0.0066	18.11%
Zn 206.200	25166.0	1.734	mg/L	0.0085	1.734	mg/L	0.0085	0.49%

101

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 25
Sample ID: 86879.11 10.0 mg/L
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 28
Date Collected: 4/25/2017 10:44:09 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.11 10.0 mg/L

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	141.6	0.096	mg/L	0.0230	0.096	mg/L	0.0230	23.98%
As 193.759	-54.7	-0.073	mg/L	0.0286	-0.073	mg/L	0.0286	39.08%
Ba 233.527	228476.9	2.034	mg/L	0.0123	2.034	mg/L	0.0123	0.60%
Be 313.042	-49400.9	-0.012	mg/L	0.0001	-0.012	mg/L	0.0001	1.25%
Cd 226.502	2688.6	0.061	mg/L	0.0004	0.061	mg/L	0.0004	0.63%
Ca 315.887	1815179.1	181.3	mg/L	0.80	181.3	mg/L	0.80	0.44%
Cr 205.552	77807.3	4.457	mg/L	0.0355	4.457	mg/L	0.0355	0.80%
Co 228.616	3034.1	0.144	mg/L	0.0008	0.144	mg/L	0.0008	0.54%
Cu 324.752	218757.5	0.589	mg/L	0.0054	0.589	mg/L	0.0054	0.92%
Fe 259.939	4394507.4	324.4	mg/L	1.27	324.4	mg/L	1.27	0.39%
Pb 220.353	4553.1	1.270	mg/L	0.0038	1.270	mg/L	0.0038	0.30%
Mg 279.077	335330.6	219.6	mg/L	1.05	219.6	mg/L	1.05	0.48%
Mn 257.610	2946300.3	4.839	mg/L	0.0335	4.839	mg/L	0.0335	0.69%
Mo 203.844	58.7	0.013	mg/L	0.0044	0.013	mg/L	0.0044	34.17%
Ni 231.604	9489.0	0.326	mg/L	0.0011	0.326	mg/L	0.0011	0.35%
K 766.490	464330.1	128.0	mg/L	0.53	128.0	mg/L	0.53	0.41%
Se 196.099	-159.0	-0.156	mg/L	0.0163	-0.156	mg/L	0.0163	10.43%
Ag 328.068	-8094.3	-0.028	mg/L	0.0009	-0.028	mg/L	0.0009	3.23%
Na 588.995	7024726.8	232.3	mg/L	5.53	232.3	mg/L	5.53	2.38%
Tl 190.864	-40.8	-0.026	mg/L	0.0056	-0.026	mg/L	0.0056	21.81%
V 292.402	79777.4	0.548	mg/L	0.0046	0.548	mg/L	0.0046	0.84%
Zn 213.856	56025.0	1.765	mg/L	0.0116	1.765	mg/L	0.0116	0.66%
Al 308.217	9294099.0	243.6	mg/L	4.40	243.6	mg/L	4.40	1.81%
As 188.976	-51.2	-0.038	mg/L	0.0065	-0.038	mg/L	0.0065	17.35%
Zn 206.200	21750.7	1.499	mg/L	0.0140	1.499	mg/L	0.0140	0.94%

4.457 − 0.400 = 4.057 = 405.7 mg/kg

Cr+6

405.7 + 655.0 = 1061 / 1000 = 106.1

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 27
Sample ID: 86879.11 0.020 g
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 30
Date Collected: 4/25/2017 10:49:42 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.11 0.020 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	583.9	0.331	mg/L	0.0115	0.331	mg/L	0.0115	3.48%
As 193.759	-33.4	-0.045	mg/L	0.0138	-0.045	mg/L	0.0138	31.01%
Ba 233.527	214175.9	1.907	mg/L	0.0064	1.907	mg/L	0.0064	0.33%
Be 313.042	-50626.9	-0.012	mg/L	0.0001	-0.012	mg/L	0.0001	1.13%
Cd 226.502	2428.9	0.055	mg/L	0.0002	0.055	mg/L	0.0002	0.32%
Ca 315.887	1747600.4	174.5	mg/L	1.99	174.5	mg/L	1.99	1.14%
Cr 205.552	359954.0	20.62	mg/L	0.066	20.62	mg/L	0.066	0.32%
Co 228.616	3213.8	0.153	mg/L	0.0008	0.153	mg/L	0.0008	0.51%
Cu 324.752	178910.5	0.482	mg/L	0.0020	0.482	mg/L	0.0020	0.42%
Fe 259.939	4056233.7	299.4	mg/L	3.24	299.4	mg/L	3.24	1.08%
Pb 220.353	579600.3	161.6	mg/L	0.31	161.6	mg/L	0.31	0.19%
Mg 279.077	299630.7	196.2	mg/L	2.03	196.2	mg/L	2.03	1.03%
Mn 257.610	2932552.1	4.816	mg/L	0.0283	4.816	mg/L	0.0283	0.59%
Mo 203.844	68.9	0.015	mg/L	0.0042	0.015	mg/L	0.0042	28.14%
Ni 231.604	12240.0	0.420	mg/L	0.0022	0.420	mg/L	0.0022	0.53%
K 766.490	405321.4	111.7	mg/L	1.22	111.7	mg/L	1.22	1.09%
Se 196.099	-153.3	-0.150	mg/L	0.0136	-0.150	mg/L	0.0136	9.04%
Ag 328.068	-7170.6	-0.025	mg/L	0.0002	-0.025	mg/L	0.0002	0.70%
Na 588.995	7575090.3	250.5	mg/L	3.21	250.5	mg/L	3.21	1.28%
Tl 190.864	-39.2	-0.025	mg/L	0.0011	-0.025	mg/L	0.0011	4.62%
V 292.402	68099.9	0.468	mg/L	0.0025	0.468	mg/L	0.0025	0.54%
Zn 213.856	57890.9	1.824	mg/L	0.0050	1.824	mg/L	0.0050	0.27%
Al 308.217	8163833.6	213.9	mg/L	1.64	213.9	mg/L	1.64	0.77%
As 188.976	-146.1	-0.107	mg/L	0.0057	-0.107	mg/L	0.0057	5.34%
Zn 206.200	20704.1	1.427	mg/L	0.0018	1.427	mg/L	0.0018	0.13%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 42
Sample ID: 86879.11 0.020g D=10
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 40
Date Collected: 4/25/2017 11:29:45 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.11 0.020g D=10

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	94.8	0.071	mg/L	0.0016	0.071	mg/L	0.0016	2.32%
As 193.759	0.1	0.000	mg/L	0.0116	0.000	mg/L	0.0116	>999.9%
Ba 233.527	27673.1	0.246	mg/L	0.0011	0.246	mg/L	0.0011	0.43%
Be 313.042	-6323.0	-0.001	mg/L	0.0001	-0.001	mg/L	0.0001	3.61%
Cd 226.502	382.9	0.009	mg/L	0.0002	0.009	mg/L	0.0002	2.24%
Ca 315.887	213649.0	21.33	mg/L	0.272	21.33	mg/L	0.272	1.28%
Cr 205.552	46796.2	2.680	mg/L	0.0177	2.680	mg/L	0.0177	0.66%
Co 228.616	451.0	0.021	mg/L	0.0003	0.021	mg/L	0.0003	1.39%
Cu 324.752	16949.2	0.046	mg/L	0.0005	0.046	mg/L	0.0005	1.00%
Fe 259.939	524051.9	38.68	mg/L	0.212	38.68	mg/L	0.212	0.55%
Pb 220.353	83785.3	23.36	mg/L	0.096	23.36	mg/L	0.096	0.41%
Mg 279.077	35489.9	23.24	mg/L	0.279	23.24	mg/L	0.279	1.20%
Mn 257.610	387580.4	0.636	mg/L	0.0024	0.636	mg/L	0.0024	0.38%
Mo 203.844	24.0	0.005	mg/L	0.0004	0.005	mg/L	0.0004	7.66%
Ni 231.604	1712.4	0.059	mg/L	0.0001	0.059	mg/L	0.0001	0.14%
K 766.490	47816.6	13.18	mg/L	0.236	13.18	mg/L	0.236	1.79%
Se 196.099	-14.5	-0.014	mg/L	0.0162	-0.014	mg/L	0.0162	113.96%
Ag 328.068	-799.9	-0.003	mg/L	0.0001	-0.003	mg/L	0.0001	4.36%
Na 588.995	937690.9	31.00	mg/L	0.158	31.00	mg/L	0.158	0.51%
Tl 190.864	-4.1	-0.003	mg/L	0.0043	-0.003	mg/L	0.0043	169.07%
V 292.402	9048.7	0.062	mg/L	0.0005	0.062	mg/L	0.0005	0.76%
Zn 213.856	6683.4	0.211	mg/L	0.0007	0.211	mg/L	0.0007	0.32%
Al 308.217	985303.1	25.83	mg/L	0.249	25.83	mg/L	0.249	0.96%
As 188.976	-13.9	-0.010	mg/L	0.0014	-0.010	mg/L	0.0014	14.21%
Zn 206.200	2342.5	0.164	mg/L	0.0023	0.164	mg/L	0.0023	1.40%

2.68 X10 = 26.8

26.8 - 0.4 = 26.4 + 21.1 = 47.5 = 4750 mg/kg / 4736 =

100%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 26
Sample ID: 86879.11 0.060 g
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 29
Date Collected: 4/25/2017 10:46:56 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.11 0.060 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	753.8	0.421	mg/L	0.0059	0.421	mg/L	0.0059	1.40%
As 193.759	-40.7	-0.054	mg/L	0.0034	-0.054	mg/L	0.0034	6.17%
Ba 233.527	212639.7	1.893	mg/L	0.0118	1.893	mg/L	0.0118	0.62%
Be 313.042	-43973.9	-0.010	mg/L	0.0001	-0.010	mg/L	0.0001	0.49%
Cd 226.502	2545.1	0.058	mg/L	0.0007	0.058	mg/L	0.0007	1.26%
Ca 315.887	1783439.7	178.1	mg/L	1.94	178.1	mg/L	1.94	1.09%
Cr 205.552	489653.4	28.05	mg/L	0.154	28.05	mg/L	0.154	0.55%
Co 228.616	3133.1	0.149	mg/L	0.0009	0.149	mg/L	0.0009	0.60%
Cu 324.752	176550.8	0.475	mg/L	0.0029	0.475	mg/L	0.0029	0.62%
Fe 259.939	4189586.1	309.3	mg/L	3.39	309.3	mg/L	3.39	1.10%
Pb 220.353	1100375.3	306.8	mg/L	2.09	306.8	mg/L	2.09	0.68%
Mg 279.077	330673.0	216.5	mg/L	2.35	216.5	mg/L	2.35	1.09%
Mn 257.610	2862863.7	4.701	mg/L	0.0367	4.701	mg/L	0.0367	0.78%
Mo 203.844	48.7	0.011	mg/L	0.0027	0.011	mg/L	0.0027	25.37%
Ni 231.604	10390.6	0.357	mg/L	0.0007	0.357	mg/L	0.0007	0.21%
K 766.490	445910.8	122.9	mg/L	1.50	122.9	mg/L	1.50	1.22%
Se 196.099	-145.9	-0.143	mg/L	0.0082	-0.143	mg/L	0.0082	5.72%
Ag 328.068	-7408.9	-0.025	mg/L	0.0003	-0.025	mg/L	0.0003	1.14%
Na 588.995	7501298.3	248.0	mg/L	1.40	248.0	mg/L	1.40	0.56%
Tl 190.864	-24.2	-0.015	mg/L	0.0050	-0.015	mg/L	0.0050	33.08%
V 292.402	74899.2	0.515	mg/L	0.0047	0.515	mg/L	0.0047	0.91%
Zn 213.856	58223.7	1.834	mg/L	0.0125	1.834	mg/L	0.0125	0.68%
Al 308.217	8606400.3	225.5	mg/L	2.59	225.5	mg/L	2.59	1.15%
As 188.976	-158.5	-0.116	mg/L	0.0055	-0.116	mg/L	0.0055	4.71%
Zn 206.200	19867.4	1.370	mg/L	0.0084	1.370	mg/L	0.0084	0.61%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 40
Sample ID: 86879.11 0.060g D=10
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 39
Date Collected: 4/25/2017 11:24:28 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.11 0.060g D=10

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	101.0	0.074	mg/L	0.0036	0.074	mg/L	0.0036	4.87%
As 193.759	-8.8	-0.012	mg/L	0.0074	-0.012	mg/L	0.0074	62.47%
Ba 233.527	27753.9	0.247	mg/L	0.0022	0.247	mg/L	0.0022	0.90%
Be 313.042	-6142.9	-0.001	mg/L	0.0001	-0.001	mg/L	0.0001	7.53%
Cd 226.502	296.6	0.007	mg/L	0.0000	0.007	mg/L	0.0000	0.72%
Ca 315.887	217281.1	21.70	mg/L	0.241	21.70	mg/L	0.241	1.11%
Cr 205.552	64901.3	3.717	mg/L	0.0367	3.717	mg/L	0.0367	0.99%
Co 228.616	454.3	0.022	mg/L	0.0001	0.022	mg/L	0.0001	0.27%
Cu 324.752	15214.1	0.041	mg/L	0.0007	0.041	mg/L	0.0007	1.68%
Fe 259.939	534877.4	39.48	mg/L	0.541	39.48	mg/L	0.541	1.37%
Pb 220.353	169288.8	47.20	mg/L	0.506	47.20	mg/L	0.506	1.07%
Mg 279.077	39031.4	25.56	mg/L	0.234	25.56	mg/L	0.234	0.91%
Mn 257.610	382212.0	0.628	mg/L	0.0055	0.628	mg/L	0.0055	0.88%
Mo 203.844	18.4	0.004	mg/L	0.0005	0.004	mg/L	0.0005	12.91%
Ni 231.604	1478.1	0.051	mg/L	0.0007	0.051	mg/L	0.0007	1.38%
K 766.490	51634.2	14.23	mg/L	0.205	14.23	mg/L	0.205	1.44%
Se 196.099	-9.4	-0.009	mg/L	0.0068	-0.009	mg/L	0.0068	73.76%
Ag 328.068	-907.1	-0.003	mg/L	0.0002	-0.003	mg/L	0.0002	5.04%
Na 588.995	918006.5	30.35	mg/L	0.461	30.35	mg/L	0.461	1.52%
Tl 190.864	1.7	0.001	mg/L	0.0026	0.001	mg/L	0.0026	237.38%
V 292.402	9985.7	0.069	mg/L	0.0001	0.069	mg/L	0.0001	0.18%
Zn 213.856	6767.9	0.213	mg/L	0.0010	0.213	mg/L	0.0010	0.49%
Al 308.217	1025135.2	26.88	mg/L	0.498	26.88	mg/L	0.498	1.85%
As 188.976	-27.6	-0.020	mg/L	0.0050	-0.020	mg/L	0.0050	24.61%
Zn 206.200	2233.3	0.156	mg/L	0.0035	0.156	mg/L	0.0035	2.21%

3.717 X 10 = 37.17 − 0.4 = 36.8

3680

3680 + 6600 = 10277 / 8992 = 114%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 28
Sample ID: 86879.11
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 31
Date Collected: 4/25/2017 10:52:29 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 86879.11

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	41.5	0.043	mg/L	0.0067	0.043	mg/L	0.0067	15.73%
As 193.759	-58.6	-0.078	mg/L	0.0209	-0.078	mg/L	0.0209	26.77%
Ba 233.527	201617.9	1.795	mg/L	0.0040	1.795	mg/L	0.0040	0.22%
Be 313.042	-46137.8	-0.011	mg/L	0.0001	-0.011	mg/L	0.0001	0.52%
Cd 226.502	2348.0	0.053	mg/L	0.0006	0.053	mg/L	0.0006	1.16%
Ca 315.887	1679327.0	167.7	mg/L	0.84	167.7	mg/L	0.84	0.50%
Cr 205.552	6977.6	0.400	mg/L	0.0040	0.400	mg/L	0.0040	0.99%
Co 228.616	2647.4	0.126	mg/L	0.0011	0.126	mg/L	0.0011	0.91%
Cu 324.752	236791.5	0.637	mg/L	0.0028	0.637	mg/L	0.0028	0.43%
Fe 259.939	3781370.8	279.1	mg/L	1.12	279.1	mg/L	1.12	0.40%
Pb 220.353	3252.3	0.907	mg/L	0.0506	0.907	mg/L	0.0506	5.58%
Mg 279.077	540766.4	354.1	mg/L	1.47	354.1	mg/L	1.47	0.42%
Mn 257.610	2490977.0	4.091	mg/L	0.0328	4.091	mg/L	0.0328	0.80%
Mo 203.844	52.6	0.011	mg/L	0.0058	0.011	mg/L	0.0058	51.18%
Ni 231.604	8913.7	0.306	mg/L	0.0025	0.306	mg/L	0.0025	0.82%
K 766.490	375366.3	103.5	mg/L	0.24	103.5	mg/L	0.24	0.24%
Se 196.099	-125.0	-0.123	mg/L	0.0224	-0.123	mg/L	0.0224	18.25%
Ag 328.068	-7094.2	-0.024	mg/L	0.0004	-0.024	mg/L	0.0004	1.80%
Na 588.995	12172844.0	402.5	mg/L	5.04	402.5	mg/L	5.04	1.25%
Tl 190.864	-47.9	-0.030	mg/L	0.0079	-0.030	mg/L	0.0079	26.23%
V 292.402	70932.6	0.487	mg/L	0.0009	0.487	mg/L	0.0009	0.18%
Zn 213.856	55600.2	1.751	mg/L	0.0020	1.751	mg/L	0.0020	0.11%
Al 308.217	7955215.4	208.5	mg/L	3.19	208.5	mg/L	3.19	1.53%
As 188.976	-30.9	-0.023	mg/L	0.0103	-0.023	mg/L	0.0103	45.34%
Zn 206.200	21500.2	1.482	mg/L	0.0045	1.482	mg/L	0.0045	0.31%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 29
Sample ID: 87184.04 0.020 g
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 32
Date Collected: 4/25/2017 10:55:12 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 87184.04 0.020 g

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	147.4	0.099	mg/L	0.0123	0.099	mg/L	0.0123	12.42%
As 193.759	-10.0	-0.013	mg/L	0.0383	-0.013	mg/L	0.0383	286.95%
Ba 233.527	184326.1	1.641	mg/L	0.0158	1.641	mg/L	0.0158	0.97%
Be 313.042	-16336.5	-0.004	mg/L	0.0001	-0.004	mg/L	0.0001	2.93%
Cd 226.502	2480.3	0.056	mg/L	0.0002	0.056	mg/L	0.0002	0.31%
Ca 315.887	1332343.5	133.0	mg/L	1.42	133.0	mg/L	1.42	1.07%
Cr 205.552	89305.3	5.115	mg/L	0.0434	5.115	mg/L	0.0434	0.85%
Co 228.616	2520.0	0.120	mg/L	0.0007	0.120	mg/L	0.0007	0.56%
Cu 324.752	302041.5	0.813	mg/L	0.0047	0.813	mg/L	0.0047	0.58%
Fe 259.939	4120660.4	304.2	mg/L	2.80	304.2	mg/L	2.80	0.92%
Pb 220.353	514355.5	143.4	mg/L	1.90	143.4	mg/L	1.90	1.32%
Mg 279.077	240603.9	157.6	mg/L	1.69	157.6	mg/L	1.69	1.07%
Mn 257.610	2498742.6	4.104	mg/L	0.0560	4.104	mg/L	0.0560	1.37%
Mo 203.844	71.3	0.015	mg/L	0.0045	0.015	mg/L	0.0045	29.34%
Ni 231.604	8672.4	0.298	mg/L	0.0010	0.298	mg/L	0.0010	0.34%
K 766.490	360259.0	99.29	mg/L	0.875	99.29	mg/L	0.875	0.88%
Se 196.099	-139.8	-0.137	mg/L	0.0216	-0.137	mg/L	0.0216	15.78%
Ag 328.068	-7467.6	-0.026	mg/L	0.0004	-0.026	mg/L	0.0004	1.48%
Na 588.995	3779304.0	125.0	mg/L	0.97	125.0	mg/L	0.97	0.78%
Tl 190.864	-24.6	-0.015	mg/L	0.0043	-0.015	mg/L	0.0043	28.04%
V 292.402	99715.5	0.685	mg/L	0.0049	0.685	mg/L	0.0049	0.71%
Zn 213.856	83162.4	2.620	mg/L	0.0151	2.620	mg/L	0.0151	0.58%
Al 308.217	8815866.1	231.0	mg/L	3.95	231.0	mg/L	3.95	1.71%
As 188.976	-20.8	-0.015	mg/L	0.0029	-0.015	mg/L	0.0029	19.25%
Zn 206.200	33015.7	2.275	mg/L	0.0187	2.275	mg/L	0.0187	0.82%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 43
Sample ID: 87184.04 0.020g D=10
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 41
Date Collected: 4/25/2017 11:32:19 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 87184.04 0.020g D=10

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	29.4	0.036	mg/L	0.0047	0.036	mg/L	0.0047	12.89%
As 193.759	-1.6	-0.002	mg/L	0.0192	-0.002	mg/L	0.0192	890.00%
Ba 233.527	23713.3	0.211	mg/L	0.0016	0.211	mg/L	0.0016	0.77%
Be 313.042	-1976.3	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	26.27%
Cd 226.502	326.8	0.007	mg/L	0.0003	0.007	mg/L	0.0003	3.42%
Ca 315.887	165408.2	16.52	mg/L	0.061	16.52	mg/L	0.061	0.37%
Cr 205.552	11915.4	0.682	mg/L	0.0016	0.682	mg/L	0.0016	0.24%
Co 228.616	358.0	0.017	mg/L	0.0002	0.017	mg/L	0.0002	1.02%
Cu 324.752	29469.2	0.079	mg/L	0.0017	0.079	mg/L	0.0017	2.16%
Fe 259.939	550704.5	40.65	mg/L	0.770	40.65	mg/L	0.770	1.90%
Pb 220.353	77639.1	21.65	mg/L	0.157	21.65	mg/L	0.157	0.72%
Mg 279.077	29068.8	19.04	mg/L	0.044	19.04	mg/L	0.044	0.23%
Mn 257.610	331449.9	0.544	mg/L	0.0030	0.544	mg/L	0.0030	0.55%
Mo 203.844	25.4	0.006	mg/L	0.0003	0.006	mg/L	0.0003	5.19%
Ni 231.604	1198.0	0.041	mg/L	0.0003	0.041	mg/L	0.0003	0.82%
K 766.490	42931.8	11.83	mg/L	0.050	11.83	mg/L	0.050	0.42%
Se 196.099	-11.7	-0.012	mg/L	0.0027	-0.012	mg/L	0.0027	23.49%
Ag 328.068	-861.4	-0.003	mg/L	0.0002	-0.003	mg/L	0.0002	5.42%
Na 588.995	468081.0	15.48	mg/L	0.424	15.48	mg/L	0.424	2.74%
Tl 190.864	-3.9	-0.002	mg/L	0.0048	-0.002	mg/L	0.0048	199.47%
V 292.402	12483.2	0.086	mg/L	0.0007	0.086	mg/L	0.0007	0.78%
Zn 213.856	9700.0	0.306	mg/L	0.0012	0.306	mg/L	0.0012	0.38%
Al 308.217	1081634.0	28.36	mg/L	0.676	28.36	mg/L	0.676	2.38%
As 188.976	2.6	0.002	mg/L	0.0072	0.002	mg/L	0.0072	378.05%
Zn 206.200	3937.2	0.273	mg/L	0.0005	0.273	mg/L	0.0005	0.19%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 30
Sample ID: 87184.04 1.00 mg/L
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 33
Date Collected: 4/25/2017 10:57:54 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 87184.04 1.00 mg/L

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	46.6	0.045	mg/L	0.0064	0.045	mg/L	0.0064	14.16%
As 193.759	-29.1	-0.039	mg/L	0.0064	-0.039	mg/L	0.0064	16.51%
Ba 233.527	190886.0	1.700	mg/L	0.0223	1.700	mg/L	0.0223	1.31%
Be 313.042	-14384.9	-0.003	mg/L	0.0001	-0.003	mg/L	0.0001	3.72%
Cd 226.502	2678.0	0.061	mg/L	0.0004	0.061	mg/L	0.0004	0.62%
Ca 315.887	1596871.9	159.5	mg/L	0.68	159.5	mg/L	0.68	0.42%
Cr 205.552	9549.1	0.547	mg/L	0.0036	0.547	mg/L	0.0036	0.66%
Co 228.616	2698.0	0.128	mg/L	0.0006	0.128	mg/L	0.0006	0.43%
Cu 324.752	285873.0	0.770	mg/L	0.0086	0.770	mg/L	0.0086	1.11%
Fe 259.939	4374567.5	322.9	mg/L	3.67	322.9	mg/L	3.67	1.14%
Pb 220.353	788.6	0.220	mg/L	0.0120	0.220	mg/L	0.0120	5.46%
Mg 279.077	320578.5	209.9	mg/L	0.97	209.9	mg/L	0.97	0.46%
Mn 257.610	2696428.7	4.428	mg/L	0.0452	4.428	mg/L	0.0452	1.02%
Mo 203.844	49.6	0.011	mg/L	0.0018	0.011	mg/L	0.0018	17.18%
Ni 231.604	9125.4	0.313	mg/L	0.0021	0.313	mg/L	0.0021	0.69%
K 766.490	393649.2	108.5	mg/L	0.33	108.5	mg/L	0.33	0.30%
Se 196.099	-149.8	-0.147	mg/L	0.0090	-0.147	mg/L	0.0090	6.15%
Ag 328.068	-8174.3	-0.028	mg/L	0.0005	-0.028	mg/L	0.0005	1.94%
Na 588.995	4512405.5	149.2	mg/L	1.82	149.2	mg/L	1.82	1.22%
Tl 190.864	-31.8	-0.020	mg/L	0.0079	-0.020	mg/L	0.0079	39.78%
V 292.402	101163.7	0.695	mg/L	0.0079	0.695	mg/L	0.0079	1.13%
Zn 213.856	62303.4	1.962	mg/L	0.0255	1.962	mg/L	0.0255	1.30%
Al 308.217	9516410.3	249.4	mg/L	4.51	249.4	mg/L	4.51	1.81%
As 188.976	2.1	0.002	mg/L	0.0153	0.002	mg/L	0.0153	>999.9%
Zn 206.200	24779.6	1.708	mg/L	0.0192	1.708	mg/L	0.0192	1.13%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 31
Sample ID: CCV 1.00 PPM/ PR-02-17-25
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 5
Date Collected: 4/25/2017 11:00:35 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCV 1.00 PPM/ PR-02-17-25

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Sb 206.836	1755.1	0.953	mg/L	0.0055	0.953	mg/L	0.0055	0.58%
As 193.759	719.6	0.961	mg/L	0.0172	0.961	mg/L	0.0172	1.79%
QC value within limits for As 193.759 Recovery = 96.11%								
Ba 233.527	106291.4	0.946	mg/L	0.0122	0.946	mg/L	0.0122	1.28%
QC value within limits for Ba 233.527 Recovery = 94.64%								
Be 313.042	4637806.3	1.083	mg/L	0.0032	1.083	mg/L	0.0032	0.29%
QC value within limits for Be 313.042 Recovery = 108.30%								
Cd 226.502	40777.6	0.922	mg/L	0.0115	0.922	mg/L	0.0115	1.25%
QC value within limits for Cd 226.502 Recovery = 92.21%								
Ca 315.887	520556.1	51.98	mg/L	0.842	51.98	mg/L	0.842	1.62%
QC value within limits for Ca 315.887 Recovery = 103.96%								
Cr 205.552	16086.5	0.921	mg/L	0.0093	0.921	mg/L	0.0093	1.01%
QC value within limits for Cr 205.552 Recovery = 92.14%								
Co 228.616	19033.0	0.904	mg/L	0.0133	0.904	mg/L	0.0133	1.47%
QC value within limits for Co 228.616 Recovery = 90.37%								
Cu 324.752	347697.5	0.936	mg/L	0.0264	0.936	mg/L	0.0264	2.82%
QC value within limits for Cu 324.752 Recovery = 93.61%								
Fe 259.939	724684.2	53.49	mg/L	0.823	53.49	mg/L	0.823	1.54%
QC value within limits for Fe 259.939 Recovery = 106.98%								
Pb 220.353	3208.9	0.895	mg/L	0.0068	0.895	mg/L	0.0068	0.76%
QC value within limits for Pb 220.353 Recovery = 89.48%								
Mg 279.077	79400.0	52.00	mg/L	0.721	52.00	mg/L	0.721	1.39%
QC value within limits for Mg 279.077 Recovery = 103.99%								
Mn 257.610	544202.5	0.894	mg/L	0.0033	0.894	mg/L	0.0033	0.37%
QC value within limits for Mn 257.610 Recovery = 89.37%								
Mo 203.844	4281.3	0.928	mg/L	0.0052	0.928	mg/L	0.0052	0.56%
QC value within limits for Mo 203.844 Recovery = 92.83%								
Ni 231.604	26042.0	0.894	mg/L	0.0109	0.894	mg/L	0.0109	1.22%
QC value within limits for Ni 231.604 Recovery = 89.44%								
K 766.490	190697.1	52.56	mg/L	0.826	52.56	mg/L	0.826	1.57%
QC value within limits for K 766.490 Recovery = 105.12%								
Se 196.099	975.2	0.957	mg/L	0.0112	0.957	mg/L	0.0112	1.18%
Ag 328.068	281069.3	0.965	mg/L	0.0182	0.965	mg/L	0.0182	1.88%
QC value within limits for Ag 328.068 Recovery = 96.50%								
Na 588.995	1597562.1	52.82	mg/L	1.667	52.82	mg/L	1.667	3.16%
QC value within limits for Na 588.995 Recovery = 105.64%								
Tl 190.864	1371.9	0.863	mg/L	0.0078	0.863	mg/L	0.0078	0.90%
QC value within limits for Tl 190.864 Recovery = 86.34%								
V 292.402	138126.2	0.949	mg/L	0.0149	0.949	mg/L	0.0149	1.57%
QC value within limits for V 292.402 Recovery = 94.91%								
Zn 213.856	31428.9	0.990	mg/L	0.0148	0.990	mg/L	0.0148	1.49%
QC value within limits for Zn 213.856 Recovery = 99.00%								
Al 308.217	1949225.7	51.09	mg/L	0.199	51.09	mg/L	0.199	0.39%
As 188.976	1328.5	0.974	mg/L	0.0161	0.974	mg/L	0.0161	1.65%
Zn 206.200	13090.9	0.903	mg/L	0.0035	0.903	mg/L	0.0035	0.39%

All analyte(s) passed QC.

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 32
Sample ID: 87184.04
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 34
Date Collected: 4/25/2017 11:03:18 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: 87184.04

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	66.3	0.056	mg/L	0.0032	0.056	mg/L	0.0032	5.67%
As 193.759	-22.3	-0.030	mg/L	0.0165	-0.030	mg/L	0.0165	55.49%
Ba 233.527	191908.8	1.709	mg/L	0.0048	1.709	mg/L	0.0048	0.28%
Be 313.042	-19030.1	-0.004	mg/L	0.0002	-0.004	mg/L	0.0002	3.48%
Cd 226.502	2704.2	0.061	mg/L	0.0006	0.061	mg/L	0.0006	0.93%
Ca 315.887	1327741.8	132.6	mg/L	1.32	132.6	mg/L	1.32	1.00%
Cr 205.552	9236.9	0.529	mg/L	0.0047	0.529	mg/L	0.0047	0.89%
Co 228.616	2582.2	0.123	mg/L	0.0007	0.123	mg/L	0.0007	0.55%
Cu 324.752	262565.5	0.707	mg/L	0.0034	0.707	mg/L	0.0034	0.48%
Fe 259.939	4433357.6	327.2	mg/L	3.35	327.2	mg/L	3.35	1.02%
Pb 220.353	834.2	0.233	mg/L	0.0053	0.233	mg/L	0.0053	2.29%
Mg 279.077	348721.9	228.4	mg/L	2.16	228.4	mg/L	2.16	0.95%
Mn 257.610	2496046.6	4.099	mg/L	0.0664	4.099	mg/L	0.0664	1.62%
Mo 203.844	54.0	0.012	mg/L	0.0006	0.012	mg/L	0.0006	5.41%
Ni 231.604	9044.0	0.311	mg/L	0.0008	0.311	mg/L	0.0008	0.27%
K 766.490	360415.7	99.34	mg/L	1.210	99.34	mg/L	1.210	1.22%
Se 196.099	-164.5	-0.161	mg/L	0.0246	-0.161	mg/L	0.0246	15.25%
Ag 328.068	-8003.8	-0.027	mg/L	0.0004	-0.027	mg/L	0.0004	1.46%
Na 588.995	7532957.1	249.1	mg/L	2.59	249.1	mg/L	2.59	1.04%
Tl 190.864	-38.4	-0.024	mg/L	0.0020	-0.024	mg/L	0.0020	8.38%
V 292.402	98315.4	0.676	mg/L	0.0024	0.676	mg/L	0.0024	0.36%
Zn 213.856	74879.5	2.359	mg/L	0.0063	2.359	mg/L	0.0063	0.27%
Al 308.217	8695083.2	227.9	mg/L	5.37	227.9	mg/L	5.37	2.36%
As 188.976	-5.0	-0.004	mg/L	0.0011	-0.004	mg/L	0.0011	30.77%
Zn 206.200	29761.9	2.051	mg/L	0.0039	2.051	mg/L	0.0039	0.19%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 33
Sample ID: CCB
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 35
Date Collected: 4/25/2017 11:06:03 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCB

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	-2.4	0.019	mg/L	0.0023	0.019	mg/L	0.0023	11.73%
As 193.759	-1.9	-0.003	mg/L	0.0037	-0.003	mg/L	0.0037	145.32%
Ba 233.527	18.7	0.000	mg/L	0.0001	0.000	mg/L	0.0001	40.00%
Be 313.042	-130.2	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	280.78%
Cd 226.502	-18.8	-0.000	mg/L	0.0001	-0.000	mg/L	0.0001	27.51%
Ca 315.887	215.6	0.022	mg/L	0.0033	0.022	mg/L	0.0033	15.49%
Cr 205.552	6.5	0.000	mg/L	0.0004	0.000	mg/L	0.0004	97.35%
Co 228.616	1.9	0.000	mg/L	0.0001	0.000	mg/L	0.0001	149.40%
Cu 324.752	2115.7	0.006	mg/L	0.0005	0.006	mg/L	0.0005	8.91%
Fe 259.939	864.6	0.064	mg/L	0.0075	0.064	mg/L	0.0075	11.80%
Pb 220.353	1.1	0.000	mg/L	0.0027	0.000	mg/L	0.0027	902.04%
Mg 279.077	25.5	0.017	mg/L	0.0054	0.017	mg/L	0.0054	32.34%
Mn 257.610	308.0	0.001	mg/L	0.0000	0.001	mg/L	0.0000	8.21%
Mo 203.844	-3.1	-0.001	mg/L	0.0011	-0.001	mg/L	0.0011	157.91%
Ni 231.604	6.3	0.000	mg/L	0.0004	0.000	mg/L	0.0004	194.05%
K 766.490	385.6	0.106	mg/L	0.0064	0.106	mg/L	0.0064	6.05%
Se 196.099	-6.4	-0.006	mg/L	0.0018	-0.006	mg/L	0.0018	28.85%
Ag 328.068	90.5	0.000	mg/L	0.0001	0.000	mg/L	0.0001	31.83%
Na 588.995	-693.3	-0.023	mg/L	0.0057	-0.023	mg/L	0.0057	24.84%
Tl 190.864	5.8	0.004	mg/L	0.0010	0.004	mg/L	0.0010	26.45%
V 292.402	6.8	0.000	mg/L	0.0002	0.000	mg/L	0.0002	424.22%
Zn 213.856	145.4	0.005	mg/L	0.0002	0.005	mg/L	0.0002	5.32%
Al 308.217	321.7	0.024	mg/L	0.0021	0.024	mg/L	0.0021	8.96%
As 188.976	0.2	0.000	mg/L	0.0038	0.000	mg/L	0.0038	>999.9%
Zn 206.200	68.1	0.007	mg/L	0.0003	0.007	mg/L	0.0003	4.38%

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 46
Sample ID: INTERF CHK B
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 3
Date Collected: 4/25/2017 11:40:36 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: INTERF CHK B

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	21.7	0.032	mg/L	0.0039	0.032	mg/L	0.0039	12.24%
As 193.759	-28.9	-0.039	mg/L	0.0193	-0.039	mg/L	0.0193	50.08%
QC value within limits for As 193.759 Recovery = Not calculated								
Ba 233.527	1031.9	0.009	mg/L	0.0002	0.009	mg/L	0.0002	1.82%
QC value within limits for Ba 233.527 Recovery = Not calculated								
Be 313.042	1263.8	0.000	mg/L	0.0001	0.000	mg/L	0.0001	18.47%
QC value within limits for Be 313.042 Recovery = Not calculated								
Cd 226.502	1238.6	0.028	mg/L	0.0004	0.028	mg/L	0.0004	1.36%
QC value within limits for Cd 226.502 Recovery = Not calculated								
Ca 315.887	1951131.5	194.8	mg/L	1.65	194.8	mg/L	1.65	0.85%
QC value within limits for Ca 315.887 Recovery = 97.41%								
Cr 205.552	-64.5	-0.004	mg/L	0.0007	-0.004	mg/L	0.0007	20.06%
QC value within limits for Cr 205.552 Recovery = Not calculated								
Co 228.616	65.5	0.003	mg/L	0.0004	0.003	mg/L	0.0004	13.67%
QC value within limits for Co 228.616 Recovery = Not calculated								
Cu 324.752	-8094.2	-0.022	mg/L	0.0001	-0.022	mg/L	0.0001	0.40%
QC value within limits for Cu 324.752 Recovery = Not calculated								
Fe 259.939	2618328.7	193.3	mg/L	1.54	193.3	mg/L	1.54	0.80%
QC value within limits for Fe 259.939 Recovery = 96.64%								
Pb 220.353	-56.7	-0.016	mg/L	0.0028	-0.016	mg/L	0.0028	17.83%
QC value within limits for Pb 220.353 Recovery = Not calculated								
Mg 279.077	306930.2	201.0	mg/L	1.51	201.0	mg/L	1.51	0.75%
QC value within limits for Mg 279.077 Recovery = 100.50%								
Mn 257.610	-2049.0	-0.003	mg/L	0.0001	-0.003	mg/L	0.0001	3.28%
QC value within limits for Mn 257.610 Recovery = Not calculated								
Mo 203.844	-13.2	-0.003	mg/L	0.0045	-0.003	mg/L	0.0045	157.17%
QC value within limits for Mo 203.844 Recovery = Not calculated								
Ni 231.604	-138.1	-0.005	mg/L	0.0005	-0.005	mg/L	0.0005	10.25%
QC value within limits for Ni 231.604 Recovery = Not calculated								
K 766.490	776293.1	214.0	mg/L	1.91	214.0	mg/L	1.91	0.89%
QC value within limits for K 766.490 Recovery = 106.98%								
Se 196.099	-104.7	-0.103	mg/L	0.0140	-0.103	mg/L	0.0140	13.61%
Ag 328.068	-4042.6	-0.014	mg/L	0.0004	-0.014	mg/L	0.0004	2.68%
QC value within limits for Ag 328.068 Recovery = Not calculated								
Na 588.995	6289437.2	208.0	mg/L	1.61	208.0	mg/L	1.61	0.77%
QC value within limits for Na 588.995 Recovery = 103.98%								
Tl 190.864	11.4	0.007	mg/L	0.0034	0.007	mg/L	0.0034	46.56%
QC value within limits for Tl 190.864 Recovery = Not calculated								
V 292.402	-1986.0	-0.014	mg/L	0.0002	-0.014	mg/L	0.0002	1.11%
QC value within limits for V 292.402 Recovery = Not calculated								
Zn 213.856	1492.9	0.047	mg/L	0.0002	0.047	mg/L	0.0002	0.37%
QC value within limits for Zn 213.856 Recovery = Not calculated								
Al 308.217	8034894.8	210.6	mg/L	2.36	210.6	mg/L	2.36	1.12%
As 188.976	-40.4	-0.030	mg/L	0.0082	-0.030	mg/L	0.0082	27.64%
Zn 206.200	133.2	0.012	mg/L	0.0007	0.012	mg/L	0.0007	6.14%

All analyte(s) passed QC.

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 41
Sample ID: CCV 1.00 PPM/ PR-02-17-25
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 5
Date Collected: 4/25/2017 11:27:01 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCV 1.00 PPM/ PR-02-17-25

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	1717.5	0.933	mg/L	0.0114	0.933	mg/L	0.0114	1.22%
As 193.759	691.9	0.924	mg/L	0.0098	0.924	mg/L	0.0098	1.06%
QC value within limits for As 193.759 Recovery = 92.42%								
Ba 233.527	103461.3	0.921	mg/L	0.0075	0.921	mg/L	0.0075	0.82%
QC value within limits for Ba 233.527 Recovery = 92.12%								
Be 313.042	4502542.0	1.051	mg/L	0.0025	1.051	mg/L	0.0025	0.24%
QC value within limits for Be 313.042 Recovery = 105.14%								
Cd 226.502	39931.7	0.903	mg/L	0.0074	0.903	mg/L	0.0074	0.82%
QC value within limits for Cd 226.502 Recovery = 90.30%								
Ca 315.887	510389.7	50.96	mg/L	0.687	50.96	mg/L	0.687	1.35%
QC value within limits for Ca 315.887 Recovery = 101.93%								
Cr 205.552	15548.1	0.891	mg/L	0.0092	0.891	mg/L	0.0092	1.03%
QC value within limits for Cr 205.552 Recovery = 89.05%								
Co 228.616	18496.4	0.878	mg/L	0.0100	0.878	mg/L	0.0100	1.14%
QC value within limits for Co 228.616 Recovery = 87.82%								
Cu 324.752	336841.3	0.907	mg/L	0.0105	0.907	mg/L	0.0105	1.16%
QC value within limits for Cu 324.752 Recovery = 90.68%								
Fe 259.939	716277.2	52.87	mg/L	0.936	52.87	mg/L	0.936	1.77%
QC value within limits for Fe 259.939 Recovery = 105.74%								
Pb 220.353	3156.9	0.880	mg/L	0.0121	0.880	mg/L	0.0121	1.38%
QC value within limits for Pb 220.353 Recovery = 88.03%								
Mg 279.077	77638.6	50.84	mg/L	0.736	50.84	mg/L	0.736	1.45%
QC value within limits for Mg 279.077 Recovery = 101.69%								
Mn 257.610	528671.0	0.868	mg/L	0.0019	0.868	mg/L	0.0019	0.22%
QC value within limits for Mn 257.610 Recovery = 86.82%								
Mo 203.844	4181.3	0.907	mg/L	0.0105	0.907	mg/L	0.0105	1.16%
QC value within limits for Mo 203.844 Recovery = 90.67%								
Ni 231.604	25271.8	0.868	mg/L	0.0079	0.868	mg/L	0.0079	0.91%
QC value within limits for Ni 231.604 Recovery = 86.79%								
K 766.490	189680.3	52.28	mg/L	1.182	52.28	mg/L	1.182	2.26%
QC value within limits for K 766.490 Recovery = 104.56%								
Se 196.099	970.4	0.952	mg/L	0.0063	0.952	mg/L	0.0063	0.66%
Ag 328.068	278399.6	0.956	mg/L	0.0074	0.956	mg/L	0.0074	0.77%
QC value within limits for Ag 328.068 Recovery = 95.58%								
Na 588.995	1578909.1	52.20	mg/L	0.195	52.20	mg/L	0.195	0.37%
QC value within limits for Na 588.995 Recovery = 104.41%								
Tl 190.864	1325.7	0.834	mg/L	0.0113	0.834	mg/L	0.0113	1.36%
QC value within limits for Tl 190.864 Recovery = 83.43%								
V 292.402	135076.3	0.928	mg/L	0.0084	0.928	mg/L	0.0084	0.90%
QC value within limits for V 292.402 Recovery = 92.81%								
Zn 213.856	30763.5	0.969	mg/L	0.0080	0.969	mg/L	0.0080	0.82%
QC value within limits for Zn 213.856 Recovery = 96.90%								
Al 308.217	1907797.7	50.01	mg/L	0.368	50.01	mg/L	0.368	0.74%
As 188.976	1303.2	0.955	mg/L	0.0065	0.955	mg/L	0.0065	0.68%
Zn 206.200	12604.1	0.870	mg/L	0.0084	0.870	mg/L	0.0084	0.97%

All analyte(s) passed QC.

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 48
Sample ID: CCV 1.00 PPM/ PR-02-17-25
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 5
Date Collected: 4/25/2017 11:46:06 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: CCV 1.00 PPM/ PR-02-17-25

Analyte	Mean Corrected Intensity	Calib. Conc.	Calib. Units	Std.Dev.	Sample Conc.	Sample Units	Std.Dev.	RSD
Sb 206.836	1659.7	0.903	mg/L	0.0128	0.903	mg/L	0.0128	1.42%
As 193.759	680.8	0.909	mg/L	0.0054	0.909	mg/L	0.0054	0.59%
QC value within limits for As 193.759 Recovery = 90.93%								
Ba 233.527	100558.5	0.895	mg/L	0.0046	0.895	mg/L	0.0046	0.51%
QC value within limits for Ba 233.527 Recovery = 89.53%								
Be 313.042	4464381.6	1.043	mg/L	0.0030	1.043	mg/L	0.0030	0.28%
QC value within limits for Be 313.042 Recovery = 104.25%								
Cd 226.502	39313.4	0.889	mg/L	0.0005	0.889	mg/L	0.0005	0.05%
QC value within limits for Cd 226.502 Recovery = 88.90%								
Ca 315.887	510525.3	50.98	mg/L	0.500	50.98	mg/L	0.500	0.98%
QC value within limits for Ca 315.887 Recovery = 101.95%								
Cr 205.552	15133.0	0.867	mg/L	0.0031	0.867	mg/L	0.0031	0.36%
QC value within limits for Cr 205.552 Recovery = 86.68%								
Co 228.616	18190.4	0.864	mg/L	0.0036	0.864	mg/L	0.0036	0.41%
QC value within limits for Co 228.616 Recovery = 86.37%								
Cu 324.752	355647.2	0.957	mg/L	0.0056	0.957	mg/L	0.0056	0.58%
QC value within limits for Cu 324.752 Recovery = 95.75%								
Fe 259.939	716279.2	52.87	mg/L	0.697	52.87	mg/L	0.697	1.32%
QC value within limits for Fe 259.939 Recovery = 105.74%								
Pb 220.353	3198.5	0.892	mg/L	0.0222	0.892	mg/L	0.0222	2.49%
QC value within limits for Pb 220.353 Recovery = 89.19%								
Mg 279.077	77091.0	50.48	mg/L	0.575	50.48	mg/L	0.575	1.14%
QC value within limits for Mg 279.077 Recovery = 100.97%								
Mn 257.610	518440.5	0.851	mg/L	0.0031	0.851	mg/L	0.0031	0.37%
QC value within limits for Mn 257.610 Recovery = 85.14%								
Mo 203.844	4062.7	0.881	mg/L	0.0035	0.881	mg/L	0.0035	0.40%
QC value within limits for Mo 203.844 Recovery = 88.09%								
Ni 231.604	25076.5	0.861	mg/L	0.0019	0.861	mg/L	0.0019	0.22%
QC value within limits for Ni 231.604 Recovery = 86.12%								
K 766.490	187062.2	51.56	mg/L	0.867	51.56	mg/L	0.867	1.68%
QC value within limits for K 766.490 Recovery = 103.12%								
Se 196.099	961.3	0.943	mg/L	0.0094	0.943	mg/L	0.0094	1.00%
Ag 328.068	262937.4	0.903	mg/L	0.0058	0.903	mg/L	0.0058	0.64%
QC value within limits for Ag 328.068 Recovery = 90.27%								
Na 588.995	1543395.5	51.03	mg/L	0.498	51.03	mg/L	0.498	0.98%
QC value within limits for Na 588.995 Recovery = 102.06%								
Tl 190.864	1285.9	0.809	mg/L	0.0064	0.809	mg/L	0.0064	0.79%
QC value within limits for Tl 190.864 Recovery = 80.93%								
V 292.402	131415.1	0.903	mg/L	0.0046	0.903	mg/L	0.0046	0.51%
QC value within limits for V 292.402 Recovery = 90.30%								
Zn 213.856	29704.5	0.936	mg/L	0.0022	0.936	mg/L	0.0022	0.23%
QC value within limits for Zn 213.856 Recovery = 93.57%								
Al 308.217	1807108.0	47.37	mg/L	0.603	47.37	mg/L	0.603	1.27%
As 188.976	1281.6	0.939	mg/L	0.0052	0.939	mg/L	0.0052	0.55%
Zn 206.200	12487.8	0.862	mg/L	0.0067	0.862	mg/L	0.0067	0.77%

All analyte(s) passed QC.

Method Loaded
Method Name: 04012017
IEC File:
Method Description: 03312017

Method Last Saved: 4/10/2017 8:26:46 AM
MSF File:

Sequence No.: 47
Sample ID: INTERF CHK A+B
Analyst:
Initial Sample Wt:
Dilution:
Wash Time: 60

Autosampler Location: 4
Date Collected: 4/25/2017 11:43:19 AM
Data Type: Original
Initial Sample Vol:
Sample Prep Vol:
Auto Dilution Factor: 1

Mean Data: INTERF CHK A+B

Analyte	Mean Corrected Intensity	Calib. Conc.	Units	Std.Dev.	Sample Conc.	Units	Std.Dev.	RSD
Sb 206.836	1669.1	0.908	mg/L	0.0105	0.908	mg/L	0.0105	1.15%
As 193.759	631.9	0.844	mg/L	0.0380	0.844	mg/L	0.0380	4.50%
QC value within limits for As 193.759 Recovery = 84.40%								
Ba 233.527	92842.4	0.827	mg/L	0.0006	0.827	mg/L	0.0006	0.07%
QC value within limits for Ba 233.527 Recovery = 82.66%								
Be 313.042	4036233.4	0.943	mg/L	0.0074	0.943	mg/L	0.0074	0.79%
QC value within limits for Be 313.042 Recovery = 94.25%								
Cd 226.502	37130.8	0.840	mg/L	0.0012	0.840	mg/L	0.0012	0.15%
QC value within limits for Cd 226.502 Recovery = 83.96%								
Ca 315.887	1950511.7	194.8	mg/L	1.60	194.8	mg/L	1.60	0.82%
QC value within limits for Ca 315.887 Recovery = 97.38%								
Cr 205.552	14174.6	0.812	mg/L	0.0014	0.812	mg/L	0.0014	0.17%
QC value within limits for Cr 205.552 Recovery = 81.19%								
Co 228.616	16449.0	0.781	mg/L	0.0019	0.781	mg/L	0.0019	0.24%
QC value within limits for Co 228.616 Recovery = 78.10%								
Cu 324.752	317436.5	0.855	mg/L	0.0023	0.855	mg/L	0.0023	0.27%
QC value within limits for Cu 324.752 Recovery = 85.46%								
Fe 259.939	2587823.6	191.0	mg/L	1.31	191.0	mg/L	1.31	0.69%
QC value within limits for Fe 259.939 Recovery = 95.51%								
Pb 220.353	2615.0	0.729	mg/L	0.0081	0.729	mg/L	0.0081	1.12%
QC value within limits for Pb 220.353 Recovery = 72.91%								
Mg 279.077	306774.6	200.9	mg/L	1.42	200.9	mg/L	1.42	0.71%
QC value within limits for Mg 279.077 Recovery = 100.45%								
Mn 257.610	487196.7	0.800	mg/L	0.0009	0.800	mg/L	0.0009	0.11%
QC value within limits for Mn 257.610 Recovery = 80.01%								
Mo 203.844	3697.0	0.802	mg/L	0.0014	0.802	mg/L	0.0014	0.17%
QC value within limits for Mo 203.844 Recovery = 80.16%								
Ni 231.604	22197.8	0.762	mg/L	0.0023	0.762	mg/L	0.0023	0.30%
QC value within limits for Ni 231.604 Recovery = 76.23%								
K 766.490	777613.1	214.3	mg/L	1.12	214.3	mg/L	1.12	0.52%
QC value within limits for K 766.490 Recovery = 107.16%								
Se 196.099	817.6	0.802	mg/L	0.0104	0.802	mg/L	0.0104	1.29%
Ag 328.068	268117.2	0.920	mg/L	0.0022	0.920	mg/L	0.0022	0.24%
QC value within limits for Ag 328.068 Recovery = 92.05%								
Na 588.995	6366132.2	210.5	mg/L	1.93	210.5	mg/L	1.93	0.92%
QC value within limits for Na 588.995 Recovery = 105.24%								
Tl 190.864	1076.6	0.678	mg/L	0.0030	0.678	mg/L	0.0030	0.44%
QC value within limits for Tl 190.864 Recovery = 67.76%								
V 292.402	120577.2	0.829	mg/L	0.0015	0.829	mg/L	0.0015	0.18%
QC value within limits for V 292.402 Recovery = 82.85%								
Zn 213.856	30816.6	0.971	mg/L	0.0026	0.971	mg/L	0.0026	0.27%
QC value within limits for Zn 213.856 Recovery = 97.07%								
Al 308.217	8044188.6	210.8	mg/L	3.70	210.8	mg/L	3.70	1.76%
As 188.976	1193.0	0.874	mg/L	0.0069	0.874	mg/L	0.0069	0.79%
Zn 206.200	11105.0	0.767	mg/L	0.0008	0.767	mg/L	0.0008	0.11%

All analyte(s) passed QC.

Conclusion and Recommendation

Based on the results of supplementary analysis, it is concluded that the matrix of samples in AETL Job numbers 86878 and 86879 is incompatible with Cr (VI) and that the digestates may contain soluble reducing agents for Cr (VI) which will lower the concentration of Cr (VI) in the samples if it is present. Therefore, it is recommended that results of Cr (VI) in these samples be accepted with qualification that they may have been under-reported.

APPENDIX D: DATA VALIDATION REPORTS

Appendix D
Data Validation Summary Report Cross-Reference

DVSR	AETL Data Packages Included	AETL Report Date	Explanation
May 27, 2017	86878 and 86879	3/16/2017	DVSR for review of Level II Data package for original analytical runs for methods SW6020/7471A, SW6010B, and SW7199
June 2, 2017	86878 and 86879	4/7/2017	DVSR for review of Level II Data package for re-analysis by SW7199 and original analysis by SW7196
June 1, 2017	86878 and 86879	3/16/2017	DVSR for review of Level IV report of SW7199 data for samples originally reported on 3/16/17
May 24, 2017	86878 and 86879	4/7/2017	DVSR for review of Level IV report of SW7196 data for samples originally reported on 4/7/16

TETRA TECH, INC.
DATA VALIDATION SUMMARY REPORT

TO: **Randy Westhaus, Project Manager**

FROM: **Michael Wilson, Senior Chemist**

DATE: **May 27, 2017**

SUBJECT: **Data Validation Review for the Village Park Site Project's Metals Analyses Level II Data Packages 86878 and 86879 from American Environmental Testing Laboratory (AETL) in Burbank, CA.**

Introduction

This report summarizes the findings from Level II data validation efforts conducted on the sample data results for Village Park Site project. The validation guidance used in evaluating the data is presented in the current versions of *USEPA National Functional Guidelines for Inorganic Data Review* and *USEPA National Functional Guidelines for Organic Data Review*. The data were audited at a Level II effort. The Level II effort requires review of all applicable Quality Control (QC) sample results as it relates to the field data under review, and any other data contained in the Level II data package. This Level II validation determines the usability of the data based on the Data Quality Objectives (DQOs) for the project.

Executive Summary

The AETL data for the project were contained in two Sample Delivery Groups (SDGs) designated as 86878 and 86879. Data package 86878 contained results for dust samples VPD-1, VDP-2, DUSTDUP1, VPD-3, VDP-4, and VDP-5. Data package 86879 contained results for soil samples VPS-1-0, VPS-1-1, VPS-2-0, VPS-2-1, SOILDUP1, VPS-3-0, VPS -3-1, VPS-4-0, VPS-4-1, VPS-5-0, VPS-5-1, VPS-6-0, VPS-6-1, VPS-7-0, VPS-7-1, VPS -8-0, and VPS-8-1.

The methods used to analyze these soil and dust samples are listed below.

1. Hexavalent Chromium by Method SW7199
2. CAM 17 Metals by Method SW6020
3. Titanium/Manganese/Tin by Method SW6010B
4. Mercury by Method SW7471A

The samples were logged into the lab under compliant Chain of Custody documentation with no exceptions noted. These two data packages were originally reported without MS/MSD results for Hexavalent Chromium by Method SW7199. At Tetra Tech's request the lab retroactively analyzed the MS/MSD and these QC results were used in this evaluation.

The data showed the laboratory analyzed all samples in accordance with method guidelines and all metals data result are usable except for several rejected Hexavalent Chromium results. All the data not rejected may be used as reported and qualified.

Evaluation Criteria

The data were evaluated by results from the following Quality Control (QC) entities.

- Method/Field Blanks
- Laboratory Control Samples
- Holding Times
- Surrogate Recovery (Organic Methods)
- Spiked and Field Duplicate Compliance
- Calibration Compliance
- Compound Identification
- Analytical Method Compliance

Chain-of-Custody (COC) forms were reviewed and no unresolved discrepancies were noted.

Evaluation of Accuracy, Precision, Representativeness, Comparability, and Completeness

1. Accuracy is established by reviewing spiked sample analysis. A blank spike (LCS) measures the accuracy of the instrument and the LCS results for this data set were all found to be within control limits. Therefore, the LCS accuracy for this project meets the Data Quality Objectives (DQO). The MS/MSD recovery for Hexavalent Chromium resulted in rejected data and did not meet the DQO.

2. Precision is established by calculating the RPD values for MS/MSD pairs and field duplicates. The RPD values calculated for this project show that >95% of the RPD calculated were within control limits. Therefore, the precision for this project meets the DQO.

3. Representativeness is established by using standard field sampling techniques. Because the field sampling was conducted under approved work plans and by following an established SOP, the sampling is judge to have adequate representativeness. The DQO was met.

4. Comparability of the data is preserved if the analytical analyses are conducted under approved and vetted EPA analytical methods. Because the EPA methods are constructed with comparability built into the methods. By using approved analytical methods for this project, the data is comparable. The DQO was met.

5. Completeness is measured by determine the amount of valid data produced by the laboratory as compared to the total possible data from the chain. This data set had rejected data and all samples were analyzed as per the chains. Therefore, the data completeness is 100% (except for Hexavalent Chromium rejected data) which is above the 90% criterion. The DQO was met.

Validation Qualifiers and Comment Descriptors Definitions

<u>Qualifier Definitions</u>

The upper case letters are used to denote NFG allowed qualifiers.

J- Estimated. The associated numerical value is an estimated quantity with a negative bias. The analyte was detected but the reported value may not be accurate or precise. The data are usable as estimated values.

J+ Estimated. The associated numerical value is an estimated quantity with a positive bias. The analyte was detected but the reported value may not be accurate or precise. The data are usable as estimated values.

J Estimated. The associated numerical value is an estimated quantity. It is not possible to assess the direction of the potential bias. The analyte was detected but the reported value may not be accurate or precise. The "J" qualification indicates the data fell outside the QC limits, but the exceedance was not sufficient to cause rejection of the data. The data the data are usable as estimated values.

R Rejected. The data is unusable (the compound or analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from functional guideline acceptance criteria. Either resampling or reanalysis is necessary to determine the presence or absence of the rejected analyte.

U Not detected. Analyses were performed for the compound or analyte, but it was not detected. The "U" designation is also applied to suspected blank contamination. The "U" flag is used to qualify any result that is detected in an environmental sample and associated blank at less than the PQL. For example, when any blank has a detection of the analyte that is below the PQL, and any associated field samples to that blank that also has detections of analytes below the PQL, then the samples are qualified as not detected at the PQL level. However, the data result is not censored by using the default PQL level and instead have the blank level reported in the sample qualified as not detected.

UJ Estimated/Not detected. Analyses were performed for the compound or analyte, but it was not detected and the sample quantitation or detection limit is an estimated quantity due to poor accuracy or precision. This qualification is also used to flag possible false negative results in the case where low bias in the analytical system is indicated by low calibration response, surrogate, or other spike recovery.

Qualifier Descriptor Comments

a: The analyte was found in the method blank.

b: The surrogate spike recovery was outside control limits.

c: The Matrix Spike and/or Matrix Spike Duplicate recoveries were outside control limits.

d: The Laboratory Control Sample (LCS) recovery was outside control limits.

e: A holding time violation occurred.

f: The duplicate samples Relative Percent Difference (RPD) was outside the control limit.

g: The datum met prescribed method criteria.

h: The method requires a confirmation result, but none was performed.

k: The analyte was found in a field blank.

l: The second column confirmation result indicates the analyte was not confirmed.

p: The result was qualified based on professional judgment.

q: The analyte detection was below the Practical Quantitation Limit (PQL).

r: The result is above the instrument's calibration range.

t: The sample temperature was outside acceptance criteria.

n: The laboratory case narrative indicated a QC problem.

1.0 Hexavalent Chromium by Method SW7199A

1.1 Method/Field Blanks

The method blanks and/or field blanks reported no detections of target analytes above the detection limit. One method blank was extracted for each preparation batch. The method blanks were compliant with the analytical method.

1.2 Laboratory Control Samples

The laboratory control sample (LCS) analysis showed the method required spiked analytes were recovered within control limits. One LCS was extracted for each preparation batch. The LCSs were compliant with the analytical method.

1.3 Holding Times

All extraction and analysis holding times were in compliance.

1.4 Surrogate Recovery

Surrogates do not apply to method SW7199

1.5 Spiked and Field Duplicate Compliance

The matrix spike/matrix spike duplicate analyses showed poor recovery below 10% which generally means the associated not detected data results need to be rejected. Additionally, all detected results are qualified as estimated. It appears the matrix is causing a loss of the analyte and is pervasive.

1.6 Calibration Compliance

The calibration of the analytical instrument met criteria.

1.7 Compound Identification

All reported compound detections were identified by the correct retention time.

1.8 Analytical Method Compliance

The Level II data review showed the data to be method compliant.

1.9 Conclusions

Based on the results of this Level II Data Validation effort, it is concluded that the data for method SW7199 are usable as reported and qualified, except for the data rejected due to MS/MSD results. The target analyte identifications are considered correct and reliable. The DQOs were not satisfied as per the Work Plan due to decreased completeness below the 90% criterion.

Both soil and dust samples had MS/MSD results below 10% (these results were below 1%) and because of this, not detected Hexavalent Chromium results are rejected and cannot be used for any purpose. Also affected are the detected results and these results are qualified as estimated and may be used as estimated results.

2.0 CAM 17 Metals by Method SW6020

2.1 Method/Field Blanks

The method blanks and/or field blanks reported no detections of target analytes above the detection limit. One method blank was extracted for each preparation batch. The method blanks were compliant with the analytical method.

2.2 Laboratory Control Samples

The laboratory control sample (LCS) analysis showed the method required spiked analytes were recovered within control limits. One LCS was extracted for each preparation batch. The LCSs were compliant with the analytical method.

2.3 Holding Times

All extraction and analysis holding times were in compliance.

2.4 Surrogate Recovery

Surrogates do not apply to method SW6020

2.5 Spiked and Field Duplicate Compliance

The matrix spike/matrix spike duplicate analyses were not performed for this method.

2.6 Calibration Compliance

The calibration of the analytical instrument met criteria.

2.7 Analytical Method Compliance

The Level II data review showed the data to be method compliant.

2.8 Conclusions

Based on the results of this Level II Data Validation effort, it is concluded that the data for method SW6020 are usable as reported. The target analyte identifications are considered correct and reliable. The DQOs

were satisfied as per the Work Plan and the data is usable for its intended purpose. The DQOs were satisfied as per the Work Plan and the data is usable for its intended purpose.

3.0 Titanium/Manganese/Tin by Method SW6010B

3.1 Method/Field Blanks

The method blanks and/or field blanks reported no detections of target analytes above the detection limit. One method blank was extracted for each preparation batch. The method blanks were compliant with the analytical method.

3.2 Laboratory Control Samples

The laboratory control sample (LCS) analysis showed the method required spiked analytes were recovered within control limits. One LCS was extracted for each preparation batch. The LCSs were compliant with the analytical method.

3.3 Holding Times

All extraction and analysis holding times were in compliance.

3.4 Surrogate Recovery

Surrogates do not apply to method SW6010B

3.5 Spiked and Field Duplicate Compliance

The matrix spike/matrix spike duplicate analyses were performed only for Manganese. The recovery of the Manganese spike was below the lower limit but the native concentration was more than 4X the spike concentration so no validation is applied.

3.6 Calibration Compliance

The calibration of the analytical instrument met criteria.

3.7 Analytical Method Compliance

The Level II data review showed the data to be method compliant.

3.8 Conclusions

Based on the results of this Level II Data Validation effort, it is concluded that the data for method SW6010B are usable as reported. The target analyte identifications are considered correct and reliable. The DQOs were satisfied as per the Work Plan and the data is usable for its intended purpose. The DQOs were satisfied as per the Work Plan and the data is usable for its intended purpose.

4.0 Mercury by Method SW7471A

4.1 Method/Field Blanks

The method blanks and/or field blanks reported no detections of target analytes above the detection limit. One method blank was extracted for each preparation batch. The method blanks were compliant with the analytical method.

4.2 Laboratory Control Samples

The laboratory control sample (LCS) analysis showed the method required spiked analytes were recovered within control limits. One LCS was extracted for each preparation batch. The LCSs were compliant with the analytical method.

4.3 Holding Times

All extraction and analysis holding times were in compliance.

4.4 Surrogate Recovery

Surrogates do not apply to method SW7471A.

4.5 Spiked and Field Duplicate Compliance

The matrix spike/matrix spike duplicate analyses showed good recovery and meets the method guidelines.

4.6 Calibration Compliance

The calibration of the analytical instrument met criteria.

4.7 Analytical Method Compliance

The Level II data review showed the data to be method compliant.

4.8 Conclusions

Based on the results of this Level II Data Validation effort, it is concluded that the data for method SW7471A are usable as reported. The target analyte identifications are considered correct and reliable. The DQOs were satisfied as per the Work Plan and the data is usable for its intended purpose. The DQOs were satisfied as per the Work Plan and the data is usable for its intended purpose.

TETRA TECH, INC.
DATA VALIDATION SUMMARY REPORT

TO: **Randy Westhaus, Project Manager**

FROM: **Michael Wilson, Senior Chemist**

DATE: **June 2, 2017**

SUBJECT: **Data Validation Review for the Village Park Site Project's REANALYSES of Hexavalent Chromium samples in Level II Data Packages 86878 and 86879 from American Environmental Testing Laboratory (AETL) in Burbank, CA.**

Introduction

This report summarizes the findings from Level II data validation efforts conducted on the sample data results for Village Park Site project. The validation guidance used in evaluating the data is presented in the current versions of *USEPA National Functional Guidelines for Inorganic Data Review* and *USEPA National Functional Guidelines for Organic Data Review*. The data were audited at a Level II effort. The Level II effort requires review of all applicable Quality Control (QC) sample results as it relates to the field data under review, all the raw data associated with the data analysis, and any other data contained in the Level II data package. This Level II validation determines the usability of the data based on the Data Quality Objectives (DQOs) for the project.

Executive Summary

The AETL data for the project were contained in two Sample Delivery Groups (SDGs) designated as 86878 and 86879. Data package 86878 contained results for dust samples VPD-1 REP, VDP-2 REP, DUSTDUP1 REP, VPD-3 REP, VDP-4 REP, and VDP-5 REP. Data package 86879 contained results for soil samples VPS-1-0 REP, VPS-1-1 REP, VPS-2-0 REP, VPS-2-1 REP, SOILDUP1 REP, VPS-3-0 REP, VPS -3-1 REP, VPS-4-0 REP, VPS-4-1 REP, VPS-5-0 REP, VPS-5-1 REP, VPS-6-0 REP, VPS-6-1 REP, VPS-7-0 REP, VPS-7-1 REP, VPS -8-0 REP, and VPS-8-1 REP. The results evaluated in this DVSR are for the reanalysis of samples for hexavalent chromium using EPA Method SW7199. The samples were reanalyzed at the request of Tetra Tech to verify/confirm the original results.

The method used to analyze these soil and dust samples under this review is listed below.

1. Hexavalent Chromium by Method SW7199.

The samples were logged into the lab under compliant Chain of Custody documentation with no exceptions noted.

The data showed the laboratory analyzed all Hexavalent Chromium samples in accordance with method guidelines and the data are usable except for several rejected Hexavalent Chromium results. All the data not rejected may be used as reported and qualified.

Evaluation Criteria

The data were evaluated by results from the following Quality Control (QC) entities.

- Method/Field Blanks
- Laboratory Control Samples
- Holding Times
- Surrogate Recovery (Organic Methods)
- Spiked and Field Duplicate Compliance
- Calibration Compliance
- Compound Identification
- Analytical Method Compliance

Chain-of-Custody (COC) forms were reviewed and no unresolved discrepancies were noted.

Evaluation of Accuracy, Precision, Representativeness, Comparability, and Completeness

1. Accuracy is established by reviewing spiked sample analysis. A blank spike (LCS) measures the accuracy of the instrument and the LCS results for this data set were all found to be within control limits. Therefore, the LCS accuracy for this project meets the Data Quality Objectives (DQO). The MS/MSD recovery for Hexavalent Chromium resulted in rejected data and did not meet the DQO.

2. Precision is established by calculating the RPD values for MS/MSD pairs and field duplicates. The RPD values calculated for this project show that >95% of the RPD calculated were within control limits. Therefore, the precision for this project meets the DQO.

3. Representativeness is established by using standard field sampling techniques. Because the field sampling was conducted under approved work plans and by following an established SOP, the sampling is judge to have adequate representativeness. The DQO was met.

4. Comparability of the data is preserved if the analytical analyses are conducted under approved and vetted EPA analytical methods. Because the EPA methods are constructed with comparability built into the methods. By using approved analytical methods for this project, the data is comparable. The DQO was met.

5. Completeness is measured by determine the amount of valid data produced by the laboratory as compared to the total possible data from the chain. This data set had rejected data and all samples were analyzed as per the chains. "Therefore, because of the rejected data completeness is less than the 90% criterion. The DQO was not met.

Validation Qualifiers and Comment Descriptors Definitions

<u>Qualifier Definitions</u>

The upper case letters are used to denote NFG allowed qualifiers.

J- Estimated. The associated numerical value is an estimated quantity with a negative bias. The analyte was detected but the reported value may not be accurate or precise. The data are usable as estimated values.

J+ Estimated. The associated numerical value is an estimated quantity with a positive bias. The analyte was detected but the reported value may not be accurate or precise. The data are usable as estimated values.

J Estimated. The associated numerical value is an estimated quantity. It is not possible to assess the direction of the potential bias. The analyte was detected but the reported value may not be accurate or precise. The "J" qualification indicates the data fell outside the QC limits, but the exceedance was not sufficient to cause rejection of the data. The data the data are usable as estimated values.

R Rejected. The data is unusable (the compound or analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from functional guideline acceptance criteria. Either resampling or reanalysis is necessary to determine the presence or absence of the rejected analyte.

U Not detected. Analyses were performed for the compound or analyte, but it was not detected. The "U" designation is also applied to suspected blank contamination. The "U" flag is used to qualify any result that is detected in an environmental sample and associated blank at less than the PQL. For example, when any blank has a detection of the analyte that is below the PQL, and any associated field samples to that blank that also has detections of analytes below the PQL, then the samples are qualified as not detected at the PQL level. However, the data result is not censored by using the default PQL level and instead have the blank level reported in the sample qualified as not detected.

UJ Estimated/Not detected. Analyses were performed for the compound or analyte, but it was not detected and the sample quantitation or detection limit is an estimated quantity due to poor accuracy or precision. This qualification is also used to flag possible false negative results in the case where low bias in the analytical system is indicated by low calibration response, surrogate, or other spike recovery.

Qualifier Descriptor Comments

a: The analyte was found in the method blank.

b: The surrogate spike recovery was outside control limits.

c: The Matrix Spike and/or Matrix Spike Duplicate recoveries were outside control limits.

d: The Laboratory Control Sample (LCS) recovery was outside control limits.

e: A holding time violation occurred.

f: The duplicate samples Relative Percent Difference (RPD) was outside the control limit.

g: The datum met prescribed method criteria.

h: The method requires a confirmation result, but none was performed.

k: The analyte was found in a field blank.

l: The second column confirmation result indicates the analyte was not confirmed.

p: The result was qualified based on professional judgment.

q: The analyte detection was below the Practical Quantitation Limit (PQL).

r: The result is above the instrument's calibration range.

t: The sample temperature was outside acceptance criteria.

n: The laboratory case narrative indicated a QC problem.

1.0 Hexavalent Chromium by Method SW7199

1.1 Method/Field Blanks

The method blanks and/or field blanks reported no detections of target analytes above the detection limit. One method blank was extracted for each preparation batch. The method blanks were compliant with the analytical method.

1.2 Laboratory Control Samples

The laboratory control sample (LCS) analysis showed the method required spiked analytes were recovered within control limits. One LCS was extracted for each preparation batch. The LCSs were compliant with the analytical method.

1.3 Holding Times

All extraction and analysis holding times were not in compliance.

1.4 Surrogate Recovery

Surrogates do not apply to method SW7199.

1.5 Spiked and Field Duplicate Compliance

The matrix spike/matrix spike duplicate analyses showed poor recovery below 10% which generally means the associated not detected data results need to be rejected. Additionally, all detected results are qualified as estimated. It appears the matrix is causing a loss of the analyte and is pervasive.

1.6 Calibration Compliance

The calibration of the analytical instrument met criteria.

1.7 Compound Identification

All reported compound detections were identified by the correct retention time.

1.8 Analytical Method Compliance

The Level II data review showed the data to be method compliant.

1.9 Conclusions

Based on the results of this Level II Data Validation effort, it is concluded that the data for method SW7199 are usable as reported and qualified except for the data rejected due to MS/MSD results. The target analyte identifications are considered correct and reliable. The DQOs were not satisfied as per the Work Plan due to decreased completeness below the 90% criterion.

Both soil and dust samples had MS/MSD results below 10% (these results were below 1%) and because of this those not detected Hexavalent Chromium results are rejected and cannot be used for any purpose. Also affected are the detected results and these results are qualified as estimated and may be used as estimated results.

TETRA TECH, INC.
DATA VALIDATION SUMMARY REPORT

TO: **Randy Westhaus, Project Manager**

FROM: **Michael Wilson, Senior Chemist**

DATE: **June 1, 2017**

SUBJECT: **Data Validation Review for the Village Park Site Project's Hexavalent Chromium analyses Level IV Data Packages 86878 and 86879 from American Environmental Testing Laboratory (AETL) in Burbank, CA.**

Introduction

This report summarizes the findings from Level IV data validation efforts conducted on the sample data results for Village Park Site project. The validation guidance used in evaluating the data is presented in the current versions of *USEPA National Functional Guidelines for Inorganic Data Review* and *USEPA National Functional Guidelines for Organic Data Review*. The data were audited at a Level IV effort. The Level IV effort requires review of all applicable Quality Control (QC) sample results as it relates to the field data under review, all the raw data associated with the data analysis, and any other data contained in the Level IV data package. This Level IV validation determines the usability of the data based on the Data Quality Objectives (DQOs) for the project.

Executive Summary

The AETL data for the project were contained in two Sample Delivery Groups (SDGs) designated as 86878 and 86879. Data package 86878 contained results for dust samples VPD-1, VDP-2, DUSTDUP1, VPD-3, VDP-4, and VDP-5. Data package 86879 contained results for soil samples VPS-1-0, VPS-1-1, VPS-2-0, VPS-2-1, SOILDUP1, VPS-3-0, VPS -3-1, VPS-4-0, VPS-4-1, VPS-5-0, VPS-5-1, VPS-6-0, VPS-6-1, VPS-7-0, VPS-7-1, VPS -8-0, and VPS-8-1. Although these data packages contained several methods of analyses only the Hexavalent Chromium results are the subject of this Level IV review. The original Level II data package included results for methods SW6060B, SW6020, SW7471A, and SW7199. Please see the Data Validation Summary Report (DVSR) dated May 27, 2017 for the Level II validation summary for all four of these methods. At Tetra Tech's request, AETL provided a Level IV data package for the SW7199 data only. This DVSR presents the Level IV validation summary for method SW7199.

The method used to analyze these soil and dust samples under this review is listed below.

1. Hexavalent Chromium by Method SW7199.

The samples were logged into the lab under compliant Chain of Custody documentation with no exceptions noted. These two data packages were originally reported without MS/MSD results for Hexavalent Chromium by Method SW7199. At Tetra Tech's request the lab retroactively analyzed the MS/MSD and these QC results were used in this evaluation.

The data showed the laboratory analyzed all Hexavalent Chromium samples in accordance with method guidelines and the data are usable except for several rejected Hexavalent Chromium results. All the data not rejected may be used as reported and qualified.

Evaluation Criteria

The data were evaluated by results from the following Quality Control (QC) entities.

- Method/Field Blanks
- Laboratory Control Samples
- Holding Times
- Surrogate Recovery (Organic Methods)
- Spiked and Field Duplicate Compliance
- Calibration Compliance
- Compound Identification
- Analytical Method Compliance

Chain-of-Custody (COC) forms were reviewed and no unresolved discrepancies were noted.

Evaluation of Accuracy, Precision, Representativeness, Comparability, and Completeness

1. Accuracy is established by reviewing spiked sample analysis. A blank spike (LCS) measures the accuracy of the instrument and the LCS results for this data set were all found to be within control limits. Therefore, the LCS accuracy for this project meets the Data Quality Objectives (DQO). The MS/MSD recovery for Hexavalent Chromium resulted in rejected data and did not meet the DQO.

2. Precision is established by calculating the RPD values for MS/MSD pairs and field duplicates. The RPD values calculated for this project show that >95% of the RPD calculated were within control limits. Therefore, the precision for this project meets the DQO.

3. Representativeness is established by using standard field sampling techniques. Because the field sampling was conducted under approved work plans and by following an established SOP, the sampling is judge to have adequate representativeness. The DQO was met.

4. Comparability of the data is preserved if the analytical analyses are conducted under approved and vetted EPA analytical methods. Because the EPA methods are constructed with comparability built into the methods. By using approved analytical methods for this project, the data is comparable. The DQO was met.

5. Completeness is measured by determining the amount of valid data produced by the laboratory, as compared to the total possible data from the chain. This data set had rejected data and all samples were analyzed as per the chains. “Therefore, because of the rejected data completeness is less than the 90% criterion. The DQO was not met.

Validation Qualifiers and Comment Descriptors Definitions

<u>Qualifier Definitions</u>

The upper case letters are used to denote NFG allowed qualifiers.

J- Estimated. The associated numerical value is an estimated quantity with a negative bias. The analyte was detected but the reported value may not be accurate or precise. The data are usable as estimated values.

J+ Estimated. The associated numerical value is an estimated quantity with a positive bias. The analyte was detected but the reported value may not be accurate or precise. The data are usable as estimated values.

J Estimated. The associated numerical value is an estimated quantity. It is not possible to assess the direction of the potential bias. The analyte was detected but the reported value may not be accurate or precise. The "J" qualification indicates the data fell outside the QC limits, but the exceedance was not sufficient to cause rejection of the data. The data are usable as estimated values.

R Rejected. The data is unusable (the compound or analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from functional guideline acceptance criteria. Either resampling or reanalysis is necessary to determine the presence or absence of the rejected analyte.

U Not detected. Analyses were performed for the compound or analyte, but it was not detected. The "U" designation is also applied to suspected blank contamination. The "U" flag is used to qualify any result that is detected in an environmental sample and associated blank at less than the PQL. For example, when any blank has a detection of the analyte that is below the PQL, and any associated field samples to that blank that also has detections of analytes below the PQL, then the samples are qualified as not detected at the PQL level. However, the data result is not censored by using the default PQL level and instead have the blank level reported in the sample qualified as not detected.

UJ Estimated/Not detected. Analyses were performed for the compound or analyte, but it was not detected and the sample quantitation or detection limit is an estimated quantity due to poor accuracy or precision. This qualification is also used to flag possible false negative results in the case where low bias in the analytical system is indicated by low calibration response, surrogate, or other spike recovery.

Qualifier Descriptor Comments

a: The analyte was found in the method blank.

b: The surrogate spike recovery was outside control limits.

c: The Matrix Spike and/or Matrix Spike Duplicate recoveries were outside control limits.

d: The Laboratory Control Sample (LCS) recovery was outside control limits.

e: A holding time violation occurred.

f: The duplicate samples Relative Percent Difference (RPD) was outside the control limit.

g: The datum met prescribed method criteria.

h: The method requires a confirmation result, but none was performed.

k: The analyte was found in a field blank.

l: The second column confirmation result indicates the analyte was not confirmed.

p: The result was qualified based on professional judgment.

q: The analyte detection was below the Practical Quantitation Limit (PQL).

r: The result is above the instrument's calibration range.

t: The sample temperature was outside acceptance criteria.

n: The laboratory case narrative indicated a QC problem.

1.0 Hexavalent Chromium by Method SW7199

1.1 Method/Field Blanks

The method blanks and/or field blanks reported no detections of target analytes above the detection limit. One method blank was extracted for each preparation batch. The method blanks were compliant with the analytical method.

1.2 Laboratory Control Samples

The laboratory control sample (LCS) analysis showed the method required spiked analytes were recovered within control limits. One LCS was extracted for each preparation batch. The LCSs were compliant with the analytical method.

1.3 Holding Times

All extraction and analysis holding times were in compliance.

1.4 Surrogate Recovery

Surrogates do not apply to method SW7199.

1.5 Spiked and Field Duplicate Compliance

The matrix spike/matrix spike duplicate analyses showed poor recovery below 10% which generally means the associated not detected data results need to be rejected. Additionally, all detected results are qualified as estimated. It appears the matrix is causing a loss of the analyte and is pervasive.

1.6 Calibration Compliance

The calibration of the analytical instrument met criteria.

1.7 Compound Identification

All reported compound detections were identified by the correct retention time.

1.8 Analytical Method Compliance

The Level IV data review showed the data to be method compliant.

1.9 Conclusions

Based on the results of this Level IV Data Validation effort, it is concluded that the data for method SW7199 are usable as reported and qualified except for the data rejected due to MS/MSD results. The target analyte identifications are considered correct and reliable. The DQOs were not satisfied as per the Work Plan due to decreased completeness below the 90% criterion.

Both soil and dust samples had MS/MSD results below 10% (these results were below 1%) and because of this those not detected Hexavalent Chromium results are rejected and cannot be used for any purpose. Also affected are the detected results and these results are qualified as estimated and may be used as estimated results.

The raw data from the Hexavalent Chromium SW7199 analyses were reviewed and the raw data supported the results reported. The chromatograms were inspected and the peak shape was symmetrical and the baseline stable, indications of good chromatography. Each individual calibration level was reviewed and found in compliance with the calibration protocols. The lowest level in the calibration showed adequate sensitivity with the peak >10X the standard background noise.

TETRA TECH, INC.
DATA VALIDATION SUMMARY REPORT

TO: **Randy Westhaus, Project Manager**

FROM: **Michael Wilson, Senior Chemist**

DATE: **May 24, 2017**

SUBJECT: **Data Validation Review for the Village Park Site Project's Level IV Data Packages Concerning Hexavalent Chromium Results from American Environmental Testing Laboratory (AETL) in Burbank, CA.**

Introduction

This report summarizes the findings from Level IV data validation efforts conducted on the sample data results for Village Park Site project. The validation guidance used in evaluating the data is presented in the current versions of *USEPA National Functional Guidelines for Inorganic Data Review* and *USEPA National Functional Guidelines for Organic Data Review*. The data were audited at a Level IV effort. The Level IV effort requires review of all applicable Quality Control (QC) sample results as it relates to the field data under review, all the raw data associated with the data analysis, and any other data contained in the Level IV data package. This Level IV validation determines the usability of the data based on the Data Quality Objectives (DQOs) for the project.

Executive Summary

The AETL data for the project were contained in two Sample Delivery Groups (SDGs) designated as 86878 and 86879. Data package 86878 contained results for dust samples VPD-1, VDP-2, DUSTDUP1, VPD-3, VDP-4, and VDP-5. Data package 86879 contained results for soil samples VPS-1-0, VPS-1-1, VPS-2-0, VPS-2-1, SOILDUP1, VPS-3-0, VPS -3-1, VPS-4-0, VPS-4-1, VPS-5-0, VPS-5-1, VPS-6-0, VPS-6-1, VPS-7-0, VPS-7-1, VPS -8-0, and VPS-8-1.

The methods used to analyze these soil and dust samples was SW7196A.

The samples were logged into the lab under compliant Chain of Custody documentation with no exceptions noted. Because these re-analyses were requested on samples past their holding times the data will be qualified for that fact. However, for the purposes of these analyses that fact is not considered significant.

The data showed the laboratory analyzed all samples in accordance with method guidelines and the not detected or very low detected concentration levels originally seen in the AETL data results have been verified. AETL has performed extensive tests to verify all SW7196 results reported and have spent considerable time, effort, and expense to document their data.

This Level IV review looked at the many hand written logs, recalculated response factors, post and pre digestion spikes, insoluble spikes, mass balance adjudication, and extra case narrative explanations for the results in addition to the standard evaluation criteria.

Evaluation Criteria

The data were evaluated by results from the following Quality Control (QC) entities.

- Method/Field Blanks
- Laboratory Control Samples
- Holding Times
- Surrogate Recovery (Organic Methods)
- Spiked and Field Duplicate Compliance
- Calibration Compliance
- Compound Identification
- Analytical Method Compliance

Chain-of-Custody (COC) forms were reviewed and no unresolved discrepancies were noted.

Evaluation of Accuracy, Precision, Representativeness, Comparability, and Completeness

1. Accuracy is established by reviewing spiked sample analysis. A blank spike (LCS) measures the accuracy of the instrument and the LCS results for this data set were all found to be within control limits. Therefore, the LCS accuracy for this project meets the Data Quality Objectives (DQO). The MS/MSD recovery for Hexavalent Chromium resulted in rejected data and did not meet the DQO.

2. Precision is established by calculating the RPD values for MS/MSD pairs and field duplicates. The RPD values calculated for this project show that >95% of the RPD calculated were within control limits. Therefore, the precision for this project meets the DQO.

3. Representativeness is established by using standard field sampling techniques. Because the field sampling was conducted under approved work plans and by following an established SOP, the sampling is judged to have adequate representativeness. The DQO was met.

4. Comparability of the data is preserved if the analytical analyses are conducted under approved and vetted EPA analytical methods. Because the EPA methods are constructed with comparability built into the methods. By using approved analytical methods for this project, the data is comparable. The DQO was met.

5. Completeness is measured by determine the amount of valid data produced by the laboratory as compared to the total possible data from the chain. This data set had rejected data and all samples were analyzed as per the chains. Therefore, because of the rejected data, completeness is less than the 90% criterion. The DQO was not met.

Validation Qualifiers and Comment Descriptors Definitions

<u>Qualifier Definitions</u>

The upper case letters are used to denote NFG allowed qualifiers.

J- Estimated. The associated numerical value is an estimated quantity with a negative bias. The analyte was detected but the reported value may not be accurate or precise. The data are usable as estimated values.

J+ Estimated. The associated numerical value is an estimated quantity with a positive bias. The analyte was detected but the reported value may not be accurate or precise. The data are usable as estimated values.

J Estimated. The associated numerical value is an estimated quantity. It is not possible to assess the direction of the potential bias. The analyte was detected but the reported value may not be accurate or precise. The "J" qualification indicates the data fell outside the QC limits, but the exceedance was not sufficient to cause rejection of the data. The data the data are usable as estimated values.

R Rejected. The data is unusable (the compound or analyte may or may not be present). Use of the "R" qualifier indicates a significant variance from functional guideline acceptance criteria. Either resampling or reanalysis is necessary to determine the presence or absence of the rejected analyte.

U Not detected. Analyses were performed for the compound or analyte, but it was not detected. The "U" designation is also applied to suspected blank contamination. The "U" flag is used to qualify any result that is detected in an environmental sample and associated blank at less than the PQL. For example, when any blank has a detection of the analyte that is below the PQL, and any associated field samples to that blank that also has detections of analytes below the PQL, then the samples are qualified as not detected at the PQL level. However, the data result is not censored by using the default PQL level and instead have the blank level reported in the sample qualified as not detected.

UJ Estimated/Not detected. Analyses were performed for the compound or analyte, but it was not detected and the sample quantitation or detection limit is an estimated quantity due to poor accuracy or precision. This qualification is also used to flag possible false negative results in the case where low bias in the analytical system is indicated by low calibration response, surrogate, or other spike recovery.

Qualifier Descriptor Comments

a: The analyte was found in the method blank.

b: The surrogate spike recovery was outside control limits.

c: The Matrix Spike and/or Matrix Spike Duplicate recoveries were outside control limits.

d: The Laboratory Control Sample (LCS) recovery was outside control limits.

e: A holding time violation occurred.

f: The duplicate samples Relative Percent Difference (RPD) was outside the control limit.

g: The datum met prescribed method criteria.

h: The method requires a confirmation result, but none was performed.

k: The analyte was found in a field blank.

l: The second column confirmation result indicates the analyte was not confirmed.

p: The result was qualified based on professional judgment.

q: The analyte detection was below the Practical Quantitation Limit (PQL).

r: The result is above the instrument's calibration range.

t: The sample temperature was outside acceptance criteria.

n: The laboratory case narrative indicated a QC problem.

1.0 Hexavalent Chromium by Method SW7196A

1.1 Method/Field Blanks

The method blanks and/or field blanks reported no detections of target analytes above the detection limit. One method blank was extracted for each preparation batch. The method blanks were compliant with the analytical method.

1.2 Laboratory Control Samples

The laboratory control sample (LCS) analysis showed the method required spiked analytes were recovered within control limits. One LCS was extracted for each preparation batch. The LCSs were compliant with the analytical method.

1.3 Holding Times

All extraction and analysis holding times were not in compliance.

1.4 Surrogate Recovery

Surrogates do not apply to method SW7196A

1.5 Spiked and Field Duplicate Compliance

The matrix spike/matrix spike duplicate analyses showed poor recovery below 10% which generally means the associated not detected data results need to be rejected. Additionally, all detected results are qualified as estimated. It appears the matrix is causing a reductive loss of the analyte and is pervasive.

1.6 Calibration Compliance

The calibration of the analytical instrument met criteria.

1.7 Analytical Method Compliance

The Level IV data review showed the data to be method compliant.

1.8 Conclusions

Based on the results of this Level IV Data Validation effort, it is concluded that the not detected data for method SW7196A are not usable and are rejected because of too little recovery of the MS/MSD. When your spike cannot be recovered above 10% there are serious issues with seeing any native analyte and even

more issues seeing the detection level. Therefore the not detected level is rejected, which results in all not detected data being rejected. The not detected data are assigned a “R” qualifier and cannot be used for any purpose.

The Hexavalent Chromium detected results are also impacted by the MS/MSD issues and are qualified as estimated and assigned the “J-“qualifier. These data may be used as estimated values.

Due to the apparent reductive nature of the matrix for these samples, diluted analysis may reduce the matrix effect and allow better MS/MSD recovery. However, this will elevate the detection level and perhaps be above the EPA regional screening levels for residential soil.