TETRA TECH

Kelly Thomas
Project Manager

September 2, 2015

Mr. Brian Kelly
On-Scene Coordinator
U.S. Environmental Protection Agency Region 5
9311 Groh Road
Grosse Ile, Michigan 48138

Subject: **Site Assessment Report – Hard Chrome Plating**
EPA Contract No. EP-S5-13-01
Technical Direction Document No. S05-0001-1507-004
Document Tracking No. 0333

Dear Mr. Kelly:

Tetra Tech Inc. (Tetra Tech) is submitting a Site Assessment Report for the Hard Chrome Plating Site located in Grand Rapids, Michigan. The report summarizes the removal assessment conducted on August 3, 2015. The report findings show significant chemical hazards exist at the abandoned site.

If you have any questions regarding this report, please call me at (313) 574-3176.

Sincerely,

Kelly D Thomas

Kelly Thomas
Project Manager

Enclosure
cc: Kevin Scott, Tetra Tech Program Manager
TDD File

Tetra Tech, Inc.
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Tel 248-721-8001 | Fax 312.201.0031
www.tetratech.com

HARD CHROME PLATING SITE
ASSESSMENT REPORT
GRAND RAPIDS, KENT COUNTY, MICHIGAN

Prepared for

U.S. Environmental Protection Agency
Emergency Response Branch
Region 5
9311 Groh Road
Grosse Ile, MI 48138

Submitted by

Tetra Tech Inc.
25213 Dequindre Road
Madison Heights, MI 48071

EPA Contract No. EP-S5-13-01

Technical Direction Document No. S05-0001-1507-004
Document Tracking No. 0325

August 28, 2015

Prepared by

Kelly Thomas
Project Manager

Approved by

John Dirgo
START QC Reviewer

CONTENTS

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) tasked Tetra Tech Inc. (Tetra Tech), under Superfund Technical Assessment and Response Team (START) Contract EP-S5-13-01, Technical Direction Document (TDD) No. S05-0001-1507-004, to perform the following:

- Develop and implement a Health and Safety Plan and a Sampling and Analysis Plan
- Inventory drums, tanks, vats, and containers
- Document site conditions
- Collect waste samples
- Track assessment costs
- Write an assessment report

2.0 SITE BACKGROUND

2.1 SITE LOCATION

The Hard Chrome Plating Site is a vacant 1-acre lot with a single, one-story building that encompasses approximately 13,000 square feet (ft^2). The site is located at 1516 Blaine Avenue SE in Grand Rapids, Michigan (see Figures 1 and 2 in Appendix A). The site is an industrial property located in a mixed residential, commercial, and industrial area. The site is bordered by residential properties to the north, Blaine Avenue and River City Scholars School to the west, Cottage Grove Avenue and industrial properties to the south, and industrial properties to the east.

2.2 SITE DESCRIPTION

The site served as a plating shop from 1954 until 2013. The abandoned facility is currently owned by the Kent County Land Bank Authority.

The building is constructed of concrete block, brick, and masonry. An office area is located in the western portion of the building; the eastern portion is composed of a large warehouse divided into a small laboratory and a storage area. The plating operations took place in the southern half with drum storage in the northern half.

3.0 REMOVAL ASSESSMENT ACTIVITIES

On August 3, 2015, Tetra Tech and the EPA conducted the removal assessment, which consisted of container inventory, sample collection, and site documentation. Before the assessment, site-specific health and safety plan and sampling and analysis plan were developed for the site.

3.1 CONTAINER INVENTORY

After a safety meeting and equipment setup, EPA and Tetra Tech personnel conducted an initial site entry in Level D personal protective equipment (PPE) to perform air monitoring, container inventory, and identify sampling locations. All ambient air-monitoring levels were at background levels. Tetra Tech START personnel recorded the container inventory in a logbook in accordance with Tetra Tech SOP No. 024, "Recording Notes in Field Logbooks" and Tetra Tech's QAPP for START (Tetra Tech 2014).
For the purposes of this report, containers are described and organized by the rooms in which they were found. Refer to Figure 3 for a diagram of the building layout.

Office Area	No Containers
Lab Area 1	3 small containers (labels included citric acid)
Lab Area 2	23 small containers (labels included sulfuric acid, citric acid, sodium hydroxide)
Storage Area 1	35 55-gallon drums (labels included muriatic acid, hydrochloric acid, nickel)
Storage Area 1	24 5-gallon containers (labels included flammable -chromium trioxide)
Storage Area 1	5 bags solid material and 5 plating baths
Storage Area 2	3 aboveground storage tanks (ASTs), 3 55-gallon drums, and 6 5-gallon containers.
Storage Area 3	6 ASTs, 10 55-gallon drums, and 11 5-gallon containers
Storage Area 4	52 55-gallon drums (labels included acids and nickel)

3.2 SAMPLE COLLECTION

In accordance with the site-specific Sampling and Analysis Plan and Health and Safety Plan, Tetra Tech collected eight waste samples from drums, vats, and other containers at the site. Sample were collected in level B PPE.

Once each container had been opened, the content's pH was tested using pH strips, then polypropylene coliwasas were used to collect the samples into 8-ounce jars. The jars were then sealed in plastic bags before being placed into a cooler for delivery to the laboratory.

3.3 ANALYTICAL RESULTS

Based on the results of field pH tests and observations, the samples were analyzed for a combination of the following parameters: total and toxicity characteristic leaching procedure (TCLP) metals (Method 6010C), total and TCLP mercury (Methods 7470A and 7471B), pH (Method 9045D), flashpoint/ignitability (Method 1010), and hexavalent chromium (chromium VI) (Method 7196A). Specific parameters analyzed for each sample are as follows:

- HCP-D1-080315: Total and TCLP metals, chromium VI, and pH
- HCP-**Tank01**-080315: Total and TCLP metals, chromium VI, and pH
- HCP-**Tank02**-080315 Total and TCLP metals, chromium VI, and pH
- HCP-**Tank03**-080315: Total and TCLP metals, chromium VI, and pH
- HCP-**Tank04**-080315: Total and TCLP metals, chromium VI, and pH
- HCP-**Tank05**-080315: Total and TCLP metals, chromium VI, and pH
- HCP-B1-080315: Flashpoint
- HCP-C1-080315: pH

The results were compared to the hazardous waste identification criteria present in Title 40 of the Code of Federal Regulations (CFR), Part 261. According the 40 CFR, Part 261.2, a substance is considered a hazardous waste if it exhibits any of the characteristics of ignitability, corrosivity, toxicity, or reactivity. The analytical results for each sample are summarized below.

TCLP Metals

All five of the plating baths (Tanks 01 through 05) were found to contain TCLP arsenic (5.0 mg/L), chromium (5.0 mg/L), lead (5.0 mg/L), and/or mercury (0.2 mg/L) well above hazardous waste levels.

- HCP-Tank01-080315: arsenic (110 mg/L), chromium (100,000 mg/L), and lead (7.2 mg/L)
- HCP-Tank02-080315: arsenic (95 mg/L), chromium (90,000 mg/L), and lead (16 mg/L)
- HCP-Tank03-080315: arsenic (27 mg/L), chromium (37,000 mg/L), and lead (1,100 mg/L).
- HCP-Tank04-080315: chromium (1,600 mg/L) and lead (19 mg/L).
- HCP-Tank05-080315: arsenic (140 mg/L), chromium (120,000 mg/L), lead (9.9J mg/L) and mercury (0.35 mg/L).

Corrosivity/pH

Characteristic of corrosivity include pH less than or equal to 2 or greater than or equal to 12.5.

- HCP-D1-080315: 14
- HCP-C1-080315: < 1
- HCP-Tank01-080315: < 1
- HCP-Tank02-080315: < 1
- HCP-Tank03-080315: < 1
- HCP-Tank05-080315: < 1

Ignitability

Characteristic of ignitability include a flash point less than 140°F.

- HCP-B1-080315: 71°F.

4.0 THREATS TO HUMAN HEALTH AND THE ENVIRONMENT

Site factors that may be applicable to a removal action are summarized below:

- **Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release**.

The site assessment documented that the vacant building containers 100s of drums, vats, ASTs, and small containers of hazardous waste. Several on-site containers showed signs of deterioration, corrosion, and leaking.

- **Actual or potential exposure of nearby human populations, animals, or the food chain to hazardous substances or pollutants or contaminants.**

Residences, River City Scholars School, and occupied businesses surround the site. During the site assessment, 100s of drums, ASTs, and vats containing hazardous waste levels of chrome, lead, arsenic, and mercury, and corrosive and flammable levels were documented abandoned, without secondary

containment. Exposure to human populations could result from metal scrappers, trespassers, accidental or intentional release, and/or fire.

Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

The Grand Rapids averages approximately 31 inches of annual precipitation per year, and winter temperatures are normally well below freezing with regular snowfall. Weather conditions will continue to contribute to the deterioration of the site building, and precipitation will continue to cause damage to drums and containers. The freezing of waste could lead to bulging and rupture of drums.

5.0 SUMMARY

Tetra Tech START collected eight samples during the removal assessment. Analytical results indicated wastes associated with all eight samples would be characterized as hazardous waste.

The site building contained over 100 totes, drums, vats, tanks, and small containers of various chemicals in states of deterioration, without secondary containment.

The site is abandoned, and will continue to deteriorate with time. The continued deterioration of the building increases the chance of further degradation of the containers and the likelihood of a release to the environment.

6.0 REFERENCES

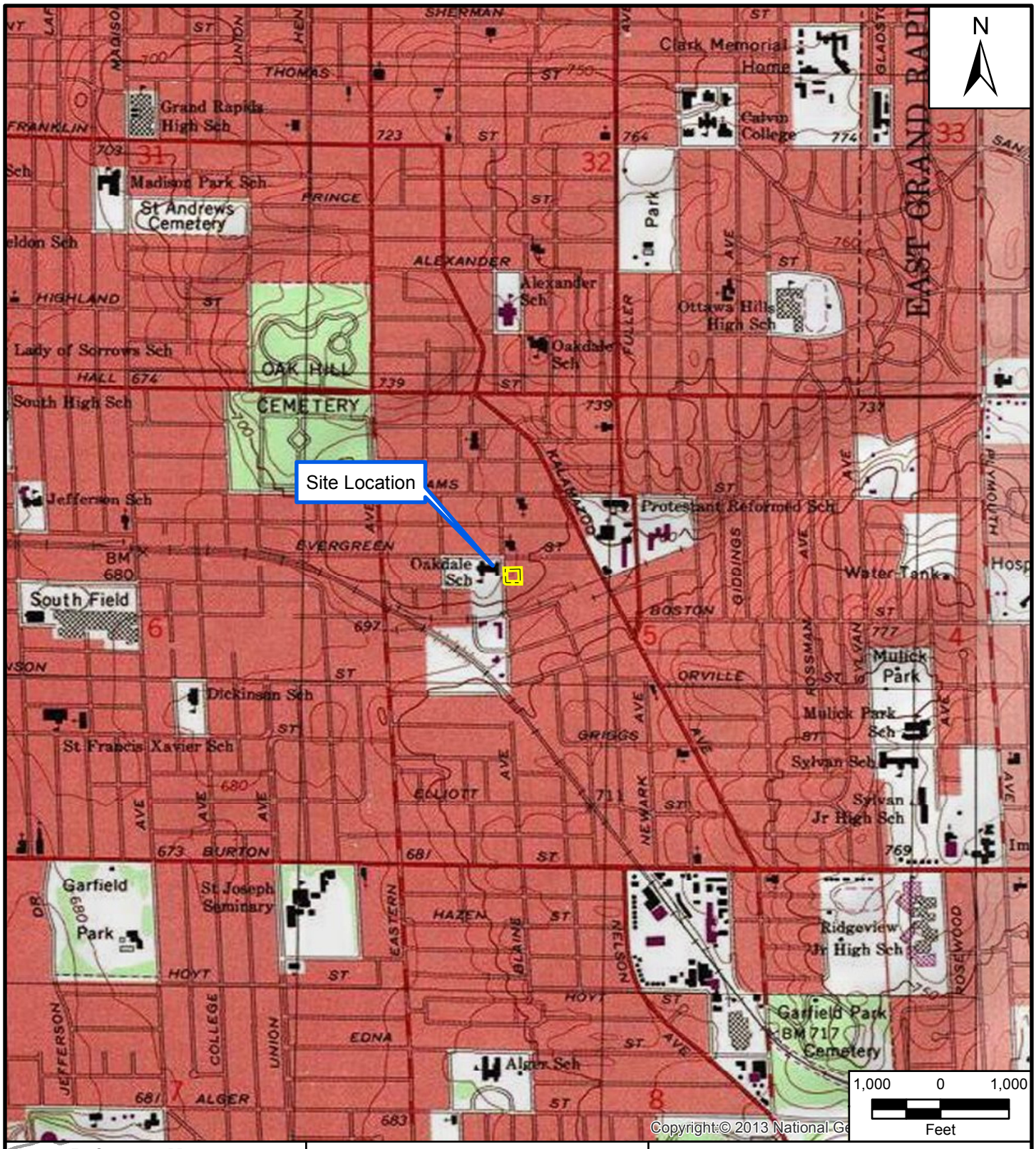
Tetra Tech, Inc. 2014. "Quality Assurance Project Plan, Superfund Technical Assessment and Response Team (START IV), EPA Region 5." April

Tetra Tech, Inc. 2015a. "Abbreviated Sampling and Analysis Plan for the Hard Chrome Plating Site." Prepared for EPA under Contract No. EP-S5-13-01. July 31.

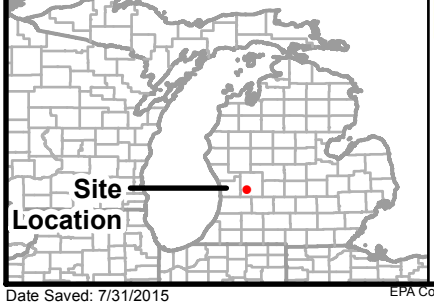
Tetra Tech, Inc. 2015b. "Health and Safety Plan for the Hard Chrome Plating Site." Prepared for EPA under Contract No. EP-S5-13-01. July 31.

United States Environmental Protection Agency (EPA). 2009. Hazardous Waste Characteristics: A User-Friendly Reference Document. October.

APPENDIX A
SITE FIGURES



Reference Map



LEGEND

Approximate Site Boundary

Source: Modified from USGS, Englewood, Illinois and Berwyn, Illinois 7.5-Minute (1:24,000 Scale) Topographic Maps, 1981.

Hard Chrome Plating Site
Grand Rapids, Michigan

Figure 1

Site Location Map

TETRA TECH

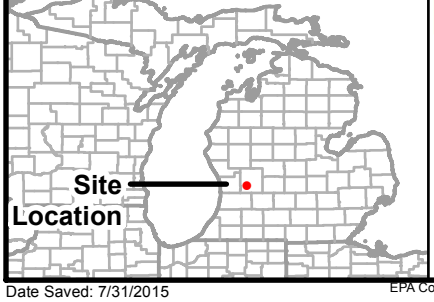
Prepared For: USEPA | Prepared By: Tetra Tech, Inc.

File Path: G:\IG\IG9026-START IV\Michigan\Hard Chrome Plating\mxd\HardChrome_1.mxd

Date Saved: 7/31/2015

EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1507-004 Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Projection: Mercator Auxiliary Sphere Datum:WGS 1984 Units: Meter

Reference Map



LEGEND

Approximate Site Boundary

Source: Bing Maps Hybrid (2011-2012).

Hard Chrome Plating Site
Grand Rapids, Michigan

Figure 2

Site Layout Map

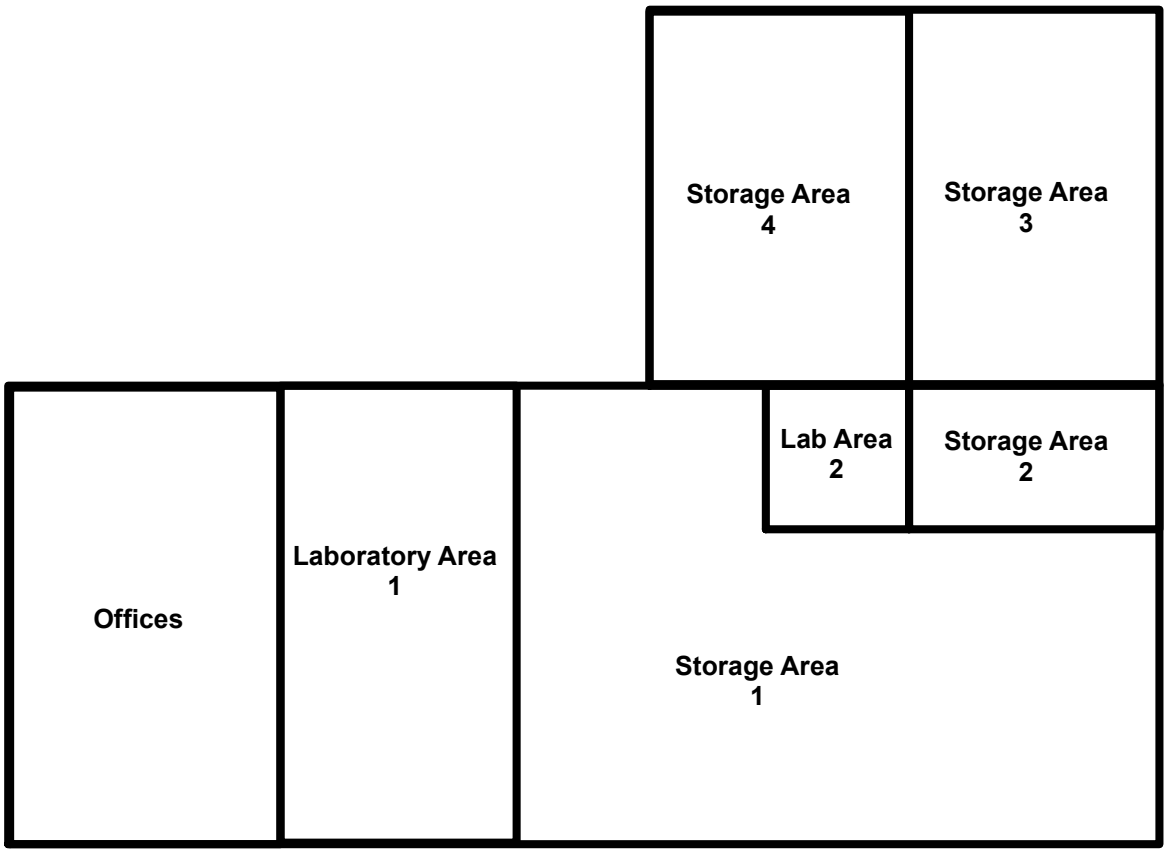
TETRA TECH

Prepared For: USEPA | Prepared By: Tetra Tech, Inc.

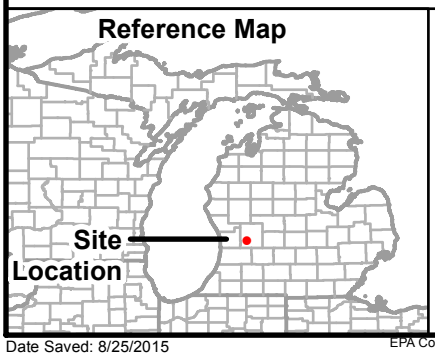
File Path: G:\IG\IG9026-START IV\Michigan\Hard Chrome Plating\mxd\HardChrome_2.mxd

Date Saved: 7/31/2015

EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1507-004 Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Projection: Mercator Auxiliary Sphere Datum:WGS 1984 Units: Meter



Not To Scale



Source: Bing Maps Hybrid (2011-2012).

Hard Chrome Plating Site
Grand Rapids, Michigan

Figure 3

Building Layout Map

TETRA TECH

Prepared For: USEPA	Prepared By: Tetra Tech, Inc.

File Path: G:\IG\IG9026-START IV\Michigan\Hard Chrome Plating\mxd\HardChrome_3.mxd

Date Saved: 8/25/2015

EPA Contract No.: EP-S5-13-01 TDD No.: S05-0001-1507-004 Coordinate System: WGS 1984 Web Mercator Auxiliary Sphere Projection: Mercator Auxiliary Sphere Datum:WGS 1984 Units: Meter

APPENDIX B

RESULTS TABLE

HARD CHROME PLATING REMOVAL ASSESSMENT
ANALYTICAL RESULTS FOR UNKNOWN MATERIAL SAMPLES

	Analyte	Units	EPA TCLP Regulatory Limits	HCP-D1-080315	HCP-Tank05-080315	HCP-Tank03-080315	HCP-Tank04-080315	HCP-B1-080315	HCP-Tank02-080315	HCP-C1-080315	HCP-Tank01-080315
				08/03/2015 12:55	08/03/2015 12:51	08/03/2015 12:47	08/03/2015 12:49	08/03/2015 12:35	08/03/2015 12:44	08/03/2015 13:01	08/03/2015 12:42
Total Metals	Arsenic	mg/Kg	--	**0.35 J**	**41**	**7.2**	**1.1**	--	**27**	--	**29**
	Barium	mg/Kg	--	**0.69**	<1.6	**4.3**	**26**	--	**2.7 J**	--	**2.5 J**
	Cadmium	mg/Kg	--	<0.058	<0.54	<0.56	<0.057	--	<0.55	--	<0.52
	Chromium	mg/Kg	--	**1.1**	**110,000**	**34,000**	**2,400**	--	**79,000**	--	**76,000**
	Lead	mg/Kg	--	**3.7**	**5.9**	**930**	**290**	--	**14**	--	**13**
	Selenium	mg/Kg	--	**0.42 J**	<2.1	<2.1	<0.22	--	<2.1	--	<2.0
	Silver	mg/Kg	--	<0.037	**0.81 J**	<0.36	**0.045 J**	--	**0.45 J**	--	**0.63 J**
Mercury	Mercury	mg/Kg	--	<0.0012	**0.41**	**0.081**	**0.0045 J**	--	**0.032**	--	**0.19**
Chromium VI	Hexavalent Chromium	mg/Kg	--	<0.27	**110,000**	**5**	**1,400**	--	**90,000**	--	**82,000**
pH	pH	S.U.	< 2 and > 12.5	**14.0**	**<1**	**<1**	**11.0**	--	**<1**	**<1**	**<1**
Flashpoint	Flashpoint	°F	< 140 °F	--	--	--	--	**71**	--	--	
TCLP											
Metals	Arsenic	mg/L	5	**0.59**	**140**	**27**	**0.96**	--	**95**	--	**110**
	Barium	mg/L	100	**0.78**	**1.3**	**4.2**	**0.87**	--	**3.1**	--	**2.2**
	Cadmium	mg/L	1	<0.038	<0.038	<0.038	<0.038	--	<0.038	--	**0.14 J**
	Chromium	mg/L	5	**0.9**	**120,000**	**37,000**	**1,600**	--	**90,000**	--	**100,000**
	Lead	mg/L	5	**1.3**	**9.9 J**	**1,100**	**19**	--	**16**	--	**7.2**
	Selenium	mg/L	1	<0.21	**0.33 J**	<0.21	<0.21	--	<0.21	--	**0.22 J**
	Silver	mg/L	5	**0.044 J**	**1.8**	**0.84**	**0.072 J**	--	**1.4**	--	**1.5**
Mercury	Mercury	mg/L	0.2	<0.0018	**0.35**	**0.09**	**0.00069 J**	--	**0.021**	--	**0.15**

Notes:

Meets RCRA requirements to classify as hazardous waste based on toxicity

Meets RCRA requirements to classify as hazardous waste based on ignitability

Meets RCRA requirements to classify as hazardous waste based on corrosivity

EPA	United States Environmental Protection Agency
RCRA	Resource Conservation and Recovery Act
S.U.	Standard Units
TCLP	Toxicity Characteristic Leaching Procedure

APPENDIX C
PHOTOGRAPHIC DOCUMENTATION

OFFICIAL PHOTOGRAPH NO. 1
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	East	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of the Hard Chrome Plating Site from the western property line.		

OFFICIAL PHOTOGRAPH NO. 2
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	North-Northwest	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of the adjoining property to the west (River City Scholars).		

OFFICIAL PHOTOGRAPH NO. 3
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of several 55-gallon drums stored on-site.		

OFFICIAL PHOTOGRAPH NO. 4
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of a plating bath, and a 55-gallon drum.		

OFFICIAL PHOTOGRAPH NO. 5
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)

Subject: View of several containers of various sizes stored improperly.

OFFICIAL PHOTOGRAPH NO. 6
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)

Subject: View of an aboveground storage tank (AST) and several other containers of various sizes. Note the 5-gallon containers labeled as corrosives and oxidizers.

OFFICIAL PHOTOGRAPH NO. 7
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)

Subject: View of three plating baths as well as other containers of various sizes.

OFFICIAL PHOTOGRAPH NO. 8
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of 55-gallon drums stacked on top of each other.		

OFFICIAL PHOTOGRAPH NO. 9
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)

Subject: View of 55-gallon drums stored in the building. Note the drum labeled as 107 appears to be bulging due to increased pressure.

OFFICIAL PHOTOGRAPH NO. 10
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of a 55-gallon drum of ammonium hydroxide stored in the building.		

OFFICIAL PHOTOGRAPH NO. 11
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of a 55-gallon drum of muriatic acid stored in the building.		

OFFICIAL PHOTOGRAPH NO. 12
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of a 5-gallon container labeled as an oxidizer, toxic, and corrosive.		

OFFICIAL PHOTOGRAPH NO. 13
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)

Subject: View of 55-gallon drums. Note that the drum to the right of drum 148 appears to be severely bulging due to increased pressure.

OFFICIAL PHOTOGRAPH NO. 14
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of START personnel sampling a plating bath.		

OFFICIAL PHOTOGRAPH NO. 15
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of START personnel preparing to sample a container.		

OFFICIAL PHOTOGRAPH NO. 16
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of containers of various sizes stored in a laboratory area.		

OFFICIAL PHOTOGRAPH NO. 17
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of various acids stored beneath the sink in a laboratory area.		

OFFICIAL PHOTOGRAPH NO. 18
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	NA	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of 5-gallon containers stacked on top of each other. Note the containers are labeled as corrosive, oxidizer, and toxic.		

OFFICIAL PHOTOGRAPH NO. 19
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	East	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of containers stored outside of the building.		

OFFICIAL PHOTOGRAPH NO. 20
U.S. ENVIRONMENTAL PROTECTION AGENCY

TDD No.:	S05-0001-1507-004	**Location:**	Hard Chrome Plating Site 1516 Blaine Avenue SE Grand Rapids, Kent County, Michigan 49507
Orientation:	North-Northeast	**Date:**	August 3, 2015
Photographer:	Kelly Thomas (Tetra Tech)	**Witness:**	Cordell Renner (Tetra Tech)
Subject:	View of the residential properties that are the northern adjoining properties.		

APPENDIX D

START FIELD NOTES

8/3/15

1030: START Thomas Renner, to Villicana onsite. Weather: 71°F, partly cloudy, wind- 7mph South, 78% Humidity.

1045: Calibrated MultiRAE.

H_2S = 9.9, O_2 = 18.0%, LEL = 99, CO = 50

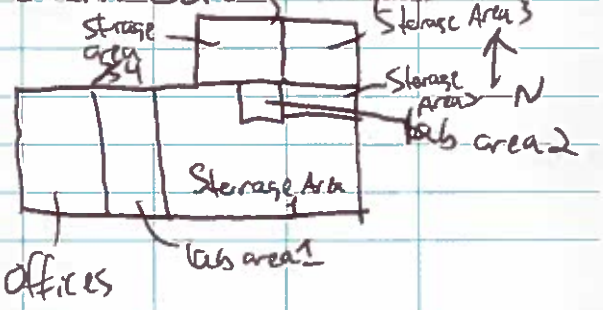
VOCs = 9.87 HCN = 10

1115: Attended Site safety meeting w/ START & EPA OSC Kelly. Todays activities will include Conducting initial site inspection and container inventory in Level D PPE w/ air monitoring. START will identify which containers can be sampled & log condition, number, & general fullness of containers

1130: START Thomas, Renner & EPA OSC Kelly entered the building in Level D PPE w/ air monitoring. Building is secure, & in fair condition (i.e. no holes in the walls, roof, etc.)

General Building Layout:

Not to Scale



Offices: No containers in the offices & restroom areas

~~Lab area 1~~: 3 small containers (less than 1.8 gallons each). ~~Unlabled.~~ (1) Citric Acid

~~Storage area 1~~: 35 55-gallon drums (7 labled muriatic acid, 4 labled HCL, 4 unlabled solid, 20 are unlabled, closed, or labled as Nickle).

- 24 5-gallon containers (1 labled flamable - Chromium trioxide 23 unlabled)
- 5 unlabled bags of solid material
- 5 unlabled tanks

Storage Area 2:

- 3 Asts unlabled
- 3 unlabled 55-gallon drums
- 6 5-gallon containers unlabled

Storage Area 3:

- 6 unlabled tanks
- 10 unlabled drums
- 11 5-gallon containers unlabled

Storage Area 4: (8)

- 52 55-gallon drums (4 labled as acid, 13 labled as nickle, others unlabled)

Rite in the Rain

8/3/15 cont.

Lab Area 2:

- 23 small (less than 1-gallon each) containers
  (1 labled Sulfuric acid, 4 labled citric acid, 2 labled Sodium hydroxide)

1215: Exited the building. Began preparing equipment to enter the building in Level B-ppe. START will collect (1) sample from unlabled drum (previously identified as drum 31 in previous consultants report) located in Storage area 1 that previously exhibited pH > 13. (2) Sample from drum in Storage area 1 labled as hydrochloric acid (3) Sample from 5-gallon container labled as flammable in Storage area 1. (4) 5 samples from 5 tanks in Storage area 1. Previous consultant identified tanks as: Tank 1, Tank 76, Tank 77, Tank 78, Tank 80

Backnote: START observed no elevated readings above background w/ Multi RAE during initial site entry and inventory.

1230 START Thomas & Villicana enter the building in Level B ppe. START

8/3/15 cont.

Renner is backup.

1235. START opened unlabled bucket in Storage Area 1. Exhibited VOCs > 1000 ppm w/ multiRAE. Collected 1 sample to be analyzed for flashpoint.
HCP-B1-080315 where B1 = Bucket 1

1240: START began collecting samples from 5 tanks in Storage Area 1.
Samples identified as:
HCP-Tank 05-080315
HCP-Tank 04-080315
HCP-Tank 03-080315
HCP-Tank 02-080315
HCP-Tank 01-080315
where Tank 01 was previous consultants Tank 1
Tank 02 was previous consultants Tank 80
Tank 03 was Tank 77
Tank 04 was Tank 78
Tank 05 was Tank 76

START also used pH paper to test pH of the tanks.
All pH's were ≥ 2 except tank 04
pH ≥ 10

START attempted to open a drum in Storage

Rite in the Rain

8/3/15 cont.

Area 1 labled as HCL. The drum appeared to be under pressure, and pressurized gas spewed out when START attempted to open it. The other HCL drums were smaller so START did not open.

START collected sample from unlabled drum in Storage area 1 ~~pack~~ identified by the previous consultant as Drum 31 pH in field test ~~xc~~ 14. START collected one sample for analyses:

HCP-D1-080315 where D1 = Drum 1.

START collected 1 sample from a small (~500mL) container ~~of~~ labled as sulfuric acid located in the Lab Area 2. Material exhibited pH ~2 in field test. START collected:

HCP-C1-080315 where C1 = Container 1

1315. START exited the building.

1330: START completed site walk around the exterior of the building.

START observed residential dwellings north of the building, and a school west of the building across Blaine Ave.

a fenced storage area is located on the southern wall of the building. The gate was unlocked.

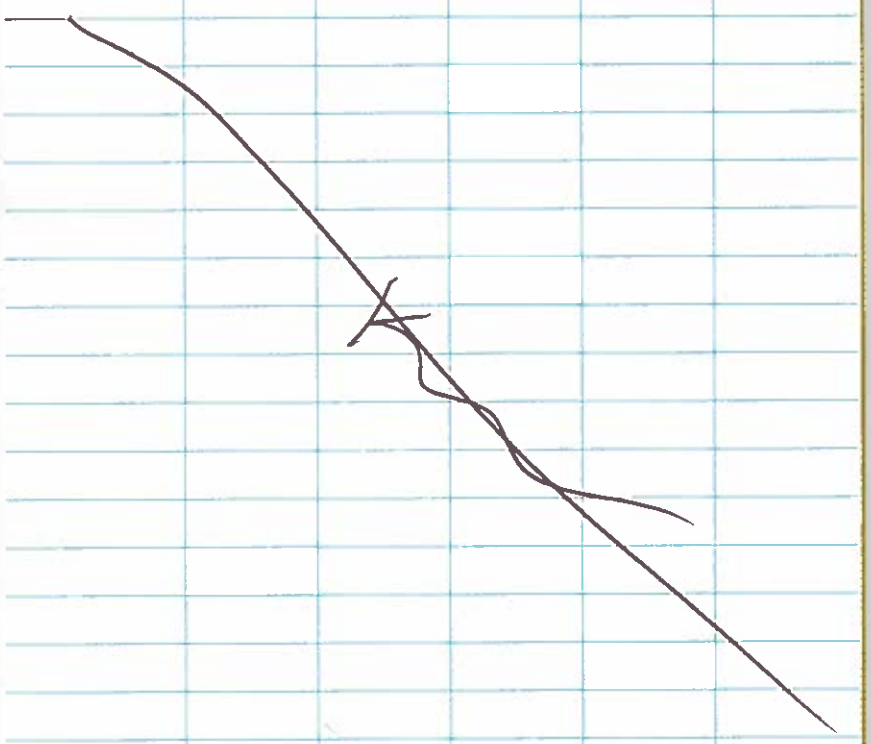
8/3/15 cont.

START observed various empty drums in the area.

1400: START entered the building in Level D PPE to table to gather samples.

1415. Samples will be delivered to ALS labs in Holland MI.

1445. START offsite.



Rite in the Rain

APPENDIX E

LABORATORY REPORTS AND DATA VALIDATION REPORT

10-Aug-2015

Kelly Thomas
Tetra Tech
25213 Dequindre Rd.
Madison Heights, MI 48071

Re: **Hard Chrome Plating 103X90260001S051507004** Work Order: **1508060**

Dear Kelly,

ALS Environmental received 14 samples on 03-Aug-2015 03:30 PM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested.

Sample results are compliant with NELAP standard requirements and QC results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 30.

If you have any questions regarding this report, please feel free to contact me.

Sincerely,

Joseph Ribar

Electronically approved by: Joseph Ribar

Joseph Ribar
Project Manager

Certificate No: MI: 0022

Report of Laboratory Analysis

ALS Group USA, Corp

Date: 10-Aug-15

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Work Order: **1508060**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
1508060-01	HCP-D1-080315 TCLP	Tclp Extract		8/3/2015 12:55	8/3/2015 15:30	☐
1508060-02	HCP-D1-080315	Waste		8/3/2015 12:55	8/3/2015 15:30	☐
1508060-03	HCP-Tank05-080315 TCLP	Tclp Extract		8/3/2015 12:51	8/3/2015 15:30	☐
1508060-04	HCP-Tank05-080315	Waste		8/3/2015 12:51	8/3/2015 15:30	☐
1508060-05	HCP-Tank03-080315 TCLP	Tclp Extract		8/3/2015 12:47	8/3/2015 15:30	☐
1508060-06	HCP-Tank03-080315	Waste		8/3/2015 12:47	8/3/2015 15:30	☐
1508060-07	HCP-Tank04-080315 TCLP	Tclp Extract		8/3/2015 12:49	8/3/2015 15:30	☐
1508060-08	HCP-Tank04-080315	Waste		8/3/2015 12:49	8/3/2015 15:30	☐
1508060-09	HCP-B1-080315	Waste		8/3/2015 12:35	8/3/2015 15:30	☐
1508060-10	HCP-Tank02-080315 TCLP	Tclp Extract		8/3/2015 12:44	8/3/2015 15:30	☐
1508060-11	HCP-Tank02-080315	Waste		8/3/2015 12:44	8/3/2015 15:30	☐
1508060-12	HCP-C1-080315	Waste		8/3/2015 13:01	8/3/2015 15:30	☐
1508060-13	HCP-Tank01-080315 TCLP	Tclp Extract		8/3/2015 12:42	8/3/2015 15:30	☐
1508060-14	HCP-Tank01-080315	Waste		8/3/2015 12:42	8/3/2015 15:30	☐

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Work Order: 1508060

Case Narrative

Samples for the above noted Work Order were received on 08/03/2015. The attached "Sample Receipt Checklist" documents the status of custody seals, container integrity, preservation, and temperature compliance.

Samples were analyzed according to the analytical methodology previously transmitted in the "Work Order Acknowledgement". Methodologies are also documented in the "Analytical Result" section for each sample. Quality control results are listed in the "QC Report" section. Sample association for the reported quality control is located at the end of each batch summary. If applicable, results are appropriately qualified in the Analytical Result and QC Report sections. The "Qualifiers" section documents the various qualifiers, units, and acronyms utilized in reporting.

With the following exceptions, all sample analyses achieved analytical criteria.

Metals:
Very elevated levels of Chromium. Samples had to run at multiple dilutions.

Wet Chemistry:
No other deviations or anomalies were noted.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-D1-080315 TCLP
Collection Date: 8/3/2015 12:55 PM

Work Order: 1508060
Lab ID: 1508060-01
Matrix: TCLP EXTRACT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP MERCURY BY CVAA		Method: **SW7470A**			Prep: SW7470 / 8/5/15		Analyst: **LR**
Mercury	U		0.0018	0.020	mg/L	1	8/5/2015 23:17
TCLP METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3005A / 8/5/15		Analyst: **JEC**
Arsenic	**0.59**		**0.070**	**0.25**	**mg/L**	10	8/5/2015 19:46
Barium	**0.78**		**0.030**	**0.25**	**mg/L**	10	8/5/2015 19:46
Cadmium	U		0.038	0.50	mg/L	10	8/5/2015 19:46
Chromium	**0.90**		**0.015**	**0.50**	**mg/L**	20	8/7/2015 13:10
Lead	**1.3**		**0.095**	**0.25**	**mg/L**	10	8/5/2015 19:46
Selenium	U		0.21	0.50	mg/L	10	8/5/2015 19:46
Silver	**0.044**	J	**0.019**	**0.25**	**mg/L**	10	8/5/2015 19:46

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-D1-080315
Collection Date: 8/3/2015 12:55 PM

Work Order: 1508060
Lab ID: 1508060-02
Matrix: WASTE

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 8/7/15		Analyst: **LR**
Mercury	U		0.0012	0.014	mg/Kg	1	8/7/2015 16:29
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 8/5/15		Analyst: **JEC**
Arsenic	**0.35**	J	**0.090**	**0.37**	**mg/Kg**	1	8/7/2015 10:55
Barium	**0.69**		**0.17**	**0.37**	**mg/Kg**	1	8/6/2015 13:23
Cadmium	U		0.058	0.74	mg/Kg	1	8/6/2015 13:23
Chromium	**1.1**		**0.012**	**0.37**	**mg/Kg**	1	8/6/2015 13:23
Lead	**3.7**		**0.044**	**0.37**	**mg/Kg**	1	8/6/2015 13:23
Selenium	**0.42**	J	**0.22**	**0.74**	**mg/Kg**	1	8/6/2015 13:23
Silver	U		0.037	0.37	mg/Kg	1	8/6/2015 13:23
CHROMIUM, HEXAVALENT		Method: **SW7196A**			Prep: SW3060A / 8/5/15		Analyst: **MB**
Chromium, Hexavalent	U		0.27	0.94	mg/Kg	1	8/7/2015 14:00
PH		Method: **SW9045**					Analyst: **ED**
pH	**14.0**		**0**		**s.u.**	1	8/6/2015 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank05-080315 TCLP
Collection Date: 8/3/2015 12:51 PM

Work Order: 1508060
Lab ID: 1508060-03
Matrix: TCLP EXTRACT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP MERCURY BY CVAA		Method: **SW7470A**			Prep: SW7470 / 8/5/15		Analyst: **LR**
Mercury	**0.35**		**0.0018**	**0.020**	**mg/L**	10	8/6/2015 17:22
TCLP METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3005A / 8/5/15		Analyst: **JEC**
Arsenic	**140**	*	**0.070**	**0.25**	**mg/L**	10	8/5/2015 19:51
Barium	**1.3**		**0.030**	**0.25**	**mg/L**	10	8/5/2015 19:51
Cadmium	U		0.038	0.50	mg/L	10	8/5/2015 19:51
Chromium	**120,000**	*	**0.75**	**25**	**mg/L**	1000	8/7/2015 11:01
Lead	**9.9**	J*	**9.5**	**25**	**mg/L**	1000	8/7/2015 11:01
Selenium	**0.33**	J	**0.21**	**0.50**	**mg/L**	10	8/5/2015 19:51
Silver	**1.8**		**0.019**	**0.25**	**mg/L**	10	8/5/2015 19:51

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank05-080315
Collection Date: 8/3/2015 12:51 PM

Work Order: 1508060
Lab ID: 1508060-04
Matrix: WASTE

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 8/7/15		Analyst: **LR**
Mercury	**0.41**		**0.011**	**0.13**	**mg/Kg**	10	8/7/2015 16:31
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 8/5/15		Analyst: **JEC**
Arsenic	**41**		**0.85**	**3.5**	**mg/Kg**	10	8/6/2015 13:29
Barium	U		1.6	3.5	mg/Kg	10	8/6/2015 13:29
Cadmium	U		0.54	6.9	mg/Kg	10	8/6/2015 13:29
Chromium	**110,000**		**1.1**	**35**	**mg/Kg**	100	8/6/2015 13:35
Lead	**5.9**		**0.42**	**3.5**	**mg/Kg**	10	8/6/2015 13:29
Selenium	U		2.1	6.9	mg/Kg	10	8/6/2015 13:29
Silver	**0.81**	J	**0.35**	**3.5**	**mg/Kg**	10	8/6/2015 13:29
CHROMIUM, HEXAVALENT		Method: **SW7196A**			Prep: SW3060A / 8/5/15		Analyst: **MB**
Chromium, Hexavalent	**110,000**		**710**	**2,500**	**mg/Kg**	2500	8/7/2015 14:00
PH		Method: **SW9045**					Analyst: **ED**
pH	**<1**		**0**		**s.u.**	1	8/6/2015 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank03-080315 TCLP
Collection Date: 8/3/2015 12:47 PM

Work Order: 1508060
Lab ID: 1508060-05
Matrix: TCLP EXTRACT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP MERCURY BY CVAA		Method: **SW7470A**			Prep: SW7470 / 8/5/15		Analyst: **LR**
Mercury	**0.090**		**0.00090**	**0.010**	**mg/L**	5	8/5/2015 23:21
TCLP METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3005A / 8/5/15		Analyst: **JEC**
Arsenic	**27**	*	**0.070**	**0.25**	**mg/L**	10	8/5/2015 19:57
Barium	**4.2**		**0.030**	**0.25**	**mg/L**	10	8/5/2015 19:57
Cadmium	U		0.038	0.50	mg/L	10	8/5/2015 19:57
Chromium	**37,000**	*	**0.15**	**5.0**	**mg/L**	200	8/7/2015 11:07
Lead	**1,100**	*	**1.9**	**5.0**	**mg/L**	200	8/7/2015 11:07
Selenium	U		0.21	0.50	mg/L	10	8/5/2015 19:57
Silver	**0.84**		**0.019**	**0.25**	**mg/L**	10	8/5/2015 19:57

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank03-080315
Collection Date: 8/3/2015 12:47 PM

Work Order: 1508060
Lab ID: 1508060-06
Matrix: WASTE

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 8/7/15		Analyst: **LR**
Mercury	**0.081**		**0.0024**	**0.028**	**mg/Kg**	2	8/7/2015 16:37
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 8/5/15		Analyst: **JEC**
Arsenic	**7.2**		**0.87**	**3.6**	**mg/Kg**	10	8/6/2015 13:41
Barium	**4.3**		**1.7**	**3.6**	**mg/Kg**	10	8/6/2015 13:41
Cadmium	U		0.56	7.1	mg/Kg	10	8/6/2015 13:41
Chromium	**34,000**		**1.1**	**36**	**mg/Kg**	100	8/6/2015 13:46
Lead	**930**		**0.43**	**3.6**	**mg/Kg**	10	8/6/2015 13:41
Selenium	U		2.1	7.1	mg/Kg	10	8/6/2015 13:41
Silver	U		0.36	3.6	mg/Kg	10	8/6/2015 13:41
CHROMIUM, HEXAVALENT		Method: **SW7196A**			Prep: SW3060A / 8/5/15		Analyst: **MB**
Chromium, Hexavalent	**5.0**		**0.30**	**1.0**	**mg/Kg**	1	8/7/2015 14:00
PH		Method: **SW9045**					Analyst: **ED**
pH	**<1**		**0**		**s.u.**	1	8/6/2015 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank04-080315 TCLP
Collection Date: 8/3/2015 12:49 PM

Work Order: 1508060
Lab ID: 1508060-07
Matrix: TCLP EXTRACT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP MERCURY BY CVAA		Method: **SW7470A**			Prep: SW7470 / 8/5/15		Analyst: **LR**
Mercury	**0.00069**	J	**0.00018**	**0.0020**	**mg/L**	1	8/5/2015 23:24
TCLP METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3005A / 8/5/15		Analyst: **JEC**
Arsenic	**0.96**		**0.070**	**0.25**	**mg/L**	10	8/5/2015 20:03
Barium	**0.87**		**0.030**	**0.25**	**mg/L**	10	8/5/2015 20:03
Cadmium	U		0.038	0.50	mg/L	10	8/5/2015 20:03
Chromium	**1,600**	*	**0.0075**	**0.25**	**mg/L**	10	8/7/2015 09:33
Lead	**19**	*	**0.095**	**0.25**	**mg/L**	10	8/5/2015 20:03
Selenium	U		0.21	0.50	mg/L	10	8/5/2015 20:03
Silver	**0.072**	J	**0.019**	**0.25**	**mg/L**	10	8/5/2015 20:03

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank04-080315
Collection Date: 8/3/2015 12:49 PM

Work Order: 1508060
Lab ID: 1508060-08
Matrix: WASTE

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA			Method: **SW7471B**		Prep: SW7471 / 8/7/15		Analyst: **LR**
Mercury	**0.0045**	J	**0.0012**	**0.014**	**mg/Kg**	1	8/7/2015 16:39
METALS ANALYSIS BY ICP			Method: **SW846 6010C**		Prep: SW3050B / 8/5/15		Analyst: **JEC**
Arsenic	**1.1**		**0.089**	**0.36**	**mg/Kg**	1	8/6/2015 13:52
Barium	**26**		**0.17**	**0.36**	**mg/Kg**	1	8/6/2015 13:52
Cadmium	U		0.057	0.73	mg/Kg	1	8/6/2015 13:52
Chromium	**2,400**		**0.012**	**0.36**	**mg/Kg**	1	8/6/2015 13:52
Lead	**290**		**0.044**	**0.36**	**mg/Kg**	1	8/6/2015 13:52
Selenium	U		0.22	0.73	mg/Kg	1	8/6/2015 13:52
Silver	**0.045**	J	**0.036**	**0.36**	**mg/Kg**	1	8/6/2015 13:52
CHROMIUM, HEXAVALENT			Method: **SW7196A**		Prep: SW3060A / 8/5/15		Analyst: **MB**
Chromium, Hexavalent	**1,400**		**13**	**44**	**mg/Kg**	50	8/7/2015 14:00
PH			Method: **SW9045**				Analyst: **ED**
pH	**11.0**		**0**		**s.u.**	1	8/6/2015 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-B1-080315
Collection Date: 8/3/2015 12:35 PM

Work Order: 1508060
Lab ID: 1508060-09
Matrix: WASTE

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
FLASHPOINT/IGNITABILITY ANALYSIS			Method: **SW1010A**				Analyst: **RLF**
Flashpoint/Ignitability	**71.0**		**0**		**°F**	1	8/7/2015 08:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank02-080315 TCLP
Collection Date: 8/3/2015 12:44 PM

Work Order: 1508060
Lab ID: 1508060-10
Matrix: TCLP EXTRACT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP MERCURY BY CVAA		Method: **SW7470A**			Prep: SW7470 / 8/5/15		Analyst: **LR**
Mercury	**0.021**		**0.00090**	**0.010**	**mg/L**	5	8/5/2015 23:26
TCLP METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3005A / 8/5/15		Analyst: **JEC**
Arsenic	**95**	*	**0.070**	**0.25**	**mg/L**	10	8/5/2015 20:09
Barium	**3.1**		**0.030**	**0.25**	**mg/L**	10	8/5/2015 20:09
Cadmium	U		0.038	0.50	mg/L	10	8/5/2015 20:09
Chromium	**90,000**	*	**0.75**	**25**	**mg/L**	1000	8/7/2015 11:13
Lead	**16**	*	**0.95**	**2.5**	**mg/L**	100	8/7/2015 09:39
Selenium	U		0.21	0.50	mg/L	10	8/5/2015 20:09
Silver	**1.4**		**0.019**	**0.25**	**mg/L**	10	8/5/2015 20:09

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank02-080315
Collection Date: 8/3/2015 12:44 PM

Work Order: 1508060
Lab ID: 1508060-11
Matrix: WASTE

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 8/7/15		Analyst: **LR**
Mercury	**0.032**		**0.0012**	**0.015**	**mg/Kg**	1	8/7/2015 16:44
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 8/5/15		Analyst: **JEC**
Arsenic	**27**		**0.86**	**3.5**	**mg/Kg**	10	8/6/2015 13:58
Barium	**2.7**	J	**1.6**	**3.5**	**mg/Kg**	10	8/6/2015 13:58
Cadmium	U		0.55	7.0	mg/Kg	10	8/6/2015 13:58
Chromium	**79,000**		**1.1**	**35**	**mg/Kg**	100	8/6/2015 14:04
Lead	**14**		**0.42**	**3.5**	**mg/Kg**	10	8/6/2015 13:58
Selenium	U		2.1	7.0	mg/Kg	10	8/6/2015 13:58
Silver	**0.45**	J	**0.35**	**3.5**	**mg/Kg**	10	8/6/2015 13:58
CHROMIUM, HEXAVALENT		Method: **SW7196A**			Prep: SW3060A / 8/5/15		Analyst: **MB**
Chromium, Hexavalent	**90,000**		**710**	**2,500**	**mg/Kg**	2500	8/7/2015 14:00
PH		Method: **SW9045**					Analyst: **ED**
pH	**<1**		**0**		**s.u.**	1	8/6/2015 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-C1-080315
Collection Date: 8/3/2015 01:01 PM

Work Order: 1508060
Lab ID: 1508060-12
Matrix: WASTE

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
PH			Method: **SW9045**				Analyst: **ED**
pH	**<1**		**0**		**s.u.**	1	8/6/2015 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank01-080315 TCLP
Collection Date: 8/3/2015 12:42 PM

Work Order: 1508060
Lab ID: 1508060-13
Matrix: TCLP EXTRACT

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
TCLP MERCURY BY CVAA		Method: **SW7470A**			Prep: SW7470 / 8/5/15		Analyst: **LR**
Mercury	**0.15**		**0.00090**	**0.010**	**mg/L**	5	8/5/2015 23:28
TCLP METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3005A / 8/5/15		Analyst: **JEC**
Arsenic	**110**	*	**0.070**	**0.25**	**mg/L**	10	8/5/2015 20:15
Barium	**2.2**		**0.030**	**0.25**	**mg/L**	10	8/5/2015 20:15
Cadmium	**0.14**	J	**0.038**	**0.50**	**mg/L**	10	8/5/2015 20:15
Chromium	**100,000**	*	**0.75**	**25**	**mg/L**	1000	8/7/2015 09:51
Lead	**7.2**	*	**0.95**	**2.5**	**mg/L**	100	8/7/2015 09:45
Selenium	**0.22**	J	**0.21**	**0.50**	**mg/L**	10	8/5/2015 20:15
Silver	**1.5**		**0.019**	**0.25**	**mg/L**	10	8/5/2015 20:15

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: *10-Aug-15*

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
Sample ID: HCP-Tank01-080315
Collection Date: 8/3/2015 12:42 PM

Work Order: 1508060
Lab ID: 1508060-14
Matrix: WASTE

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 8/7/15		Analyst: **LR**
Mercury	**0.19**		**0.011**	**0.13**	**mg/Kg**	10	8/7/2015 16:46
METALS ANALYSIS BY ICP		Method: **SW846 6010C**			Prep: SW3050B / 8/5/15		Analyst: **JEC**
Arsenic	**29**		**0.81**	**3.3**	**mg/Kg**	10	8/6/2015 14:32
Barium	**2.5**	J	**1.5**	**3.3**	**mg/Kg**	10	8/6/2015 14:32
Cadmium	U		0.52	6.7	mg/Kg	10	8/6/2015 14:32
Chromium	**76,000**		**1.1**	**33**	**mg/Kg**	100	8/6/2015 14:38
Lead	**13**		**0.40**	**3.3**	**mg/Kg**	10	8/6/2015 14:32
Selenium	U		2.0	6.7	mg/Kg	10	8/6/2015 14:32
Silver	**0.63**	J	**0.33**	**3.3**	**mg/Kg**	10	8/6/2015 14:32
CHROMIUM, HEXAVALENT		Method: **SW7196A**			Prep: SW3060A / 8/5/15		Analyst: **MB**
Chromium, Hexavalent	**82,000**		**750**	**2,600**	**mg/Kg**	2500	8/7/2015 14:00
PH		Method: **SW9045**					Analyst: **ED**
pH	**<1**		**0**		**s.u.**	1	8/6/2015 12:30

Note: See Qualifiers page for a list of qualifiers and their definitions.

ALS Group USA, Corp

Date: 10-Aug-15

Client: Tetra Tech
Project: Hard Chrome Plating 103X90260001S051507004
WorkOrder: **1508060**

QUALIFIERS, ACRONYMS, UNITS

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte is present at an estimated concentration between the MDL and Report Limit
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and PQL, sample results may exhibit background or reagent contamination at the observed level.

Acronym	Description
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

Units Reported	Description
°F	Degrees Fahrenheit
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
s.u.	Standard Units

ALS Group USA, Corp

Date: 10-Aug-15

Client: Tetra Tech

QC BATCH REPORT

Work Order: 1508060

Project: Hard Chrome Plating 103X90260001S051507004

Batch ID: **74466** Instrument ID **HG1** Method: **SW7470**

MBLK Sample ID: **MBLK-74466-74466** Units: **mg/L** Analysis Date: **8/5/2015 08:29 PM**

Client ID: Run ID: **HG1_150805A** SeqNo: **3405335** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.00020								

LCS Sample ID: **LCS-74466-74466** Units: **mg/L** Analysis Date: **8/5/2015 08:31 PM**

Client ID: Run ID: **HG1_150805A** SeqNo: **3405336** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.001853	0.00020	0.002	0	92.6	80-120	0			

MS Sample ID: **1508104-01AMS** Units: **mg/L** Analysis Date: **8/5/2015 09:05 PM**

Client ID: Run ID: **HG1_150805A** SeqNo: **3405351** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.01976	0.0020	0.02	-0.0001	99.3	75-125	0			

MSD Sample ID: **1508104-01AMSD** Units: **mg/L** Analysis Date: **8/5/2015 09:08 PM**

Client ID: Run ID: **HG1_150805A** SeqNo: **3405352** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.01959	0.0020	0.02	-0.0001	98.4	75-125	0.01976	0.864	20	

The following samples were analyzed in this batch:

1508060-01A	1508060-03A	1508060-05A
1508060-07A	1508060-10A	1508060-13A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 1508060
Project: Hard Chrome Plating 103X90260001S051507004

QC BATCH REPORT

Batch ID: **74467** Instrument ID **HG1** Method: **SW7471B**

MBLK Sample ID: **MBLK-74467-74467** Units: **mg/Kg** Analysis Date: **8/7/2015 03:06 PM**
Client ID: Run ID: **HG1_150807A** SeqNo: **3408476** Prep Date: **8/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-74467-74467** Units: **mg/Kg** Analysis Date: **8/7/2015 03:08 PM**
Client ID: Run ID: **HG1_150807A** SeqNo: **3408477** Prep Date: **8/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1886	0.020	0.1665	0	113	80-120	0			

MS Sample ID: **15071836-05CMS** Units: **mg/Kg** Analysis Date: **8/7/2015 03:19 PM**
Client ID: Run ID: **HG1_150807A** SeqNo: **3408481** Prep Date: **8/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1425	0.013	0.1097	0.02383	108	75-125	0			

MSD Sample ID: **15071836-05CMSD** Units: **mg/Kg** Analysis Date: **8/7/2015 03:21 PM**
Client ID: Run ID: **HG1_150807A** SeqNo: **3408482** Prep Date: **8/7/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.151	0.013	0.1099	0.02383	116	75-125	0.1425	5.8	35	

The following samples were analyzed in this batch:

1508060-02A	1508060-04A	1508060-06A
1508060-08A	1508060-11A	1508060-14A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 1508060
Project: Hard Chrome Plating 103X90260001S051507004

QC BATCH REPORT

Batch ID: **74441** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-74441-74441** Units: **mg/L** Analysis Date: **8/5/2015 07:29 PM**
Client ID: Run ID: **ICP2_150805A** SeqNo: **3404857** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.0050								
Barium	U	0.0050								
Cadmium	U	0.010								
Lead	U	0.0050								
Selenium	U	0.010								
Silver	0.0006293	0.0050								J

LCS Sample ID: **LCS-74441-74441** Units: **mg/L** Analysis Date: **8/5/2015 07:34 PM**
Client ID: Run ID: **ICP2_150805A** SeqNo: **3404858** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	0.09971	0.0050	0.1	0	99.7	80-120	0			
Barium	0.09924	0.0050	0.1	0	99.2	80-120	0			
Cadmium	0.1016	0.010	0.1	0	102	80-120	0			
Lead	0.102	0.0050	0.1	0	102	80-120	0			
Selenium	0.09869	0.010	0.1	0	98.7	80-120	0			
Silver	0.1097	0.0050	0.1	0	110	80-120	0			

MS Sample ID: **1508105-44BMS** Units: **mg/L** Analysis Date: **8/5/2015 08:59 PM**
Client ID: Run ID: **ICP2_150805A** SeqNo: **3404873** Prep Date: **8/5/2015** DF: **1000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	5.0	0.1	3.564	-3560	75-125	0			SO
Barium	U	5.0	0.1	1.285	-1280	75-125	0			SO
Cadmium	0.8157	10	0.1	-0.7879	1600	75-125	0			JS
Lead	U	5.0	0.1	-3.596	3600	75-125	0			S
Selenium	U	10	0.1	-9.062	9060	75-125	0			S
Silver	1.067	5.0	0.1	2.352	-1290	75-125	0			JSO

MSD Sample ID: **1508105-44BMSD** Units: **mg/L** Analysis Date: **8/5/2015 09:05 PM**
Client ID: Run ID: **ICP2_150805A** SeqNo: **3404874** Prep Date: **8/5/2015** DF: **1000**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	5.0	0.1	3.564	-3560	75-125	-0.04627	0	20	SO
Barium	U	5.0	0.1	1.285	-1280	75-125	-0.02735	0	20	SO
Cadmium	U	10	0.1	-0.7879	788	75-125	0.8157	0	20	S
Lead	U	5.0	0.1	-3.596	3600	75-125	-0.4668	0	20	S
Selenium	U	10	0.1	-9.062	9060	75-125	-1.274	0	20	S
Silver	0.8128	5.0	0.1	2.352	-1540	75-125	1.067	0	20	JSO

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 1508060
Project: Hard Chrome Plating 103X90260001S051507004

QC BATCH REPORT

Batch ID: **74441** Instrument ID **ICP2** Method: **SW846 6010C**

The following samples were analyzed in this batch:

1508060-01A	1508060-03A	1508060-05A
1508060-07A	1508060-10A	1508060-13A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 1508060
Project: Hard Chrome Plating 103X90260001S051507004

QC BATCH REPORT

Batch ID: **74454** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-74454-74454** Units: **mg/Kg** Analysis Date: **8/6/2015 01:12 PM**
Client ID: Run ID: **ICP2_150806A** SeqNo: **3406741** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Cadmium	U	0.50								
Chromium	0.01147	0.25								J
Lead	U	0.25								
Selenium	U	0.50								
Silver	U	0.25								

LCS Sample ID: **LCS-74454-74454** Units: **mg/Kg** Analysis Date: **8/6/2015 01:18 PM**
Client ID: Run ID: **ICP2_150806A** SeqNo: **3406742** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	4.942	0.25	5	0	98.8	80-120	0			
Barium	4.857	0.25	5	0	97.1	80-120	0			
Cadmium	4.384	0.50	5	0	87.7	80-120	0			
Chromium	4.809	0.25	5	0	96.2	80-120	0			
Lead	4.905	0.25	5	0	98.1	80-120	0			
Selenium	4.974	0.50	5	0	99.5	80-120	0			
Silver	4.788	0.25	5	0	95.8	80-120	0			

MS Sample ID: **1508071-01AMS** Units: **mg/Kg** Analysis Date: **8/6/2015 02:49 PM**
Client ID: Run ID: **ICP2_150806A** SeqNo: **3406759** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	15.76	0.33	6.562	3.648	185	75-125	0			S
Barium	3186	0.33	6.562	0.1659	48600	75-125	0			SE
Cadmium	6.073	0.66	6.562	-0.0267	93	75-125	0			
Chromium	15.81	0.33	6.562	7757	-1E+05	75-125	0			SO
Lead	14.01	0.33	6.562	0.5278	206	75-125	0			S
Selenium	8.205	0.66	6.562	0.02857	125	75-125	0			
Silver	6.799	0.33	6.562	0.05955	103	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 1508060
Project: Hard Chrome Plating 103X90260001S051507004

QC BATCH REPORT

Batch ID: **74454** Instrument ID **ICP2** Method: **SW846 6010C**

MSD Sample ID: **1508071-01AMSD** Units: **mg/Kg** Analysis Date: **8/6/2015 02:55 PM**
Client ID: Run ID: **ICP2_150806A** SeqNo: **3406760** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	14.78	0.33	6.562	3.648	170	75-125	15.76	6.37	20	S
Barium	3014	0.33	6.562	0.1659	45900	75-125	3186	5.56	20	SE
Cadmium	5.979	0.66	6.562	-0.0267	91.5	75-125	6.073	1.57	20	
Chromium	16.55	0.33	6.562	7757	-1E+05	75-125	15.81	4.58	20	SO
Lead	12.59	0.33	6.562	0.5278	184	75-125	14.01	10.7	20	S
Selenium	7.757	0.66	6.562	0.02857	118	75-125	8.205	5.62	20	
Silver	6.765	0.33	6.562	0.05955	102	75-125	6.799	0.504	20	

The following samples were analyzed in this batch:

1508060-02A	1508060-04A	1508060-06A
1508060-08A	1508060-11A	1508060-14A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 1508060
Project: Hard Chrome Plating 103X90260001S051507004

QC BATCH REPORT

Batch ID: **74506** Instrument ID **ICP2** Method: **SW846 6010C**

MBLK Sample ID: **MBLK-74506-74506** Units: **mg/L** Analysis Date: **8/7/2015 10:17 AM**
Client ID: Run ID: **ICP2_150807A** SeqNo: **3407370** Prep Date: **8/6/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	0.002021	0.0050								J
Lead	U	0.0050								

LCS Sample ID: **LCS-74506-74506** Units: **mg/L** Analysis Date: **8/7/2015 10:24 AM**
Client ID: Run ID: **ICP2_150807A** SeqNo: **3407434** Prep Date: **8/6/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	0.09609	0.0050	0.1	0	96.1	80-120	0			
Lead	0.09539	0.0050	0.1	0	95.4	80-120	0			

MS Sample ID: **1508074-01AMS** Units: **mg/L** Analysis Date: **8/7/2015 10:37 AM**
Client ID: Run ID: **ICP2_150807A** SeqNo: **3407440** Prep Date: **8/6/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	0.2136	0.010	0.2	0.008916	102	75-125	0			
Lead	0.2001	0.010	0.2	0.006011	97.1	75-125	0			

MSD Sample ID: **1508074-01AMSD** Units: **mg/L** Analysis Date: **8/7/2015 10:43 AM**
Client ID: Run ID: **ICP2_150807A** SeqNo: **3407442** Prep Date: **8/6/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium	0.2155	0.010	0.2	0.008916	103	75-125	0.2136	0.882	20	
Lead	0.2039	0.010	0.2	0.006011	99	75-125	0.2001	1.88	20	

The following samples were analyzed in this batch:

1508060-01A	1508060-03A	1508060-05A
1508060-07A	1508060-10A	1508060-13A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 1508060
Project: Hard Chrome Plating 103X90260001S051507004

QC BATCH REPORT

Batch ID: **74515** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK Sample ID: **MBLK-74515-74515** Units: **mg/Kg** Analysis Date: **8/7/2015 02:00 PM**
Client ID: Run ID: **WETCHEM_150807F** SeqNo: **3408254** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	0.32	1.0								J

LCS Sample ID: **LCS-74515-74515** Units: **mg/Kg** Analysis Date: **8/7/2015 02:00 PM**
Client ID: Run ID: **WETCHEM_150807F** SeqNo: **3408253** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	5.71	1.0	5	0	114	80-120	0			

MS Sample ID: **15071836-11C MS** Units: **mg/Kg** Analysis Date: **8/7/2015 02:00 PM**
Client ID: Run ID: **WETCHEM_150807F** SeqNo: **3408240** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	3.961	0.98	4.902	1.364	53	75-125	0			S

MS Sample ID: **15071836-11C MSI** Units: **mg/Kg** Analysis Date: **8/7/2015 02:00 PM**
Client ID: Run ID: **WETCHEM_150807F** SeqNo: **3408242** Prep Date: **8/5/2015** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	1861	99	1752	1.364	106	75-125	0			

MSD Sample ID: **15071836-11C MSD** Units: **mg/Kg** Analysis Date: **8/7/2015 02:00 PM**
Client ID: Run ID: **WETCHEM_150807F** SeqNo: **3408241** Prep Date: **8/5/2015** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2.752	0.95	4.762	1.364	29.2	75-125	3.961	36	20	SR

The following samples were analyzed in this batch:

1508060-02A	1508060-04A	1508060-06A
1508060-08A	1508060-11A	1508060-14A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 1508060
Project: Hard Chrome Plating 103X90260001S051507004

QC BATCH REPORT

Batch ID: **R169112** Instrument ID **WETCHEM** Method: **SW9045**

LCS Sample ID: **WLCSW1-150806-R169112** Units: **s.u.** Analysis Date: **8/6/2015 12:30 PM**
Client ID: Run ID: **WETCHEM_150806D** SeqNo: **3405827** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	3.91	0	4	0	97.8	90-110	0			

DUP Sample ID: **1508060-12A DUP** Units: **s.u.** Analysis Date: **8/6/2015 12:30 PM**
Client ID: **HCP-C1-080315** Run ID: **WETCHEM_150806D** SeqNo: **3405834** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	U	0	0	0	0	0-0	0	0	20	

The following samples were analyzed in this batch:

1508060-02A	1508060-04A	1508060-06A
1508060-08A	1508060-11A	1508060-12A
1508060-14A		

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Tetra Tech
Work Order: 1508060
Project: Hard Chrome Plating 103X90260001S051507004

QC BATCH REPORT

Batch ID: **R169186** Instrument ID **WETCHEM** Method: **SW1010A**

LCS Sample ID: **LCS-R169186-R169186** Units: **°F** Analysis Date: **8/7/2015 08:30 AM**
Client ID: Run ID: **WETCHEM_150807A** SeqNo: **3407170** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Flashpoint/Ignitability	81	0	81	0	100	97-103	0			

DUP Sample ID: **1508056-02A DUP** Units: **°F** Analysis Date: **8/7/2015 08:30 AM**
Client ID: Run ID: **WETCHEM_150807A** SeqNo: **3408301** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Flashpoint/Ignitability	119	0	0	0	0	0-0	111	6.96	10	

The following samples were analyzed in this batch: 1508060-09A

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Cincinnati, OH +1 513 733 5336
Fort Collins, CO +1 970 490 1511
Everett, WA +1 425 356 2600
Holland, MI +1 616 399 6070
Houston, TX +1 281 530 5656
Spring City, PA +1 610 948 4903
South Charleston, WV +1 304 356 3168
Middletown, PA +1 717 944 5541
Salt Lake City, UT +1 801 266 7700
York, PA +1 717 505 5280

Chain of Custody Form

Page 1 of 1

COC ID: 22171

ALS Environmental

ALS Project Manager: | ALS Work Order #: 1508060

Customer Information		Project Information		Parameter/Method Request for Analysis	
Purchase Order		Project Name	HARD CHROME PLATING	A	Metals (TCLP)
Work Order		Project Number	103x90260001.05.1507004.	B	~~Total~~ Metals RCRA
Company Name	TETRA TECH, INC	Bill To Company	TETRA TECH	C	~~PH~~ pH
Send Report To	KELLY THOMAS	Invoice Attn	CHRIS BURNS	D	Flashpoint
Address	25213 DEQUINDRE RD.	Address	1 S. WACKER DR 37TH FLOOR	E	Hexavalent Chromium
				F	
City/State/Zip	MADISON HEIGHTS, MI 48071	City/State/Zip	CHICAGO, IL 60606	G	
Phone	313 574 3176	Phone	570 417 1280	H	
Fax		Fax		I	
e-Mail Address	KELLY.THOMAS@TETRATECH.COM	e-Mail Address	CHRISTOPHER.BURNS@TETRATECH.COM		

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	HCP - D1 - 080315	08/03/15	1255	WASTE	—	1	X	X	X	X	X						CAUSTIC
2	HCP - Tank05 - 080315		1251	WASTE			X	X	X		X						✓
3	HCP - Tank03 - 080315		1247	WASTE			X	X	X		X						✓
4	HCP - Tank04 - 080315		1249	WASTE			X	X	X		X						✓
5	HCP - B1 - 080315		1235	WASTE						X							
6	HCP - Tank02 - 080315		1244	WASTE			X	X	X		X						✓
7	HCP - C1 - 080315		1301	WASTE					X								
8	HCP - Tank01 - 080315		1242	WASTE			X	X	X		X						✓
9																	
10																	

Sampler(s) Please Print & Sign: MATT VYLICHA

Shipment Method: DELIVERED

Required Turnaround Time: (Check Box) ☐ Other ☐ STD 10 Wk Days ☑ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour

Results Due Date:

Relinquished by:	Date: 8/3/15	Time: 1530	Received by:	
Relinquished by:	Date: 8/3/15	Time: 1530	Received by (Laboratory):	
Logged by (Laboratory): DFS	Date: 8/3/15	Time: 1630	Checked by (Laboratory):	

Notes:

Cooler ID	Cooler Temp
	24.6/24.6

QC Package: (Check One Box Below)
☐ Level II Std QC ☐ TRRP Checklist
☐ Level III Std QC/Raw Data ☐ TRRP Level IV
☐ Level IV SW846/CLP
☐ Other

Preservative Key: 1-HCl 2-HNO_3 3-H_2SO_4 4-NaOH 5-$Na_2S_2O_3$ 6-$NaHSO_4$ 7-Other 8-4°C 9-5035

Note: 1. Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.
2. Unless otherwise agreed in a formal contract, services provided by ALS Environmental are expressly limited to the terms and conditions stated on the reverse.
3. The Chain of Custody is a legal document. All information must be completed accurately.

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ALS Group USA, Corp

Sample Receipt Checklist

Client Name: **TETRATECH-MADISONHEIGHTS** Date/Time Received: **03-Aug-15 15:30**

Work Order: **1508060** Received by: **KRW**

Checklist completed by Joseph Ribar (eSignature) 04-Aug-15 (Date) Reviewed by: Joseph Ribar (eSignature) 04-Aug-15 (Date)

Matrices: waste

Carrier name: ALSHN

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☐	No ☑	
Sample(s) received on ice?	Yes ☐	No ☑	
Temperature(s)/Thermometer(s):	24.6c/24.6c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	8/34/2015 4:54:22 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

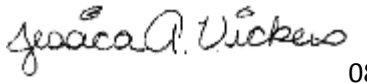
Login Notes: Samples were collected locally and delivered on ice.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction:

Site Name	Hard Chrome Plating	**TDD No.**	0001-S05-1507-004
Document Tracking No.	0324		
Data Reviewer (signature and date)	 08/24/2015	**Technical Reviewer (signature and date)**	
Laboratory Report No.	1508060	**Laboratory**	ALS Laboratories, Inc.
Analyses	Resource Conservation and Recovery Act (RCRA) Metals (SW-846 6010C/7471B), Toxicity Characteristic Leaching Procedure (TCLP) Metals (SW-846 1311/6010C/7470A), Hexavalent Chromium (SW-846 7196A), pH (SW-846 9045D), and Flashpoint/Ignitability (SW-846 1010A)		
Samples and Matrix	Eight waste samples		
Field Duplicate Pairs	None		
Field Blanks	None		

INTRODUCTION

This checklist summarizes the Stage 4 validation performed on the subject laboratory report, in accordance with the Environmental Protection Agency (EPA) *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (January 2009). Analytical data were evaluated in general accordance with the EPA *Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Inorganic Superfund Data Review* (August 2014).

OVERALL EVALUATION

Rejection of data was not required for this data package. No changes to the laboratory qualifiers were required based on the validation. The data can be used with the qualifications provided by the laboratory.

Data completeness:

Within Criteria	Exceedance/Notes
Y	

Sample preservation, receipt, and holding times:

Within Criteria	Exceedance/Notes
N	Cooler temperature was 24.6 degrees Celsius upon arrival – no action for waste samples

Instrument Performance Checks:

Within Criteria	Exceedance/Notes
NA	

Initial Calibration:

Within Criteria	Exceedance/Notes
Y	

Continuing Calibration:

Within Criteria	Exceedance/Notes
NA	

Calibration Verification:

Within Criteria	Exceedance/Notes
Y	

Method blanks:

Within Criteria	Exceedance/Notes
N	74441: silver = 0.0006293 mg/L – no action (associated results greater than 10 times blank value) 74454: chromium = 0.01147 mg/kg – no action (associated results greater than 10 times blank value) 74506: chromium = 0.002021 mg/L – no action (associated results greater than 10 times blank value) Solid method blank: hexavalent chromium = 0.32 mg/kg – no action (associated results non-detect or greater than 10 times blank value) 08/05/15 (19:17): silver = 0.00094 mg/L – no action (associated results greater than 10 times blank value) 08/06/15 (14:15): selenium = 0.0043 mg/L – no action (associated result non-detect) 08/07/15 (10:06): chromium = 0.0026 mg/L – no action (associated results greater than 10 times blank value)

Field blanks:

Within Criteria	Exceedance/Notes
NA	

Interference Check Samples (ICS) (ICP metals only):

Within Criteria	Exceedance/Notes
Y	

System monitoring compounds (surrogates and labeled compounds):

Within Criteria	Exceedance/Notes
NA	

MS/MSD:

Within Criteria	Exceedance/Notes
NA	Not performed on project samples.

Post digestion spikes:

Within Criteria	Exceedance/Notes
NA	

Serial dilutions:

Within Criteria	Exceedance/Notes
NA	

Laboratory duplicates:

Within Criteria	Exceedance/Notes
Y	

Field duplicates:

Within Criteria	Exceedance/Notes
NA	

LCSs/LCSDs:

Within Criteria	Exceedance/Notes
Y	

Sample dilutions:

Within Criteria	Exceedance/Notes
Y	2x: mercury for HCP-Tank03-080315 5x: mercury for HCP-Tank01-080315 TCLP, HCP-Tank02-080315 TCLP, and HCP-Tank03-080315 TCLP 10x: ICP metals for HCP-Tank04-080315 TCLP 10x: ICP metals except chromium for HCP-D1-080315 TCLP, HCP-Tank02-080315, and HCP-Tank03-080315 10x: ICP metals except chromium; and mercury for HCP-Tank01-080315 and HCP-Tank05-080315 10x: ICP metals except chromium and lead for HCP-Tank01-080315 TCLP, HCP-Tank02-080315 TCLP and HCP-Tank03-080315 TCLP 10x: ICP metals except chromium and lead; and mercury for HCP-Tank05-080315 TCLP 20x: chromium for HCP-D1-080315 TCLP 50x: hexavalent chromium for HCP-Tank04-080315 100x: chromium for HCP-Tank01-080315, HCP-Tank02-080315, HCP-Tank03-080315, and HCP-Tank05-080315 100x: lead for HCP-Tank01-080315 TCLP and HCP-Tank02-080315 TCLP 200x: chromium and lead for HCP-Tank03-080315 TCLP 1,000x: chromium for HCP-Tank01-080315 TCLP and HCP-Tank02-080315 TCLP 1,000x: chromium and lead for HCP-Tank05-080315 TCLP 2,500x: hexavalent chromium for HCP-Tank01-080315, HCP-Tank02-080315, and HCP-Tank05-080315

Re-extraction and reanalysis:

Within Criteria	Exceedance/Notes
NA	

Second column confirmation (GC and HPLC analyses only):

Within Criteria	Exceedance/Notes
NA	

Internal Standards:

Within Criteria	Exceedance/Notes
NA	

Target analyte identification:

Within Criteria	Exceedance/Notes
Y	

Analyte quantitation and MDLs/RLs:

Within Criteria	Exceedance/Notes
Y	Laboratory flagged results between MDL and RL “J”

Tentatively identified compounds:

Within Criteria	Exceedance/Notes
NA	

System performance and instrument stability:

Within Criteria	Exceedance/Notes
Y	

Other [specify]:

Within Criteria	Exceedance/Notes
NA	

Overall Qualifications:

See results summary pages attached for changes to the laboratory qualifiers based upon this validation. The following is a list of qualifiers and definitions that may be used for the validation of this data package:

J	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased high.
J-	The analyte was positively identified; the associated value is the approximate concentration of the analyte in the sample and may be biased low.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated value is the approximate concentration of the analyte in the sample.
R	The sample result is rejected as unusable due to serious deficiencies in one or more quality control criteria. The analyte may or may not be present in the sample.
U	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit).
UJ	The analyte was analyzed for, but was not detected at or above the associated value (reporting limit), which is considered approximate due to deficiencies in one or more quality control criteria.

Hard Chrome Plating Site Waste Sample Results
ALS Environmental Work Order 1508060

Sample_ID	Date_collected	Lab_samp_no	Analyte	Lab_Result	Lab_qualifier	Units	MDL	RL	Val._Result	Val._Qualifier
HCP-D1-080315 TCLP	8/3/2015 12:55	1508060-01A	Mercury	0.0018	U	mg/L	0.000018	0.02	0.020	U
HCP-D1-080315 TCLP	8/3/2015 12:55	1508060-01A	Arsenic	0.59		mg/L	0.0014	0.25	0.59	
HCP-D1-080315 TCLP	8/3/2015 12:55	1508060-01A	Barium	0.78		mg/L	0.0006	0.25	0.78	
HCP-D1-080315 TCLP	8/3/2015 12:55	1508060-01A	Cadmium	0.038	U	mg/L	0.00076	0.5	0.50	U
HCP-D1-080315 TCLP	8/3/2015 12:55	1508060-01A	Chromium	0.9		mg/L	0.00015	0.5	0.90	
HCP-D1-080315 TCLP	8/3/2015 12:55	1508060-01A	Lead	1.3		mg/L	0.0019	0.25	1.3	
HCP-D1-080315 TCLP	8/3/2015 12:55	1508060-01A	Selenium	0.21	U	mg/L	0.0042	0.5	0.50	U
HCP-D1-080315 TCLP	8/3/2015 12:55	1508060-01A	Silver	0.044	J	mg/L	0.00038	0.25	0.044	J
HCP-D1-080315	8/3/2015 12:55	1508060-02A	Mercury	0.0012	U	mg/Kg	0.0017	0.014	0.014	U
HCP-D1-080315	8/3/2015 12:55	1508060-02A	Arsenic	0.35	J	mg/Kg	0.061	0.37	0.35	J
HCP-D1-080315	8/3/2015 12:55	1508060-02A	Barium	0.69		mg/Kg	0.12	0.37	0.69	
HCP-D1-080315	8/3/2015 12:55	1508060-02A	Cadmium	0.058	U	mg/Kg	0.039	0.74	0.74	U
HCP-D1-080315	8/3/2015 12:55	1508060-02A	Chromium	1.1		mg/Kg	0.008	0.37	1.1	
HCP-D1-080315	8/3/2015 12:55	1508060-02A	Lead	3.7		mg/Kg	0.03	0.37	3.7	
HCP-D1-080315	8/3/2015 12:55	1508060-02A	Selenium	0.42	J	mg/Kg	0.15	0.74	0.42	J
HCP-D1-080315	8/3/2015 12:55	1508060-02A	Silver	0.037	U	mg/Kg	0.025	0.37	0.37	U
HCP-D1-080315	8/3/2015 12:55	1508060-02A	Chromium, Hexavalent	0.27	U	mg/Kg	0.29	0.94	0.94	U
HCP-D1-080315	8/3/2015 12:55	1508060-02A	pH	14		s.u.			14	
HCP-Tank05-080315 TCLP	8/3/2015 12:51	1508060-03A	Mercury	0.35		mg/L	0.000018	0.02	0.35	
HCP-Tank05-080315 TCLP	8/3/2015 12:51	1508060-03A	Arsenic	140	*	mg/L	0.0014	0.25	140	
HCP-Tank05-080315 TCLP	8/3/2015 12:51	1508060-03A	Barium	1.3		mg/L	0.0006	0.25	1.3	
HCP-Tank05-080315 TCLP	8/3/2015 12:51	1508060-03A	Cadmium	0.038	U	mg/L	0.00076	0.5	0.50	U
HCP-Tank05-080315 TCLP	8/3/2015 12:51	1508060-03A	Chromium	120000	*	mg/L	0.00015	25	120000	
HCP-Tank05-080315 TCLP	8/3/2015 12:51	1508060-03A	Lead	9.9	J*	mg/L	0.0019	25	9.9	J
HCP-Tank05-080315 TCLP	8/3/2015 12:51	1508060-03A	Selenium	0.33	J	mg/L	0.0042	0.5	0.33	J
HCP-Tank05-080315 TCLP	8/3/2015 12:51	1508060-03A	Silver	1.8		mg/L	0.00038	0.25	1.8	
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	Mercury	0.41		mg/Kg	0.0017	0.13	0.41	
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	Arsenic	41		mg/Kg	0.061	3.5	41	
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	Barium	1.6	U	mg/Kg	0.12	3.5	3.5	U
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	Cadmium	0.54	U	mg/Kg	0.039	6.9	6.9	U
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	Chromium	110000		mg/Kg	0.008	35	110000	
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	Lead	5.9		mg/Kg	0.03	3.5	5.9	
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	Selenium	2.1	U	mg/Kg	0.15	6.9	6.9	U
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	Silver	0.81	J	mg/Kg	0.025	3.5	0.81	J
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	Chromium, Hexavalent	110000		mg/Kg	0.29	2500	110000	
HCP-Tank05-080315	8/3/2015 12:51	1508060-04A	pH	0		s.u.			1	<
HCP-Tank03-080315 TCLP	8/3/2015 12:47	1508060-05A	Mercury	0.09		mg/L	0.000018	0.01	0.090	
HCP-Tank03-080315 TCLP	8/3/2015 12:47	1508060-05A	Arsenic	27	*	mg/L	0.0014	0.25	27	
HCP-Tank03-080315 TCLP	8/3/2015 12:47	1508060-05A	Barium	4.2		mg/L	0.0006	0.25	4.2	

Hard Chrome Plating Site Waste Sample Results
ALS Environmental Work Order 1508060

Sample_ID	Date_collected	Lab_samp_no	Analyte	Lab_Result	Lab_qualifier	Units	MDL	RL	Val._Result	Val._Qualifier
HCP-Tank03-080315 TCLP	8/3/2015 12:47	1508060-05A	Cadmium	0.038	U	mg/L	0.00076	0.5	0.50	U
HCP-Tank03-080315 TCLP	8/3/2015 12:47	1508060-05A	Chromium	37000	*	mg/L	0.00015	5	37000	
HCP-Tank03-080315 TCLP	8/3/2015 12:47	1508060-05A	Lead	1100	*	mg/L	0.0019	5	1100	
HCP-Tank03-080315 TCLP	8/3/2015 12:47	1508060-05A	Selenium	0.21	U	mg/L	0.0042	0.5	0.50	U
HCP-Tank03-080315 TCLP	8/3/2015 12:47	1508060-05A	Silver	0.84		mg/L	0.00038	0.25	0.84	
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	Mercury	0.081		mg/Kg	0.0017	0.028	0.081	
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	Arsenic	7.2		mg/Kg	0.061	3.6	7.2	
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	Barium	4.3		mg/Kg	0.12	3.6	4.3	
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	Cadmium	0.56	U	mg/Kg	0.039	7.1	7.1	U
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	Chromium	34000		mg/Kg	0.008	36	34000	
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	Lead	930		mg/Kg	0.03	3.6	930	
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	Selenium	2.1	U	mg/Kg	0.15	7.1	7.1	U
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	Silver	0.36	U	mg/Kg	0.025	3.6	3.6	U
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	Chromium, Hexavalent	5		mg/Kg	0.29	1	5.0	
HCP-Tank03-080315	8/3/2015 12:47	1508060-06A	pH	0		s.u.			1	<
HCP-Tank04-080315 TCLP	8/3/2015 12:49	1508060-07A	Mercury	0.00069	J	mg/L	0.000018	0.002	0.00069	J
HCP-Tank04-080315 TCLP	8/3/2015 12:49	1508060-07A	Arsenic	0.96		mg/L	0.0014	0.25	0.96	
HCP-Tank04-080315 TCLP	8/3/2015 12:49	1508060-07A	Barium	0.87		mg/L	0.0006	0.25	0.87	
HCP-Tank04-080315 TCLP	8/3/2015 12:49	1508060-07A	Cadmium	0.038	U	mg/L	0.00076	0.5	0.50	U
HCP-Tank04-080315 TCLP	8/3/2015 12:49	1508060-07A	Chromium	1600	*	mg/L	0.00015	0.25	1600	
HCP-Tank04-080315 TCLP	8/3/2015 12:49	1508060-07A	Lead	19	*	mg/L	0.0019	0.25	19	
HCP-Tank04-080315 TCLP	8/3/2015 12:49	1508060-07A	Selenium	0.21	U	mg/L	0.0042	0.5	0.50	U
HCP-Tank04-080315 TCLP	8/3/2015 12:49	1508060-07A	Silver	0.072	J	mg/L	0.00038	0.25	0.072	J
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	Mercury	0.0045	J	mg/Kg	0.0017	0.014	0.0045	J
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	Arsenic	1.1		mg/Kg	0.061	0.36	1.1	
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	Barium	26		mg/Kg	0.12	0.36	26	
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	Cadmium	0.057	U	mg/Kg	0.039	0.73	0.73	U
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	Chromium	2400		mg/Kg	0.008	0.36	2400	
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	Lead	290		mg/Kg	0.03	0.36	290	
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	Selenium	0.22	U	mg/Kg	0.15	0.73	0.73	U
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	Silver	0.045	J	mg/Kg	0.025	0.36	0.045	J
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	Chromium, Hexavalent	1400		mg/Kg	0.29	44	1400	
HCP-Tank04-080315	8/3/2015 12:49	1508060-08A	pH	11		s.u.	0	0	11	
HCP-B1-080315	8/3/2015 12:35	1508060-09A	Flashpoint/Ignitability	71		F	0	0	71	
HCP-Tank02-080315 TCLP	8/3/2015 12:44	1508060-10A	Mercury	0.021		mg/L	0.000018	0.01	0.021	
HCP-Tank02-080315 TCLP	8/3/2015 12:44	1508060-10A	Arsenic	95	*	mg/L	0.0014	0.25	95	
HCP-Tank02-080315 TCLP	8/3/2015 12:44	1508060-10A	Barium	3.1		mg/L	0.0006	0.25	3.1	
HCP-Tank02-080315 TCLP	8/3/2015 12:44	1508060-10A	Cadmium	0.038	U	mg/L	0.00076	0.5	0.50	U
HCP-Tank02-080315 TCLP	8/3/2015 12:44	1508060-10A	Chromium	90000	*	mg/L	0.00015	25	90000	

Hard Chrome Plating Site Waste Sample Results
ALS Environmental Work Order 1508060

Sample_ID	Date_collected	Lab_samp_no	Analyte	Lab_Result	Lab_qualifier	Units	MDL	RL	Val._Result	Val._Qualifier
HCP-Tank02-080315 TCLP	8/3/2015 12:44	1508060-10A	Lead	16	*	mg/L	0.0019	2.5	16	
HCP-Tank02-080315 TCLP	8/3/2015 12:44	1508060-10A	Selenium	0.21	U	mg/L	0.0042	0.5	0.50	U
HCP-Tank02-080315 TCLP	8/3/2015 12:44	1508060-10A	Silver	1.4		mg/L	0.00038	0.25	1.4	
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	Mercury	0.032		mg/Kg	0.0017	0.015	0.032	
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	Arsenic	27		mg/Kg	0.061	3.5	27	
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	Barium	2.7	J	mg/Kg	0.12	3.5	2.7	J
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	Cadmium	0.55	U	mg/Kg	0.039	7	7.0	U
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	Chromium	79000		mg/Kg	0.008	35	79000	
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	Lead	14		mg/Kg	0.03	3.5	14	
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	Selenium	2.1	U	mg/Kg	0.15	7	7.0	U
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	Silver	0.45	J	mg/Kg	0.025	3.5	0.45	J
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	Chromium, Hexavalent	90000		mg/Kg	0.29	2500	90000	
HCP-Tank02-080315	8/3/2015 12:44	1508060-11A	pH	0		s.u.			1	<
HCP-C1-080315	8/3/2015 13:01	1508060-12A	pH	0		s.u.			1	<
HCP-Tank01-080315 TCLP	8/3/2015 12:42	1508060-13A	Mercury	0.15		mg/L	0.000018	0.01	0.15	
HCP-Tank01-080315 TCLP	8/3/2015 12:42	1508060-13A	Arsenic	110	*	mg/L	0.0014	0.25	110	
HCP-Tank01-080315 TCLP	8/3/2015 12:42	1508060-13A	Barium	2.2		mg/L	0.0006	0.25	2.2	
HCP-Tank01-080315 TCLP	8/3/2015 12:42	1508060-13A	Cadmium	0.14	J	mg/L	0.00076	0.5	0.14	J
HCP-Tank01-080315 TCLP	8/3/2015 12:42	1508060-13A	Chromium	100000	*	mg/L	0.00015	25	100000	
HCP-Tank01-080315 TCLP	8/3/2015 12:42	1508060-13A	Lead	7.2	*	mg/L	0.0019	2.5	7.2	
HCP-Tank01-080315 TCLP	8/3/2015 12:42	1508060-13A	Selenium	0.22	J	mg/L	0.0042	0.5	0.22	J
HCP-Tank01-080315 TCLP	8/3/2015 12:42	1508060-13A	Silver	1.5		mg/L	0.00038	0.25	1.5	
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	Mercury	0.19		mg/Kg	0.0017	0.13	0.19	
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	Arsenic	29		mg/Kg	0.061	3.3	29	
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	Barium	2.5	J	mg/Kg	0.12	3.3	2.5	J
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	Cadmium	0.52	U	mg/Kg	0.039	6.7	6.7	U
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	Chromium	76000		mg/Kg	0.008	33	76000	
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	Lead	13		mg/Kg	0.03	3.3	13	
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	Selenium	2	U	mg/Kg	0.15	6.7	6.7	U
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	Silver	0.63	J	mg/Kg	0.025	3.3	0.63	J
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	Chromium, Hexavalent	82000		mg/Kg	0.29	2600	82000	
HCP-Tank01-080315	8/3/2015 12:42	1508060-14A	pH	0		s.u.			1	<