ENVIRONMENTAL INVESTIGATIONS SUMMARY

INTRODUCTION

GO Spectrum NW, LLC (Spectrum) prepared this Environmental Investigations Summary to provide the Washington State Department of Ecology (Ecology) Volunteer Cleanup Program (VCP) with a synopsis of environmental investigations conducted at an industrial property known as the Former Scott Galvanizing Parcel. The purpose of the past investigations were to characterize the soil and ground water conditions at the property. The Former Scott Galvanizing Parcel is located at 1520 NW Leary Way in Seattle, Washington 98107. The property owner, Mr. Todd Sims of the Light Space Shadow Leary LLC requested the submittal of the property into the Ecology VCP to determine if a No Further (NFA) designation could be attained for his property.

SITE OVERVIEW

The Former Scott Galvanizing Parcel building was occupied by industrial tenants for 65 years (1950-2015). The subject property is a King County parcel encompassing a total of 18,000 square feet (0.43-acre) with a gentle northeast to southwest slope. The site is a fully developed industrial property with an 18,000-square foot single-story industrial building. The industrial building is wood frame, with cinder block, wood, and corrugated steel exteriors and gabled roof. The site features frontages on NW Leary Way and NW 49th Street.

ADJACENT PROPERTIES

The subject property is bound on the north by NW 49th Street and an industrial building beyond. NW Leary Way binds the subject property to the south and there is a commercial self-storage building beyond. The subject property is bounded on the east by a brewery and 15th Avenue NW beyond. The subject property is bound on the west by two commercial lots occupied by the storage yard for Big D Towing and Walt's Organic Fertilizer shop.

INTERIOR

The former galvanizing plant has two distinct areas. The Upper Plant area covers the north half of the property building and has a concrete floor. Most recently the west half of this portion of the building was used to store acid and raw zinc. Sanborn historical map review indicated that a foundry was once located in the east half of this portion of the property building. The dip tanks were remove in 2017.

The Lower Plant area was the location within the property building where the galvanizing operations took place. The flooring in this portion of the property building is a combination of concrete pad surrounding the dip tanks with the remaining portions of flooring consisting of dirt. This portion of the property has five dip tanks and each of these tanks has secondary containment consisting of four large concrete vaults with steel grading.

CHEMICAL STORAGE

Past on-site galvanizing operations required the use and storage of the following chemicals:

- Sodium hydroxide (NaOH): commonly called Caustic Soda, Seattle Galvanizing used the caustic soda in the manufacturing process. During past operations, a vendor supplied the caustic soda in liquid form via tanker. The spent caustic soda was collect from the caustic dip tank by a commercial chemical recycler.

- Sulfuric Acid (H_2SO_4): a 750-gallon AST was used to mix an acid-water solution used in the galvanizing process; storage was limited to the 750 gallon AST located in the north portion of the building.
- Ammonia (NH_3): stored on-site as dry powder, typically 1,000 to 2,000 pounds stored in the north portion of the building.
- Zinc: raw metal in blocks, typically 20,000 to 25,000 pounds of zinc were stored in the north portion of the building.

SOILS ASSESSMENT

Spectrum field personnel supervised the installation of eight soil sampling borings at the Former Scott Galvanizing Parcel. A total of ten soil samples were collected as part of the Phase II ESA. The samples were collected from the depth interval of 0.5 to 11.1 feet below ground surface (BGS).

Spectrum supervised the installation of eight sample borings that were dispersed to characterize subsurface conditions at the Former Scott Galvanizing property. More specifically:

- Borings SB1, SB2, SB6, SB7, and SB8 were placed on the Lower Plant (south) portion of the property building to test the soils in the dip tank are for pH, zinc, and lead.
- Boring SB3 was placed on the southwest portion of the Upper Plant (north) portion of the property building to test the site soils in the acid storage area for pH and zinc.
- Borings SB 4 and SB5 were placed on the west and east edges of the Upper Plant to test soils in the former foundry and raw zinc storage areas for lead and zinc.

ANALYTICAL PROTOCOL

Based on the knowledge that the project site had a 70-year history as a galvanizing plant we tested soil samples for lead and zinc utilizing US EPA Test Method 6020 Series. In addition, we tested the pH of soil samples utilizing US EPA Test Method 9045D.

SOIL ANALYTICAL RESULTS

Lead was detected in two analyzed soil samples. The detected levels of lead were 6.3 and 34 mg/kg in samples GLC-SB5-01 and GLC-SB7-02, respectively.

Zinc was detected in all eight analyzed samples. The detected concentration of zinc in the tested site soils ranged from 28 to 1800 mg/kg.

Spectrum submitted four soil samples for pH analysis. Three samples exhibited acidic pH and the measured pH ranged from 4.89 to 5.17. One sample had a pH of 9.69.

The soil analytical results are summarized in Table 1 in Appendix A. The soil boring locations and analytical results are plotted in Figure 1 in Appendix B.

GROUND WATER ASSESSMENT

The four ground water monitoring wells were installed in the property building interior. The well locations were dispersed to characterize subsurface conditions at the Former Scott Galvanizing property. More specifically:

- Monitoring well GLC-MW1 was placed on the northwest portion of the Upper Plant,

north portion of the property building to test ground water beneath the acid storage and raw zinc storage areas for arsenic, cadmium, chromium, mercury lead, and zinc.

- Monitoring well GLC-MW2 was placed on the northeast part of the Upper Plant, north portion of the property building to test ground water beneath the former foundry for arsenic, cadmium, chromium, mercury lead, and zinc.
- Monitoring wells GLC-MW3 and GLC-MW4 were placed on the Lower Plant, south portion of the property building to test the ground water beneath the pickle and zinc dip tank areas for arsenic, cadmium, chromium, mercury lead, and zinc.

Spectrum collected soil samples from the screened sections of the ground water monitoring well borings.

ANALYTICAL PROTOCOL

Based on the site history as a galvanizing plant we tested the monitoring well boring soil samples for Washington State Model Toxics Control Act (MTCA) Metals and zinc. The MTCA Metals are arsenic, cadmium, chromium, mercury, and lead. The MTCA Metals and zinc soil samples were analyzed utilizing Total Metals in Soil method with US EPA Test Method 6020 Series. The ground water samples were also tested for MTCA Metals and zinc. The MTCA Metals and zinc water samples were analyzed utilizing Total Metals in Water method with US EPA Test Method 6020 Series.

ANALYTICAL RESULTS FOR SOIL SAMPLES FROM MONITORING WELLS

Lead was detected in one of the analyzed soil samples. The detected level of lead was 6.6 milligrams per kilogram (mg/kg) in sample GLC-MW3-02S. In addition, chromium in concentrations ranging from 15 to 28 mg/kg was detected in all three analyzed soil samples. Zinc was detected in all three analyzed soil samples (GLC-MW1-03S, GLC-MW3-02S, and GLC-MW4-02S). The detected concentration of zinc in the tested site soils ranged from 20 to 250 mg/kg. Analytical results indicate that no cadmium, arsenic, or mercury were detected in the soil samples from subject property. A summary of these results is provided in Table 2 in Appendix A.

GROUND WATER ANALYTICAL RESULTS

Spectrum submitted four ground water samples for MTCA Metals analysis. In addition, the four ground water samples were also tested for zinc content.

Arsenic, cadmium, and zinc were detected in the ground water samples. Arsenic was detected in samples GLC-MW3-01 and GLC-MW4-01 in concentrations of 11 micrograms per liter (µg/L) and 5.6 µg/L, respectively. Cadmium was detected in the ground water sample GLC-MW3-01 in a concentration of 9.6 µg/L. Zinc was detected in the four ground water samples in concentrations ranging from 750 µg/L in sample GLC-MW4-01 to 50,000 µg/L in sample GLC-MW3-01. Analytical results indicate that no cadmium, arsenic, or mercury were detected in the ground water samples from subject property.

The soil and ground water analytical results are summarized in Tables 2 and 3, respectively in Appendix A. The monitoring well locations and analytical results are plotted in Figure 2 in Appendix B.

GROUNDWATER

Wet soils were generally encountered at depths ranging from 10 to 11 feet BGS within the well borings. The static water levels in the monitoring wells ranged from 9.2 feet BGS in monitoring well GLC-MW1 to 12.1 feet BGS in monitoring well GLC-MW4. The interpreted ground water flow direction is southwest and the estimated gradient is 0.02.

REMEDIAL ACTIONS

The dip tanks were removed in 2016, by the former property owner, Mr. Justin Goff. Mr. Goff informed the current owner, Mr. Todd Sims that there is no documentation dealing with the removal of the dip tanks.

Also in 2016, Mr. Goff chose to cap the heavy metals impacted soils with a 6-inch diameter concrete pad. The pad was placed over the entire south portion of the site building. Mr. Goff did not know if the two ground water monitoring wells is the south portion of the site were saved. Mr. Sims believes that the wells were destroyed during the pad installation.

APPENDIX A: TABLES

TABLE 1: SOIL SAMPLES ANALYTICAL RESULTS METALS[1]

SAMPLE	SOURCE LOCATION	LEAD (mg/kg)[2]	ZINC (mg/kg)[2]
GLC-SB1-02	Soil Boring GLC-SB1 Lower Plant area, four feet south and two feet west of the southeast corner of the caustic dip tank; 8.2 – 10.0 feet BGS.	NA[3]	12
GLC-SB2-02	Soil Boring GLC-SB2, Lower Plant area, nine feet south and nine feet east of the southwest corner of the sulfuric acid dip tank; 6.0 – 7.5 feet BGS.		180
GLC-SB3-02	Soil Boring GLC-SB3, Upper Plant area, 27 feet east and 18 feet north of the building midpoint; 5.0 -6.5 feet BGS.		**650**
GLC–SB4-01	Soil Boring GLC-SB4 Upper Plant area, located eleven feet east and 49 feet north of the building midpoint; 3.5 –5.3 feet BGS.	ND[4]	28
GLC–SB5-01	Soil Boring GLC-SB5 Upper Plant area, located 65 feet south and 70 feet west of the northeast corner of the building; 4.5 – 5.3 feet BGS.	6.3	**1,800**
GLC–SB6-02	Soil Boring GLC-SB6 Lower Plant area, nine feet north and seven feet west of the southwest corner of the ammonia dip tank; 6.5 –9.2 feet BGS.		**860**
GLC–SB7-02	Soil Boring GLC-SB7 Lower Plant area, 21 feet north and seven feet west of the southwest corner of the zinc dip tank; 6.2 – 7.3 feet BGS.	34	**6,700**
GLC–SB8-02	Soil Boring GLC-SB8 Lower Plant area, nine feet south and three feet west of the southwest corner of the zinc dip tank; 8.3 – 11.1 feet BGS.	ND	390
[5]Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Industrial Properties (August 15, 2001).		1,000	---
[6]MTCA Priority Contaminants of Ecological Concern for Sites that Qualify for Simplified Terrestrial Ecological Evaluation Procedure		---	570

EXPLANATION

[1]Lead and zinc analysis using EPA Test Method 6020 Series;
[2]Analytical values reported in milligrams per kilograms (mg/kg) - parts per million;
[3]NA – Not Analyzed;
[4]ND - Not Detected, Test Method Detection Limits – lead (5.0 parts per million) and zinc (5.0 parts per million);
[5]Bold- signifies exceedance of regulatory cleanup level;
[6]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Unrestricted Land Uses (WAC 173-340-745); and
[7]MTCA WAC 173-340-900.

TABLE 2: SOILS ANALYTICAL RESULTS METALS[1]

Sample	Source Location	Arsenic[2]	Cadmium[2]	Chromium[2]	Mecury[2]	Lead[2]	Zinc[2]
GLC-MW1-03S	Boring for monitoring well GLC-MW1, Upper Plant area, 22 feet east and 34 feet north of the building midpoint; 11.0 – 12.0 feet BGS.	ND	ND	15	ND	ND	ND[3]
GLC-MW3-02S	Boring for monitoring well GLC-MW3, Lower Plant area, 21 feet north and 12 feet west of the southwest corner of the zinc dip tank; 10.0 to 11.0 feet BGS.	ND	ND	28	ND	6.6	ND
GLC-MW4-02S	Boring for monitoring well GLC-MW4, Lower Plant area, five feet south and 15 feet east of the midpoint of the east side of the sulfuric acid dip tank; 10.0 to 11.0 feet BGS.	ND	ND	21	ND	ND	ND
[5]Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels for Industrial Properties (August 15, 2001).		20	2	2,000	2	1,000	---
[6]MTCA Priority Contaminants of Ecological Concern for Sites that Qualify for Simplified Terrestrial Ecological Evaluation Procedure		---	---	---	---	---	570

EXPLANATION

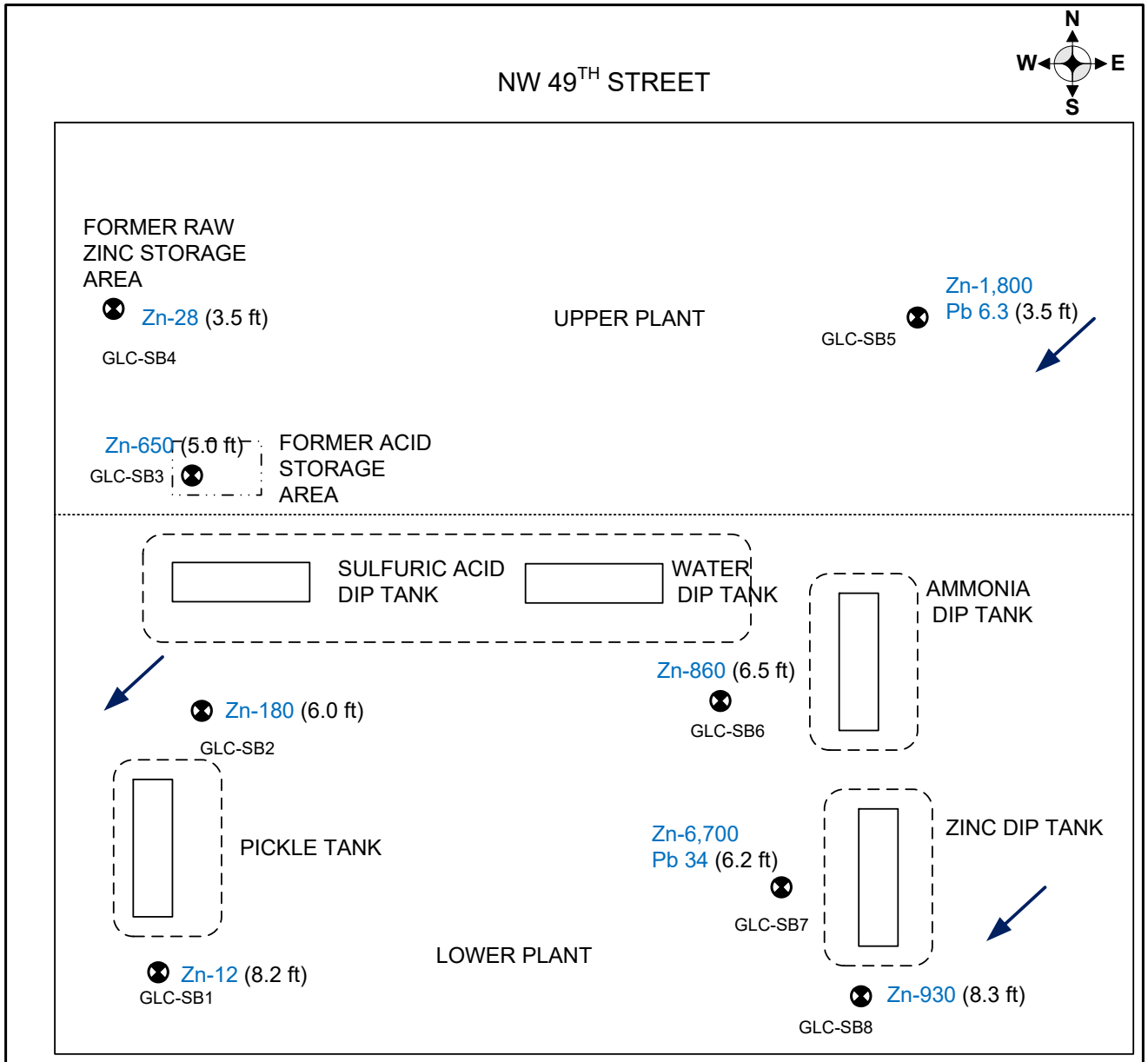
[1]Total Metals in Soil by EPA-6020 Series; [2]Analytical values reported in milligrams per kilograms (mg/kg); [3]Not Detected, Below Test Method Reporting Limits – arsenic (5.0 mg/kg), cadmium (1.0 mg/kg), chromium (5.0 mg/kg), mercury (0.5 mg/kg), lead (5.0 mg/kg), and zinc (5.0 mg/kg); [4]Bold- signifies exceedance of regulatory cleanup level; [5]MTCA - Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels For Industrial Properties (WAC 173-340-900); and [6]MTCA WAC 173-340-900 Table 749-2.

TABLE 3: GROUND WATER ANALYTICAL RESULTS METALS[1]							
Sample	**Source Location**	**Arsenic[2]**	**Cadmium[2]**	**Chromium[2]**	**Mecury[2]**	**Lead[2]**	**Zinc[2]**
GLC-MW1-01	Boring for monitoring well GLC-MW1, Upper Plant area, 22 feet east and 34 feet north of the building midpoint.	ND	ND	ND	ND	ND	1,700
GLC-MW2-01	Boring for monitoring well GLC-MW2, Upper Plant area, located 65 feet south and 80 feet west of the northeast corner of the building.	ND	3.2	ND	ND	ND[3]	**6,000**[4]
GLC-MW3-01	Boring for monitoring well GLC-MW3, Lower Plant area, 21 feet north and 12 feet west of the southwest corner of the zinc dip tank.	**11**	**9.6**	ND	ND	ND	**50,000**
GLC-MW4-01	Boring for monitoring well GLC-MW4, Lower Plant area, five feet south and 15 feet east of the midpoint of the east side of the sulfuric acid dip tank.	**5.6**	ND	ND	ND	ND	750
[5]Washington Model Toxics Control Act (MTCA) Method A Cleanup Levels Ground Water (August 15, 2001).		5	5	50	2	15	---
EPA Secondary Drinking Water Regulations Secondary Maximum Contaminant Levels (SMCLs)		---	---	---	---	---	5,000

EXPLANATION

[1]Total Metals in Water by EPA-6020 Method; [2]Analytical values reported in micrograms per liters (µg/L); [3]Not Detected, Below Test Method Reporting Limits – arsenic (2.0 µg/L), cadmium (2.0 µg/L), chromium (10 µg/L), mercury (1.0 µg/L), lead (2.0 µg/L), and zinc (2.0 µg/L); [4]Bold- signifies exceedance of regulatory cleanup level; [5]MTCA - Washington Model Toxics Control Act (MTCA) Method A Ground Water Cleanup Levels (WAC 173-340-900).

APPENDIX B: FIGURES



EXPLANATION

GLC-SB3 SOIL BORING LOCATION

Zn-12 (8.2 ft) METALS RESULTS IN mg/kg & Depth Detected

DIP TANK WITH SECONDARY CONTAINMENT

INTERPRETED GW FLOW DIRECTION

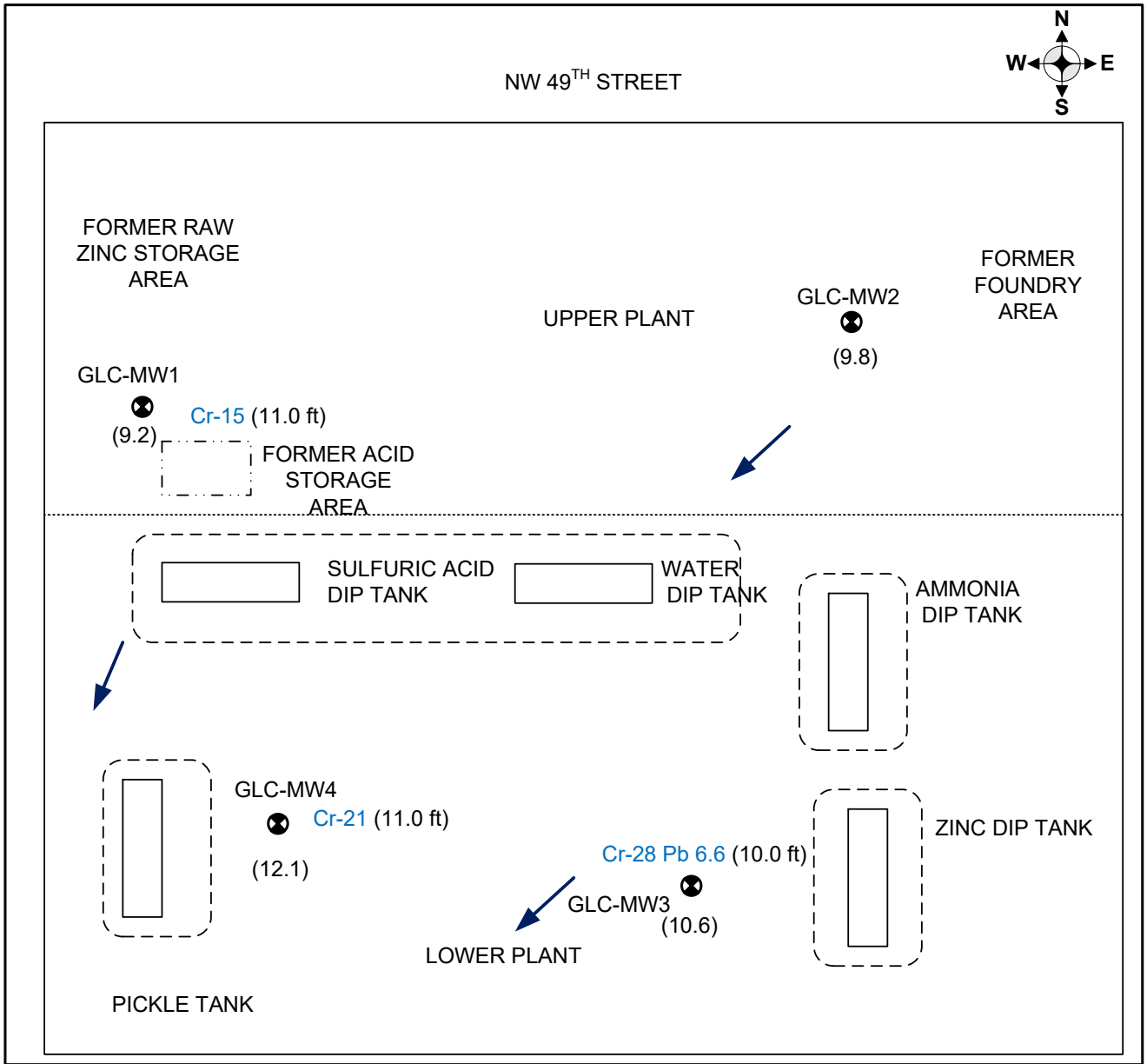
NOT TO SCALE

FIGURE 1

LIGHT SPACE SHADOW LEARY LLC
ECOLOGY VCP SITE SUMMARY
SOIL ANALYSIS RESULTS
FORMER SCOTT GALVANIZING PARCEL
1520 NW LEARY WAY
SEATTLE, WASHINGTON 98107

SITE PLOT PLAN

GO Spectrum NW, LLC	February 2018



EXPLANATION

- MONITORING WELL LOCATION
- Zn-12 (8.2 ft) METALS RESULTS IN mg/kg & Depth Detected
- (13.2) DEPTH TO WATER IN FEET BELOW GROUND SURFACE WITH SURFACE ELEVATION ADJUSTMENT
- DIP TANK WITH SECONDARY CONTAINMENT
- INTERPRETE GW FLOW DIRECTION

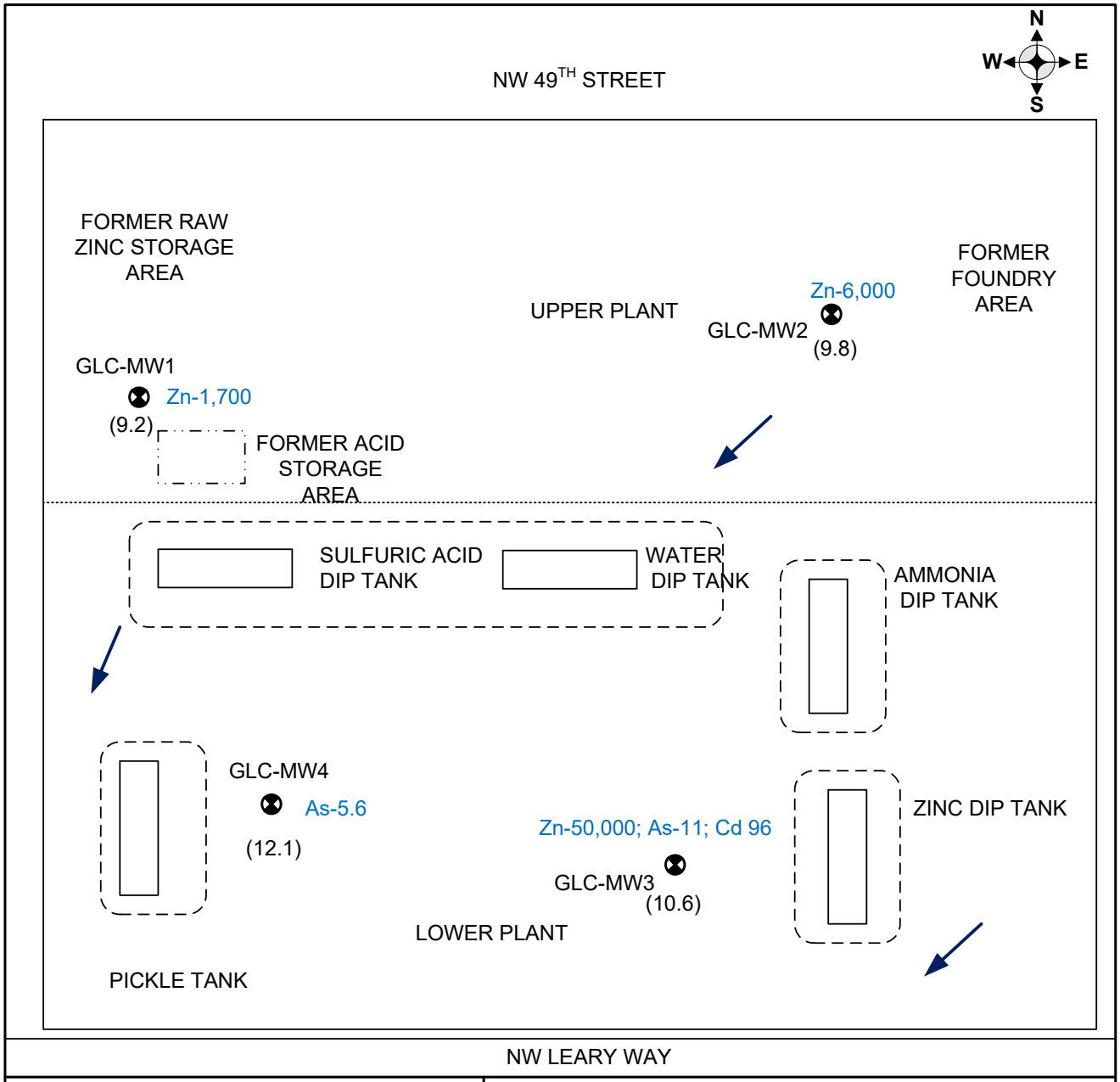
NOT TO SCALE

FIGURE 2

LIGHT SPACE SHADOW LEARY LLC
ECOLOGY VCP SITE SUMMARY
MONITORING WELL SOIL ANALYSES RESULTS
FORMER SCOTT GALVANIZING PARCEL
1520 NW LEARY WAY
SEATTLE, WASHINGTON 98107

SITE PLOT PLAN

GO Spectrum NW, LLC	February 2018



EXPLANATION

- MONITORING WELL LOCATION
- Zn-1,700 METALS RESULTS IN µg/L
- (13.2) DEPTH TO WATER IN FEET BELOW GROUND SURFACE WITH SURFACE ELEVATION ADJUSTMENT
- DIP TANK WITH SECONDARY CONTAINMENT
- INTERPRETED GW FLOW DIRECTION

NOT TO SCALE

FIGURE 3

LIGHT SPACE SHADOW LEARY LLC
ECOLOGY VCP SITE SUMMARY
GROUND WATER ANALYSES RESULTS
FORMER SCOTT GALVANIZING PARCEL
1520 NW LEARY WAY
SEATTLE, WASHINGTON 98107

SITE PLOT PLAN

GO Spectrum NW, LLC	February 2018