August 31, 2016

U.S. Environmental Protection Agency, Region 9
Water Enforcement Section II
75 Hawthorne Street (ENF 3-2)
San Francisco, CA 94105-3901

Attention: Juliet Hannafin

Subject: Interim Sediment Investigation Results and Proposed Additional Sediment Sampling
Sims Group USA Corporation, Redwood City, California

Dear Ms. Hannafin:

In accordance with Paragraph 12 of the Consent Decree between the United States Environmental Protection Agency (EPA) and Sims Group USA Corporation (Sims), Case 3:14-cv-04209, effective December 1, 2014 ("the Consent Decree"), and the Final Sediment Sampling and Analysis Plan and Quality Assurance Project Plan (SSAP/QAPP), approved by EPA on April 25, 2016, Terraphase Engineering Inc. (Terraphase) has performed characterization of the marine sediment within a portion of Redwood Creek ("the Project Area") to evaluate if the shared-use area underneath and proximate to Sims' ship-loading conveyor ("the Conveyor") located at Wharf 3 at the Port of Redwood City ("the Port") has been affected by total metals and polychlorinated biphenyls (PCBs) associated with Sims' scrap metal ship-loading activities.

Work was completed in general accordance with the Final SSAP/QAPP. Sediment samples were collected between June 6 and June 15, 2016, and analyzed by Eurofins Calscience Environmental Laboratories in Garden Grove, California. After evaluating the results of the primary sediment samples, Sims elected to analyze all contingency sediment samples collected from additional transects to the north and south of the original Project Area. Based on the preliminary evaluation of the primary and contingency data, Sims has determined that additional characterization is warranted pursuant to the Consent Decree objectives, to assess both the lateral and vertical extent of the potentially affected area.

On behalf of Sims, Terraphase has prepared this letter to briefly summarize the key investigation findings and to describe the proposed supplemental site characterization activities. The available data are provided herein, in the attached tables and figures. The laboratory data, as well as sediment sampling logs and photos, can be provided at your request. Sims proposes that the additional sediment characterization proposed herein be completed, and that the new data and information, combined with the results summarized in this letter, be presented in a single comprehensive report. The data evaluation presented in this letter is preliminary in nature, given that additional data collection is proposed. Pending completion of characterization activities, we are reserving judgment on the extent to which any of the sampling results may be attributable to Sims' operations.

## KEY FINDINGS

### Scrap Metal

Small amounts of scrap metal were observed in sediment from 13 sample locations of the total 52 locations sampled in the Project Area. Most of the locations where scrap metal was observed were limited to an area within 40 feet of the concrete apron. The extent of observed scrap metal impacts in the Project Area has been sufficiently characterized by the completed investigative activities.

### Sediment Chemistry

Metals and PCBs were found to be elevated in the Project Area relative to background concentrations. Metal concentrations were consistently higher in the primary area than in the contingency area. Of the metals, copper, lead, and zinc concentrations had the largest relative exceedances of their respective 95% Upper Tolerance Limit (UTL) background concentrations in both the primary and contingency areas.

***Lateral Distribution:*** Concentrations of metals and PCBs were highest in subtidal (i.e., non-riprap) sediment in close proximity to the concrete apron, and along the intertidal riprap shoreline on either side of the concrete apron. Concentrations of metals and PCBs in subtidal sediment generally decreased with distance from the concrete apron, both to the south and north.

With the exception of zinc at one location, the concentrations of metals in the northernmost subtidal contingency sediment samples were below their respective 95%UTL background concentrations. Metals concentrations were also generally below their respective 95%UTL background concentrations in sediments collected from the southernmost contingency sampling locations, with the exception of relatively small exceedances of the lead and zinc 95%UTL background concentrations at selected locations.

Total PCB concentrations were below the 95%UTL background concentrations in most subtidal sediment samples. Total PCB concentrations were below the 95%UTL background concentrations in all contingency subtidal sediment samples to the south of the concrete apron and in the northernmost subtidal sediment samples. Therefore, the lateral extent of PCBs in subtidal sediment in the Project Area has been sufficiently characterized.

Metals and total PCB concentrations in sediment collected from the intertidal (i.e., riprap) area generally exceeded their respective 95%UTL background concentrations. However, the background samples were all collected in subtidal areas near Wharves 2, 4, and 5, and not in intertidal areas, and therefore the background metals and PCB concentrations may not be relevant or appropriate for screening intertidal sediment data from the Project Area.

***Vertical Distribution:*** Three sediment cores were collected in the primary area south of the concrete apron, to depths between 2.1 and 3 feet below the sediment surface (bss). Copper, lead, zinc, and total PCB concentrations show similar vertical trends. At the two locations within approximately 20 feet of the concrete apron, copper, lead, zinc, and PCB concentrations were highest in the intermediate-depth (1.5-to-2-foot-bss) sediment sample. By contrast, copper, lead, zinc, and PCB concentrations in sediment approximately 40 feet south of the concrete apron, were highest in the surface sample and decreased with depth. The copper concentration in the deepest sample at this location was below the 95%UTL

background concentration, and lead, and zinc concentrations were only slightly above their 95%UTL background concentrations for subsurface sediment.

Total PCB concentrations in all three samples from the core collected 40 feet south of the concrete apron were all below the 95%UTL background concentration.

***Comparison with Redwood Creek Reference PCB Concentrations:*** The range of total PCB concentrations in the background areas was similar to the range found in sediment from reference locations in Redwood Creek. Therefore, the data from the background areas is representative of subtidal conditions in Redwood Creek.

Most of the Project-Area subtidal (i.e., non-riprap) sediment samples also contained total PCB concentrations within the range of total PCB concentrations in the Redwood Creek reference samples. However, most of the project-area intertidal (i.e., riprap) sediment samples contained total PCB concentrations above the range of total PCB concentrations in the Redwood Creek reference samples.

## PROPOSED ADDITIONAL SEDIMENT SAMPLING

Based on the results of this investigation, Sims has determined that additional characterization is necessary to achieve the objectives of the Consent Decree. The following section summarizes the proposed supplemental site characterization activities.

### Lateral Extent of Metals within the Project Area

The extent of metals exceeding background in surface sediment is generally well established based on the current data. One additional transect of subtidal surface samples is proposed on the both the north and south margins of the Project Area, for a total of five additional subtidal surface samples. The proposed additional surface-sediment sample locations are shown on Figure 17. The samples will be collected using a Ponar sampler and analyzed for Title 22 metals and moisture content, in accordance with methods presented in the Final SSAP/QAPP.

### Vertical Extent of Metals and PCBs within the Project Area

Additional sediment coring is proposed to provide characterization of the vertical extent of metals and PCBs in the Project Area. Ten additional sediment coring locations are proposed (Figure 17). The proposed coring locations are coincident with prior sample locations. Three of the proposed coring locations (W3-7, W3-8 and W3-9) were previously cored during the initial investigation to a depth of 3 feet bss. The cores will be advanced to a target depth of 5 feet bss, using the vibracore method.

Subsurface samples will be collected and analyzed for the same constituent suite used for the primary and contingency samples, at depths of 1.5-2.0 feet, 2.5-3.0 feet, 3.5-4.0 feet, and 4.5-5.0 feet bss. At stations W3-7, W3-8 and W3-9, samples will only be collected and analyzed from depths of 3.5-4.0 feet bss, and 4.5-5.0 feet bss, because shallower data at these locations are already available.

Samples collected from sediment cores will be analyzed for Title 22 metals, PCBs (Aroclors), and moisture content, in accordance with methods presented in the Final SSAP/QAPP.



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**Intertidal Area Background**

All background samples were collected in subtidal areas near Wharves 2, 4, and 5. The currently available background data set may not provide a suitable reference for samples collected in the intertidal portion of the Project Area. Additional surface sediment sampling is proposed in intertidal areas adjacent to the previously sampled background areas near Wharves 2, 4, and 5 to establish background concentrations for the intertidal environment. Six sediment samples will be collected from the riprap in each of the three background areas, for a total of 18 background samples. The locations of additional riprap sediment sample locations are presented on Figures 18a, b, and c. Sediment samples will be analyzed for Title 22 metals, PCBs (Aroclors), and moisture content.

Additional sampling of Project-Area intertidal sediments is not proposed at this time. The existing data will be screened against the 95%UTL background concentrations to be established for intertidal sediment. Additional sampling of Project-Area intertidal sediments may be proposed depending on the outcome of data screening against background.

**Sampling and Analysis Plan**

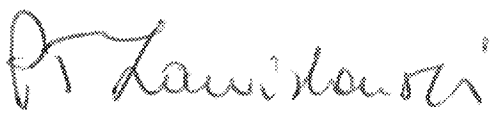
The proposed investigation will be conducted in general accordance with the approved Final SSAP/QAPP. The only deviation in field methods relative to the Final SSAP/QAPP is the proposed use of the vibracore sediment coring method. A standard operating procedure for coring using the vibracore method is attached.

**CLOSING**

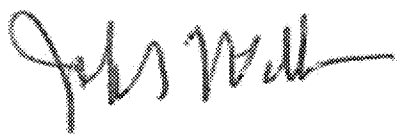
Sims is committed to complying with the objectives of the Consent Decree, and believes that the proposed additional sediment sampling will help achieve the investigation objectives. Terraphase and Sims appreciate the EPA's review of the investigative results to date. We look forward to meeting with you to discuss the proposed approach for the completion of site characterization.

If you have any questions or comments regarding the information in the letter, please contact Peter Zawislanski at peter.zawislanski@terraphase.com or 510-645-1858.

For Terraphase Engineering Inc.



Peter Zawislanski, PG, CHG
Principal Hydrogeologist



Jeff Wallace, PG
Principal Geologist

cc: Rich Campbell, EPA
Melisa Cohen, Sims Metal Management
Steven Shinn, Sims Metal Management
Scott Miller, Esq., Sims Metal Management
Margaret Rosegay, Esq., Pillsbury Winthrop Shaw Pittman

Enclosures:

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**Vibracore Sediment Sampling SOP**



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**Table 1**
Sampling Location Coordinates - Target and Actual
Sediment Investigation Report
Sims Metal Managment, Redwood City, California

| Area | Sample Location | Target | | Actual | |
|---|---|---|---|---|---|
| | | Easting | Northing | Easting | Northing |
| Wharf 2 | W2-01 | 6065533.997 | 2013564.045 | 6065544.855 | 2013557.345 |
| | W2-02 | 6065547.615 | 2013557.745 | 6065565.102 | 2013548.35 |
| | W2-03 | 6065561.232 | 2013551.445 | 6065581.341 | 2013542.937 |
| | W2-04 | 6065527.511 | 2013589.071 | 6065530.965 | 2013584.781 |
| | W2-05 | 6065541.129 | 2013582.77 | 6065552.681 | 2013576.749 |
| | W2-06 | 6065554.746 | 2013576.47 | 6065575.186 | 2013568.318 |
| | W2-07 | 6065568.364 | 2013570.17 | 6065591.087 | 2013562.432 |
| | W2-08 | 6065548.283 | 2013600.559 | 6065568.302 | 2013603.333 |
| | W2-09 | 6065561.9 | 2013594.259 | 6065586.09 | 2013589.987 |
| | W2-10 | 6065575.517 | 2013587.959 | 6065599.254 | 2013580.83 |
| Wharf 3 | W3-01 | 6065360.964 | 2013013.452 | 6065356.263 | 2013018.054 |
| | W3-02 | 6065380.236 | 2013008.083 | 6065375.815 | 2013013.005 |
| | W3-03 | 6065366.331 | 2013032.511 | 6065361.051 | 2013035.461 |
| | W3-04 | 6065385.603 | 2013027.143 | 6065379.206 | 2013027.416 |
| | W3-05 | 6065371.941 | 2013051.764 | 6065369.322 | 2013052.178 |
| | W3-06 | 6065391.213 | 2013046.396 | 6065386.453 | 2013042.909 |
| | W3-07 | 6065410.484 | 2013041.028 | 6065408.346 | 2013043.743 |
| | W3-08 | 6065404.875 | 2013021.775 | 6065397.549 | 2013026.451 |
| | W3-09 | 6065399.508 | 2013002.716 | 6065396.338 | 2013011.017 |
| | W3-10 | 6065418.78 | 2012997.347 | 6065413.816 | 2012997.361 |
| | W3-11 | 6065424.146 | 2013016.407 | 6065419.679 | 2013018.511 |
| | W3-12 | 6065429.756 | 2013035.66 | 6065430.021 | 2013036.848 |
| | W3-13 | 6065449.028 | 2013030.292 | 6065439.909 | 2013029.283 |
| | W3-14 | 6065443.418 | 2013011.039 | 6065445.641 | 2013011.492 |
| | W3-15 | 6065438.052 | 2012991.98 | 6065436.938 | 2012994.404 |
| | W3-16 | 6065432.199 | 2012972.533 | 6065432.45 | 2012976.344 |
| | W3-17 | 6065426.431 | 2012953.305 | 6065427.587 | 2012956.996 |
| | W3-18 | 6065421.089 | 2012935.17 | 6065420.615 | 2012937.234 |
| | W3-19 | 6065401.817 | 2012940.538 | 6065394.341 | 2012938.84 |
| | W3-20 | 6065407.159 | 2012958.673 | 6065400.154 | 2012958.083 |
| | W3-21 | 6065412.927 | 2012977.901 | 6065407.239 | 2012977.293 |
| | W3-22 | 6065459.077 | 2013054.193 | 6065457.5 | 2013068.122 |
| | W3-23 | 6065464.33 | 2013074.05 | 6065464.731 | 2013078.025 |
| | W3-24 | 6065473.243 | 2013092.001 | 6065467.548 | 2013096.939 |
| | W3-25 | 6065478.317 | 2013111.47 | 6065471.969 | 2013111.565 |
| | W3-26 | 6065439.805 | 2013059.56 | 6065439.304 | 2013063.473 |
| | W3-27 | 6065444.82 | 2013079.193 | 6065441.005 | 2013082.813 |



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**Table 1**
Sampling Location Coordinates - Target and Actual
Sediment Investigation Report
Sims Metal Managment, Redwood City, California

| Area | Sample Location | Target | | Actual | |
|---|---|---|---|---|---|
| | | Easting | Northing | Easting | Northing |
| Wharf 3 | W3-28 | 6065453.5 | 2013097.558 | 6065448.851 | 2013102.745 |
| | W3-29 | 6065458.987 | 2013116.887 | 6065453.051 | 2013122.821 |
| | W3-30 | 6065472.291 | 2013161.81 | 6065466.719 | 2013164.684 |
| | W3-31 | 6065490.998 | 2013156.798 | 6065487.139 | 2013161.993 |
| | W3-32 | 6065344.001 | 2012956.642 | 6065341.583 | 2012960.954 |
| | W3-33 | 6065349.343 | 2012974.777 | 6065345.512 | 2012975.714 |
| | W3-34 | 6065355.111 | 2012994.005 | 6065350.655 | 2012996.892 |
| | W3-35 | 6065363.273 | 2012951.274 | 6065353.751 | 2012952.213 |
| | W3-36 | 6065368.615 | 2012969.409 | 6065361.425 | 2012970.268 |
| | W3-37 | 6065374.383 | 2012988.637 | 6065367.676 | 2012991.685 |
| | W3-38 | 6065382.545 | 2012945.907 | 6065374.008 | 2012947.58 |
| | W3-39 | 6065387.887 | 2012964.041 | 6065380.288 | 2012965.849 |
| | W3-40 | 6065393.655 | 2012983.269 | 6065389.692 | 2012988.3 |
| | W3-41 | 6065381.989 | 2013075.664 | 6065378.049 | 2013080.229 |
| | W3-42 | 6065387.005 | 2013095.297 | 6065385.328 | 2013104.207 |
| | W3-43 | 6065401.261 | 2013070.297 | 6065397.439 | 2013079.779 |
| | W3-44 | 6065406.277 | 2013089.929 | 6065402.207 | 2013094.655 |
| | W3-45 | 6065414.956 | 2013108.294 | 6065410.63 | 2013113.395 |
| | W3-46 | 6065420.443 | 2013127.624 | 6065416.758 | 2013133.13 |
| | W3-47 | 6065420.533 | 2013064.929 | 6065413.718 | 2013067.995 |
| | W3-48 | 6065425.549 | 2013084.561 | 6065423.279 | 2013089.859 |
| | W3-49 | 6065434.228 | 2013102.925 | 6065430.6 | 2013110.016 |
| | W3-50 | 6065439.715 | 2013122.255 | 6065434.355 | 2013127.947 |
| | W3-51 | 6065433.747 | 2013172.546 | 6065429.373 | 2013172.903 |
| | W3-52 | 6065453.019 | 2013167.178 | 6065445.797 | 2013172.84 |
| Wharf 4 | W4-01 | 6065273.611 | 2012583.018 | 6065267.191 | 2012587.01 |
| | W4-02 | 6065292.939 | 2012577.853 | 6065289.443 | 2012583.634 |
| | W4-03 | 6065312.266 | 2012572.689 | 6065312.928 | 2012579.404 |
| | W4-04 | 6065258.503 | 2012607.51 | 6065254.307 | 2012614.484 |
| | W4-05 | 6065277.83 | 2012602.346 | 6065271.263 | 2012603.778 |
| | W4-06 | 6065297.157 | 2012597.182 | 6065299.984 | 2012600.706 |
| | W4-07 | 6065316.485 | 2012592.017 | 6065321.352 | 2012597.247 |
| | W4-08 | 6065283.539 | 2012622.059 | 6065283.125 | 2012632.419 |
| | W4-09 | 6065302.866 | 2012616.895 | 6065300.755 | 2012631.576 |
| | W4-10 | 6065322.194 | 2012611.73 | 6065319.371 | 2012627.92 |



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**Table 1**
Sampling Location Coordinates - Target and Actual
Sediment Investigation Report
Sims Metal Managment, Redwood City, California

| Area | Sample Location | Target | | Actual | |
|---|---|---|---|---|---|
| | | Easting | Northing | Easting | Northing |
| Wharf 5 | W5-01 | 6065265.042 | 2011858.002 | 6065253.349 | 2011864.43 |
| | W5-02 | 6065283.725 | 2011850.85 | 6065273.548 | 2011851.088 |
| | W5-03 | 6065302.409 | 2011843.698 | 6065292.003 | 2011838.088 |
| | W5-04 | 6065254.686 | 2011884.215 | 6065250.285 | 2011900.051 |
| | W5-05 | 6065273.188 | 2011876.493 | 6065280.474 | 2011880.743 |
| | W5-06 | 6065291.872 | 2011869.341 | 6065293.475 | 2011875.492 |
| | W5-07 | 6065310.065 | 2011862.181 | 6065312.066 | 2011863.26 |
| | W5-08 | 6065280.071 | 2011895.443 | 6065288.402 | 2011906.347 |
| | W5-09 | 6065298.755 | 2011888.291 | 6065310.16 | 2011897.339 |
| | W5-10 | 6065317.721 | 2011880.663 | 6065327.859 | 2011888.431 |

Notes:
Coordinates are in California State Plane, Zone III, ft, NAD 83
NAD = North American Datum



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**Table 2**
Sediment Sample Analytical Results - Background Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | **Background Area** | Wharf 2 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Location** | W2-1 | W2-2 | W2-3 | W2-4 | W2-5 | | | W2-6 | W2-7 | W2-8 |
| | | **Sample Date** | 6/13/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 | 6/14/2016 |
| | | **Sample Depth** | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 1.5-2 | 2.5-3 | 0-0.5 | 0-0.5 | 0-0.5 |
| | | **Field Identification** | W2-1-SED-6.8-7.3 | W2-2-SED-4.0-4.5 | W2-3-SED-2.5-3.0 | W2-4-SED-13.5-14.0 | W2-5-SED-0-0.5 | W2-5-SED-1.5-2.0 | W2-5-SED-2.5-3.0 | W2-6-SED-5.1-5.6 | W2-7-SED-2.7-3.2 | W2-8-SED-12.1-12.6 |
| Moisture | | % | 63 | 58 | 52 | 65 | 56 | 51 | 49 | 62 | 57 | 65 |
| Metals | Aluminum | mg/kg | **26,000** | **29,400** | **21,800** | **33,500** | **30,100** | **32,800** | **32,700** | **20,800** | **20,800** | **25,800B** |
| | Antimony | mg/kg | <2.08 | <1.87 | <1.51 | <2.16 | <1.78 | <1.6 | <1.53 | **4.81B** | <1.75 | <2.07 |
| | Arsenic | mg/kg | **10.9** | **11.2** | **8.2** | **11.6** | **14.8** | **10.9** | **10.8** | **6.09** | **5.95** | **10.1B** |
| | Barium | mg/kg | **67.1** | **73.8** | **65.3** | **68.1** | **77.5** | **57.6** | **54** | **52.1** | **57.4** | **54.8** |
| | Beryllium | mg/kg | **0.628J** | **0.595J** | **0.45J** | **0.719J** | **0.667** | **0.645** | **0.652** | **0.521J** | **0.468J** | **0.594J** |
| | Cadmium | mg/kg | <1.39 | <1.25 | <1.01 | <1.44 | <1.19 | <1.07 | <1.02 | **0.712J** | <1.16 | <1.38 |
| | Chromium | mg/kg | **91.9** | **157** | **111** | **103** | **101** | **93.4** | **94.3** | **84.1** | **117** | **84.6** |
| | Cobalt | mg/kg | **13.5** | **17.5** | **14.9** | **14.9** | **15.1** | **14.1** | **14.6** | **14.2** | **15.3** | **12.8** |
| | Copper | mg/kg | **57.4** | **55** | **45.6** | **58.1** | **77.2** | **34.6** | **35.1** | **39.8** | **57.8** | **49B** |
| | Iron | mg/kg | **41,200B** | **41,200B** | **31,400B** | **45,600B** | **42,700B** | **40,700B** | **43,000B** | **30,600B** | **32,800B** | **39,900B** |
| | Lead | mg/kg | **34** | **30.5** | **23.4** | **33.3** | **50.2** | **12.6** | **12.6** | **22.2** | **26.3** | **29.1** |
| | Mercury | mg/kg | **1.89B** | **12.4B** | **2.81B** | **0.318B** | **1.21B** | **0.0894B,J** | **0.0781B,J** | **0.988B** | **1.59B** | **0.406B** |
| | Molybdenum | mg/kg | **3.98** | **4.64** | **3.57** | **4.23** | **4.74** | **4.15** | **4.52** | <0.634 | **3.33** | **3.55** |
| | Nickel | mg/kg | **97.7** | **178** | **118** | **102** | **109** | **93.2** | **95.1** | **89.2** | **145** | **86.8** |
| | Selenium | mg/kg | <2.08 | <1.87 | <1.51 | <2.16 | <1.78 | <1.6 | <1.53 | <1.9 | <1.75 | <2.07 |
| | Silver | mg/kg | <0.693 | <0.623 | <0.504 | <0.721 | <0.594 | <0.534 | <0.51 | <0.634 | <0.582 | <0.69 |
| | Thallium | mg/kg | <2.08 | <1.87 | <1.51 | <2.16 | <1.78 | <1.6 | <1.53 | <1.9 | <1.75 | <2.07 |
| | Vanadium | mg/kg | **65.8B** | **68.8B** | **57.2B** | **79.7B** | **73.1B** | **74.7B** | **75B** | **53.4B** | **56.5B** | **63.4** |
| | Zinc | mg/kg | **158** | **161** | **162** | **154** | **185** | **98.2** | **97.2** | **127** | **135** | **139B** |
| PCBs | Aroclor 1016 | µg/kg | <27 | <24 | <21 | <28 | <23 | <51 | <19 | <26 | <23 | <28 |
| | Aroclor 1221 | µg/kg | <27 | <24 | <21 | <28 | <23 | <51 | <19 | <26 | <23 | <28 |
| | Aroclor 1232 | µg/kg | <27 | <24 | <21 | <28 | <23 | <51 | <19 | <26 | <23 | <28 |
| | Aroclor 1242 | µg/kg | <27 | <24 | <21 | <28 | <23 | <51 | <19 | <26 | <23 | <28 |
| | Aroclor 1248 | µg/kg | **25J** | **34** | **28** | <28 | **52** | <51 | <19 | **20J** | **24** | <28 |
| | Aroclor 1254 | µg/kg | **58** | **68** | **48** | **22J** | **260** | <51 | <19 | **37** | **52** | **35** |
| | Aroclor 1260 | µg/kg | **61** | **63** | **46** | **27J** | **140** | **45J** | <19 | **35** | **54** | **31** |
| | Aroclor 1262 | µg/kg | <27 | <24 | <21 | <28 | <23 | <51 | <19 | <26 | <23 | <28 |
| | Total PCBs | µg/kg | **144** | **165** | **122** | **49** | **452** | **45** | <19 | **92** | **130** | **66** |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
Detected concentrations are **bold**
J = estimated below laboratory reporting limit
mg/kg = Milligrams per kilogram
PCB = Polychlorinated biphenyls
Total PCBs summations from Aroclors were calculated using 0 for Non-Detects
µg/kg = micrograms per kilogram

**Table 2**
Sediment Sample Analytical Results - Background Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | **Background Area** | Wharf 2 | | Wharf 4 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Location** | W2-9 | W2-10 | W4-1 | W4-2 | W4-3 | W4-4 | W4-5 | | | W4-6 |
| | | **Sample Date** | 6/14/2016 | 6/14/2016 | 6/10/2016 | 6/10/2016 | 6/10/2016 | 6/9/2016 | 6/9/2016 | 6/9/2016 | 6/9/2016 | 6/9/2016 |
| | | **Sample Depth** | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 1.5-2 | 2.5-3 | 0-0.5 |
| | | **Field Identification** | W2-9-SED-10.0-10.5 | W2-10-SED-6.8-7.3 | W4-1-SED-11.8-12.3 | W4-2-SED-8.5-9.0 | W4-3-SED-4.0-4.5 | W4-4-SED-12.8-13.3 | W4-5-SED-0-0.5 | W4-5-SED-1.5-2.0 | W4-5-SED-2.5-3.0 | W4-6-SED-7.5-8.0 |
| Moisture | | % | 63 | 59 | 65 | 64 | 64 | 64 | 60 | 60 | 59 | 65 |
| Metals | Aluminum | mg/kg | **27,300B** | **25,700B** | **28,300B** | **26,000B** | **24,700B** | **27,100B** | **26,600B** | **24,600B** | **27,200B** | **27,100B** |
| | Antimony | mg/kg | <2.03 | <1.91 | <2.15 | <2.09 | <2.04 | <2.18 | <1.88 | <1.97 | <1.87 | <2.19 |
| | Arsenic | mg/kg | **8.16B** | **6.65B** | **9.91** | **9.47** | **7.21** | **8.65** | **8.37** | **10.1** | **11.2** | **8.32** |
| | Barium | mg/kg | **61.4** | **61.5** | **64.4** | **59.6** | **75.8** | **60.4** | **61** | **59.5** | **57** | **60.8** |
| | Beryllium | mg/kg | **0.61J** | **0.503J** | **0.777** | **0.703** | **0.659J** | **0.722J** | **0.715** | **0.677** | **0.721** | **0.742** |
| | Cadmium | mg/kg | <1.35 | <1.27 | **0.71J** | **0.74J** | **0.784J** | **0.618J** | **0.857J** | **1.24J** | **1.18J** | **0.709J** |
| | Chromium | mg/kg | **96.4** | **116** | **106** | **97.5** | **94.6** | **97.7** | **103** | **97.1** | **103** | **99.9** |
| | Cobalt | mg/kg | **13.6** | **14.5** | **18.6** | **17.6** | **17.5** | **17.9** | **18.4** | **17.9** | **18.6** | **17.8** |
| | Copper | mg/kg | **52.1B** | **46.1B** | **60.7** | **56.1** | **61.4** | **57.4** | **66.6** | **66.5** | **64** | **57.5** |
| | Iron | mg/kg | **41,800B** | **34,400B** | **44,000B** | **41,000B** | **38,600B** | **41,100B** | **41,400B** | **39,600B** | **41,200B** | **42,500B** |
| | Lead | mg/kg | **31.1** | **24** | **33.3** | **30.1** | **38.8** | **37.9** | **40.1** | **53.4** | **48.4** | **31.3** |
| | Mercury | mg/kg | **0.699B** | **3.04B** | **0.223J** | **0.239** | **0.438** | <0.234 | **0.384** | **0.519** | **0.46** | <0.252 |
| | Molybdenum | mg/kg | **4.04** | **3.58** | <0.715 | <0.698 | <0.679 | <0.728 | <0.628 | <0.658 | <0.624 | <0.729 |
| | Nickel | mg/kg | **105** | **139** | **107** | **98.8** | **96.3** | **98** | **106** | **98.8** | **110** | **100** |
| | Selenium | mg/kg | <2.03 | <1.91 | <2.15 | <2.09 | <2.04 | <2.18 | <1.88 | <1.97 | <1.87 | <2.19 |
| | Silver | mg/kg | <0.676 | <0.635 | **0.384J** | **0.437J** | <0.679 | <0.728 | **0.622J** | **1.21** | **0.816** | <0.729 |
| | Thallium | mg/kg | <2.03 | <1.91 | <2.15 | <2.09 | <2.04 | <2.18 | <1.88 | <1.97 | **0.386J** | <2.19 |
| | Vanadium | mg/kg | **65.8** | **61.8** | **80.3** | **73.4** | **69.3** | **75.7** | **75.7** | **75.8** | **79.6** | **75.6** |
| | Zinc | mg/kg | **147B** | **134B** | **158B** | **148B** | **163B** | **142B** | **166B** | **169B** | **168B** | **146B** |
| PCBs | Aroclor 1016 | µg/kg | <27 | <24 | <29 | <27 | <28 | <28 | <25 | <25 | <24 | <29 |
| | Aroclor 1221 | µg/kg | <27 | <24 | <29 | <27 | <28 | <28 | <25 | <25 | <24 | <29 |
| | Aroclor 1232 | µg/kg | <27 | <24 | <29 | <27 | <28 | <28 | <25 | <25 | <24 | <29 |
| | Aroclor 1242 | µg/kg | <27 | <24 | <29 | <27 | <28 | <28 | <25 | <25 | <24 | <29 |
| | Aroclor 1248 | µg/kg | **20J** | **30** | <29 | <27 | **33** | <28 | **86** | **17J** | <24 | **18J** |
| | Aroclor 1254 | µg/kg | **84** | **84** | <29 | **19J** | **36** | <28 | **90** | **22J** | <24 | **20J** |
| | Aroclor 1260 | µg/kg | **76** | **86** | **35** | **27J** | **41** | **52** | **43** | **33** | **23J** | **32** |
| | Aroclor 1262 | µg/kg | <27 | <24 | <29 | <27 | <28 | <28 | <25 | <25 | <24 | <29 |
| | Total PCBs | µg/kg | **180** | **200** | **35** | **46** | **110** | **52** | **219** | **72** | **23** | **70** |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
Detected concentrations are **bold**
J = estimated below laboratory reporting limit
mg/kg = Milligrams per kilogram
PCB = Polychlorinated biphenyls
Total PCBs summations from Aroclors were calculated using 0 for Non-Detects
µg/kg = micrograms per kilogram

**Table 2**
Sediment Sample Analytical Results - Background Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | **Background Area** | Wharf 4 | | | | Wharf 5 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Location** | W4-7 | W4-8 | W4-9 | W4-10 | W5-1 | W5-2 | W5-3 | W5-4 | W5-5 | |
| | | **Sample Date** | 6/9/2016 | 6/10/2016 | 6/10/2016 | 6/10/2016 | 6/14/2016 | 6/14/2016 | 6/14/2016 | 6/15/2016 | 6/15/2016 | 6/15/2016 |
| | | **Sample Depth** | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 1.5-2 |
| | | **Field Identification** | W4-7-SED-4.4-4.9 | W4-8-SED-9.6-10.1 | W4-9-SED-6.7-7.2 | W4-10-SED-2.4-2.9 | W5-1-SED-21.4-21.9 | W5-2-SED-14.5-15.0 | W5-3-SED-9.6-10.1 | W5-4-SED-25.8-26.3 | W5-5-SED-0-0.5 | W5-5-SED-1.5-2.0 |
| Moisture | | % | 61 | 66 | 64 | 61 | 65 | 65 | 68 | 66 | 60 | 45 |
| Metals | Aluminum | mg/kg | **22,400B** | **25,200B** | **26,500B** | **23,700B** | **32,900B** | **32,400B** | **38,200B** | **27,100** | **28,800** | **26,100** |
| | Antimony | mg/kg | <1.88 | <2.11 | <2.20 | <1.95 | <2.16 | <2.14 | <2.35 | <2.29 | <1.95 | <1.42 |
| | Arsenic | mg/kg | **7.3** | **8.51** | **7.31** | **7.63** | **9.88B** | **10.3B** | **10.8B** | **9.07** | **8.11** | **4.76** |
| | Barium | mg/kg | **80** | **56.8** | **58.4** | **95.3** | **68.4** | **66** | **76.1** | **60.5** | **60.1** | **44.5** |
| | Beryllium | mg/kg | **0.622J** | **0.704J** | **0.706J** | **0.635J** | **0.739** | **0.731** | **0.79** | **0.716J** | **0.699** | **0.634** |
| | Cadmium | mg/kg | **2.79** | **0.592J** | **0.588J** | **0.918J** | <1.44 | <1.43 | <1.56 | **0.538J** | **0.794J** | **0.607J** |
| | Chromium | mg/kg | **93.2** | **94.7** | **97.9** | **103** | **103** | **102** | **114** | **99.3** | **102** | **92.7** |
| | Cobalt | mg/kg | **17.2** | **17.3** | **17.8** | **18.6** | **14.1** | **13.5** | **15.6** | **18.3** | **19.4** | **18.7** |
| | Copper | mg/kg | **99.6** | **56.7** | **56.7** | **94.9** | **60.8B** | **57.6B** | **62.1B** | **57.6** | **56.3** | **41** |
| | Iron | mg/kg | **35,900B** | **40,300B** | **41,000B** | **38,000B** | **45,000B** | **44,800B** | **48,900B** | **43,000B** | **43,600B** | **40,500B** |
| | Lead | mg/kg | **40.3** | **30.2** | **31.6** | **80.3** | **33.7** | **31** | **32.5** | **31.6** | **23.5** | **11.4** |
| | Mercury | mg/kg | **0.537** | **0.245** | **0.244** | **0.607** | **0.336B** | **0.31B** | **0.305B** | **0.225J** | **0.103J** | **0.0295J** |
| | Molybdenum | mg/kg | <0.627 | <0.705 | <0.733 | **0.642J** | **4.24** | **4.32** | **5.01** | <0.764 | **0.767** | <0.473 |
| | Nickel | mg/kg | **95.6** | **96.2** | **98.5** | **98.6** | **101** | **102** | **111** | **99.2** | **103** | **98.4** |
| | Selenium | mg/kg | <1.88 | <2.11 | <2.20 | <1.95 | <2.16 | <2.14 | <2.35 | <2.29 | <1.95 | - |
| | Silver | mg/kg | **0.388J** | <0.705 | <0.733 | <0.649 | <0.718 | <0.714 | <0.782 | <0.764 | <0.65 | <0.473 |
| | Thallium | mg/kg | <1.88 | <2.11 | <2.20 | <1.95 | <2.16 | <2.14 | <2.35 | **0.547J** | <1.95 | <1.42 |
| | Vanadium | mg/kg | **65.3** | **71.7** | **73.8** | **69** | **77.9** | **75.6** | **88** | **74.6** | **80** | **73.7** |
| | Zinc | mg/kg | **169B** | **140B** | **143B** | **200B** | **159B** | **150B** | **161B** | **154B** | **141B** | **106B** |
| PCBs | Aroclor 1016 | µg/kg | <26 | <29 | <28 | <26 | <28 | <29 | <31 | <29 | <25 | <18 |
| | Aroclor 1221 | µg/kg | <26 | <29 | <28 | <26 | <28 | <29 | <31 | <29 | <25 | <18 |
| | Aroclor 1232 | µg/kg | <26 | <29 | <28 | <26 | <28 | <29 | <31 | <29 | <25 | <18 |
| | Aroclor 1242 | µg/kg | <26 | <29 | <28 | <26 | <28 | <29 | <31 | <29 | <25 | <18 |
| | Aroclor 1248 | µg/kg | **29** | <29 | <28 | **52** | <28 | <29 | <31 | <29 | **23J** | <18 |
| | Aroclor 1254 | µg/kg | **41** | <29 | **19J** | **110** | **23J** | **20J** | <31 | **21J** | **16J** | <18 |
| | Aroclor 1260 | µg/kg | **60** | **34** | **32** | **97** | **46** | **35** | **30J** | **36** | **33** | <18 |
| | Aroclor 1262 | µg/kg | <26 | <29 | <28 | <26 | <28 | <29 | <31 | <29 | <25 | <18 |
| | Total PCBs | µg/kg | **130** | **34** | **51** | **259** | **69** | **55** | **30** | **57** | **72** | <18 |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
Detected concentrations are **bold**
J = estimated below laboratory reporting limit
mg/kg = Milligrams per kilogram
PCB = Polychlorinated biphenyls
Total PCBs summations from Aroclors were calculated using 0 for Non-Detects
µg/kg = micrograms per kilogram

**Table 2**
Sediment Sample Analytical Results - Background Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | **Background Area** | Wharf 5 | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | **Location** | W5-5 | W5-6 | W5-7 | W5-8 | W5-9 | W5-10 |
| | | **Sample Date** | 6/15/2016 | 6/14/2016 | 6/14/2016 | 6/15/2016 | 6/15/2016 | 6/15/2016 |
| | | **Sample Depth** | 2-2.25 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| | | **Field Identification** | W5-5-SED-2.0-2.25 | W5-6-SED-12.1-12.6 | W5-7-SED-9.4-9.9 | W5-8-SED-18.3-18.8 | W5-9-SED-10.4-10.9 | W5-10-SED-6.7-7.2 |
| Moisture | | % | 46 | 65 | 65 | 65 | 62 | 69 |
| Metals | Aluminum | mg/kg | **27,600** | **31,600B** | **35,600B** | **28,000** | **29,700** | **33,000** |
| | Antimony | mg/kg | <1.39 | <2.17 | <2.16 | <2.27 | <2.07 | <2.36 |
| | Arsenic | mg/kg | **6.98** | **12B** | **9.88B** | **8.76** | **8.54** | **8.02** |
| | Barium | mg/kg | **47.1** | **62.6** | **75.2** | **60.8** | **53.2** | **68.5** |
| | Beryllium | mg/kg | **0.648** | **0.686J** | **0.724** | **0.721J** | **0.735** | **0.83** |
| | Cadmium | mg/kg | **0.625J** | <1.45 | <1.44 | **0.678J** | **0.718J** | **0.912J** |
| | Chromium | mg/kg | **94.2** | **102** | **106** | **101** | **105** | **116** |
| | Cobalt | mg/kg | **18.8** | **14** | **15** | **18.9** | **19.9** | **21.3** |
| | Copper | mg/kg | **40.6** | **49.4B** | **55.8B** | **59.8** | **49.6** | **70.5** |
| | Iron | mg/kg | **42,200B** | **44,500B** | **46,900B** | **44,200B** | **45,800B** | **48,000B** |
| | Lead | mg/kg | **11.2** | **25.1** | **29.9** | **30.7** | **20.7** | **34.6** |
| | Mercury | mg/kg | **0.032J** | **0.217B,J** | **0.228B,J** | **0.207J** | **0.115J** | **0.303** |
| | Molybdenum | mg/kg | <0.463 | **4.46** | **4.89** | <0.756 | <0.689 | <0.786 |
| | Nickel | mg/kg | **98.4** | **101** | **106** | **103** | **108** | **115** |
| | Selenium | mg/kg | **2.64** | <2.17 | <2.16 | <2.27 | <2.07 | <2.36 |
| | Silver | mg/kg | <0.463 | <0.723 | <0.722 | <0.756 | **0.24J** | <0.786 |
| | Thallium | mg/kg | <1.39 | <2.17 | <2.16 | <2.27 | <2.07 | <2.36 |
| | Vanadium | mg/kg | **76.1** | **76.5** | **82** | **75.9** | **80.5** | **87.9** |
| | Zinc | mg/kg | **104B** | **162B** | **157B** | **167B** | **135B** | **190B** |
| PCBs | Aroclor 1016 | µg/kg | <19 | <28 | <29 | <28 | <27 | <32 |
| | Aroclor 1221 | µg/kg | <19 | <28 | <29 | <28 | <27 | <32 |
| | Aroclor 1232 | µg/kg | <19 | <28 | <29 | <28 | <27 | <32 |
| | Aroclor 1242 | µg/kg | <19 | <28 | <29 | <28 | <27 | <32 |
| | Aroclor 1248 | µg/kg | <19 | <28 | <29 | **19J** | <27 | <32 |
| | Aroclor 1254 | µg/kg | <19 | **48** | **19J** | **23J** | <27 | **27J** |
| | Aroclor 1260 | µg/kg | <19 | **44** | **29** | **44** | **26J** | **47** |
| | Aroclor 1262 | µg/kg | <19 | <28 | <29 | <28 | <27 | <32 |
| | Total PCBs | µg/kg | <19 | **92** | **48** | **86** | **26** | **74** |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
Detected concentrations are **bold**
J = estimated below laboratory reporting limit
mg/kg = Milligrams per kilogram
PCB = Polychlorinated biphenyls
Total PCBs summations from Aroclors were calculated using 0 for Non-Detects
µg/kg = micrograms per kilogram

**Table 3**

Statistical Evaluation - Background Sediment Data

Sediment Investigation Report

Sims Metal Management, Redwood City, California

| Parameter | Number of Samples | Number of Detects | Minimum Detect | Maximum | Mean | Standard Deviation | Distribution | UCL Fit | 95% UCL | 95% UTL |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | 36 | 1 | 4.8 | 4.8 | -- | -- | -- | -- | TFD | TFD |
| Arsenic | 36 | 36 | 4.76 | 14.8 | 9.07 | 2.00 | Normal | 95% Student's-t UCL | 9.63 | 13.37 |
| Barium | 36 | 36 | 44.5 | 95.3 | 63.41 | 9.906 | Normal | 95% Student's-t UCL | 66.2 | 84.69 |
| Beryllium | 36 | 36 | 0.45 | 0.83 | 0.669 | 0.09 | Normal | 95% Student's-t UCL | 0.693 | 0.85 |
| Cadmium | 36 | 20 | 0.54 | 2.79 | 0.77 | 0.39 | None | 95% KM (t) UCL | 0.926 | 2.79 |
| Chromium | 36 | 30 | 36 | 157 | 102.1 | 12.22 | None | 95% Modified-t UCL | 106 | 157 |
| Cobalt | 36 | 36 | 12.8 | 21.3 | 16.6 | 2.221 | None | 95% Student's-t UCL | 17.2 | 21.30 |
| Copper | 36 | 36 | 34.6 | 99.6 | 57.42 | 13.53 | Lognormal | 95% Modified-t UCL | 61.3 | 91.0 |
| Lead | 36 | 36 | 11.2 | 80.3 | 31.69 | 12.84 | None/Lognormal[1] | 95% Modified-t UCL | 35.4 | 51.7 |
| Mercury | 36 | 34 | 0.030 | 12.4 | 0.936 | 2.151 | Lognormal | 97.5% KM (Chebyshev) UCL | 3.077 | 4.96 |
| Molybdenum | 36 | 18 | 0.642 | 5.01 | 3.814 | 1.227 | None | 95% KM (t) UCL | 2.69 | 5.01 |
| Nickel | 36 | 36 | 86.8 | 178 | 105.8 | 16.86 | None | 95% Modified-t UCL | 110.7 | 178 |
| Selenium | 35 | 1 | 2.6 | 2.6 | -- | -- | -- | -- | TFD | TFD |
| Silver | 36 | 7 | 0.46 | 1.21 | 0.59 | 0.33 | Normal | 95% KM (t) UCL | 0.50 | 0.806 |
| Thallium | 36 | 2 | 0.39 | 0.55 | 0.467 | 0.114 | -- | -- | TFD | TFD |
| Vanadium | 36 | 36 | 53.4 | 88 | 73.03 | 7.949 | Normal | 95% Student's-t UCL | 75.3 | 90.11 |
| Zinc | 36 | 36 | 97.2 | 200 | 149.9 | 23.36 | Normal | 95% Student's-t UCL | 156.5 | 200 |
| Aluminum | 36 | 36 | 20,800 | 38,200 | 27,975 | 4,072 | Normal | 95% Student's-t UCL | 29,122 | 37789 |
| Iron | 36 | 36 | 30,600 | 48,900 | 41,314 | 4,232 | None | 95% Student's-t UCL | 42,506 | 48900 |
| Total PCB Aroclors | 36 | 33 | 26 | 452 | 101.7 | 86.33 | Lognormal | 95% Adjusted Gamma UCL | 157.1 | 395 |

Notes:

< = analyte not detected above laboratory reporting limit

-- = not calculated

Metals concentrations in milligrams per kilogram

NC = not calculated due to insufficient detects

PCB concentrations in micrograms per kilogram

PCB = polychlorinated biphenyls

TFD = Too few detects to calculate UCL

Total PCBs summations from Aroclors were calculated using 0 for non-detect results

UCL = upper confidence limit

UTL = upper tolerance limit

95%UCL = 95-percent upper confidence limit on the mean

95%UTL = 95% UTL with 95% Coverage

95%UCL and 95%UTL calculated with using ProUCL 5.0.00 Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations

1 = log-normal distribution after high outlier excluded

**Table 4**
Sediment Sample Analytical Results - Primary and Contingency Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Project Area** | | | Wharf 3 | | | | | | |
| | | **Location** | 95% UCL | 95% UTL | W3-1 | W3-2 | W3-3 | W3-4 | W3-5 | W3-6 |
| | | **Location Type** | | | Primary | Primary | Primary | Primary | Primary | Primary |
| | | **Sample Date** | | | 6/6/2016 | 6/6/2016 | 6/6/2016 | 6/6/2016 | 6/6/2016 | 6/6/2016 |
| | | **Sample Depth** | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| | | **Field Identification** | | | W3-1-SED-23.2-23.8 | W3-2-SED-8.3-8.9 | W3-3-SED-21.2-21.8 | W3-4-SED-8.8-9.4 | W3-5-SED-15.0-15.5 | W3-6-SED-6.7-7.3 |
| **Moisture** | | **%** | | | **66** | **66** | **67** | **70** | **67** | **70** |
| Metals | Aluminum | mg/kg | **29,122** | 37,789 | 23,000B | 24,400B | 22,800B | 24,000B | 26,400B | 25,100B |
| | Antimony | mg/kg | **NC** | NC | 0.705B,J | <2.19 | 1.62B,J | 4.98B | 2.14B,J | 2.48B |
| | Arsenic | mg/kg | **9.63** | 13.37 | **12.1** | **17.5** | **12.7** | **17.9** | **20.8** | **13.6** |
| | Barium | mg/kg | **66.19** | 84.69 | **88.4** | **217** | 55.2 | **107** | **86.9** | 65 |
| | Beryllium | mg/kg | **0.693** | 0.852 | **0.697J** | **0.71J** | 0.682J | **0.703J** | **0.763** | **0.747J** |
| | Cadmium | mg/kg | **0.926** | 2.79 | **<1.45** | **<1.46** | **<1.46** | **<1.74** | 0.516J | **<1.65** |
| | Chromium | mg/kg | **105.7** | 157 | 89.7 | 101 | 89.7 | 93.5 | **116** | 98.5 |
| | Cobalt | mg/kg | **17.23** | 21.3 | **19.1** | **20** | **18.3** | **18.9** | **22.2** | **19.6** |
| | Copper | mg/kg | **61.3** | 90.98 | **66.6** | **106** | **65.5** | **76** | **458** | **93.3** |
| | Iron | mg/kg | **42,506** | 48,900 | **42,800** | **48,600** | **43,600** | **45,600** | **62,800** | **47,500** |
| | Lead | mg/kg | **35.39** | 51.68 | **41.7** | **60.8** | **41.5** | **47.5** | **216** | **49.4** |
| | Mercury | mg/kg | **3.077** | 4.958 | 0.34 | 0.752 | 0.389 | 0.482 | 0.4 | 0.347 |
| | Molybdenum | mg/kg | **2.689** | 5.01 | <0.727 | <0.729 | <0.730 | <0.868 | 0.989 | <0.824 |
| | Nickel | mg/kg | **110.7** | 178 | 103 | **114** | 98.7 | 104 | **138** | 109 |
| | Selenium | mg/kg | **NC** | NC | <2.18 | <2.19 | <2.19 | <2.60 | <2.16 | 1.31J |
| | Silver | mg/kg | **0.501** | 0.806 | **0.796** | **1.28** | **0.752** | **1.01** | **1.45** | **0.782J** |
| | Thallium | mg/kg | **NC** | NC | <2.18 | <2.19 | <2.19 | <2.60 | <2.16 | <2.47 |
| | Vanadium | mg/kg | **75.27** | 90.11 | 72.3 | **75.4** | 71.9 | 74.8 | **83.1** | **79** |
| | Zinc | mg/kg | **156.5** | 200.1 | **208** | **425** | **202** | **247** | **768** | **273** |
| PCBs | Aroclor 1016 | µg/kg | **NC** | NC | <29 | <30 | <31 | <34 | <30 | <33 |
| | Aroclor 1221 | µg/kg | **NC** | NC | <29 | <30 | <31 | <34 | <30 | <33 |
| | Aroclor 1232 | µg/kg | **NC** | NC | <29 | <30 | <31 | <34 | <30 | <33 |
| | Aroclor 1242 | µg/kg | **NC** | NC | <29 | <30 | <31 | <34 | <30 | <33 |
| | Aroclor 1248 | µg/kg | **NC** | NC | 44 | 130 | 45 | 56 | 210 | 63 |
| | Aroclor 1254 | µg/kg | **NC** | NC | 34 | 89 | 33 | 40 | 110 | 43 |
| | Aroclor 1260 | µg/kg | **NC** | NC | 45 | 110 | 41 | 39 | 61 | 48 |
| | Aroclor 1262 | µg/kg | **NC** | NC | <29 | <30 | <31 | <34 | <30 | <33 |
| | Total PCBs | µg/kg | **157.1** | 395 | 123 | **329** | 119 | 135 | **381** | 154 |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
J = estimated below laboratory reporting limit
mg/kg = milligrams per kilogram
NC = Not calculated
PCB = polychlorinated biphenyls
UCL = upper confidence limit
UTL = upper tolerance limit
µg/kg = Micrograms per kilogram
Concentrations in bold exceed the 95% UCL
Concentrations in highlighted gray exceed the 95% UTL

**Table 4**
Sediment Sample Analytical Results - Primary and Contingency Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | | 95% UCL | 95% UTL | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Project Area** | | | Wharf 3 | | | | | | | | |
| | | **Location** | | | W3-7 | | | W3-8 | | | W3-9 | | |
| | | **Location Type** | | | Primary | | | Primary | | | Primary | | |
| | | **Sample Date** | | | 6/7/2016 | 6/7/2016 | 6/7/2016 | 6/7/2016 | 6/7/2016 | 6/7/2016 | 6/7/2016 | 6/7/2016 | 6/7/2016 |
| | | **Sample Depth** | | | 0-0.5 | 1.5-2 | 2-2.1 | 0-0.5 | 1.5-2 | 2.5-3 | 0-0.5 | 1.5-2 | 2.5-3 |
| | | **Field Identification** | | | W3-7-SED-0-0.5 | W3-7-SED-1.5-2 | W3-7-SED-2.0-2.1 | W3-8-SED-0-0.5 | W3-8-SED-1.5-2 | W3-8-SED-2.5-3 | W3-9-SED-0-0.5 | W3-9-SED-1.5-2 | W3-9-SED-2.5-3 |
| **Moisture** | | **%** | | | **52** | **63** | **59** | **60** | **58** | **53** | **54** | **52** | **54** |
| Metals | Aluminum | mg/kg | **29,122** | 37,789 | 18,900B | 12,500B | 12,800B | 25,100B | 21,500B | 18,700B | 22,100B | 19,200B | 23,000B |
| | Antimony | mg/kg | **NC** | NC | 9.64 | 93.1 | 30.6 | <1.83 | <1.79 | <1.63 | <1.70 | <1.58 | <1.68 |
| | Arsenic | mg/kg | **9.63** | 13.37 | **47.6** | **68.9** | **76** | **31.4** | **42.2** | **23.3** | **19.9** | **14.9** | **14.4** |
| | Barium | mg/kg | **66.19** | 84.69 | **203** | **1290** | **909** | **195** | **247** | **190** | **147** | **83.7** | 62.7 |
| | Beryllium | mg/kg | **0.693** | 0.852 | 0.487J | <1.34 | <1.15 | 0.662 | 0.602 | 0.538J | 0.622 | 0.596 | 0.648 |
| | Cadmium | mg/kg | **0.926** | 2.79 | **5** | **103** | **34.2** | **2.93** | **9.75** | **5.63** | **2.29** | **1.65** | **1.49** |
| | Chromium | mg/kg | **105.7** | 157 | **780** | **264** | **205** | **128** | **170** | **147** | **126** | **116** | **120** |
| | Cobalt | mg/kg | **17.23** | 21.3 | **38.7** | **25.6** | **32** | **25.8** | **29** | **25.6** | **23.8** | **19.9** | **22.5** |
| | Copper | mg/kg | **61.3** | 90.98 | **2280** | **3280** | **621** | **360** | **534** | **349** | **416** | **146** | **80.5** |
| | Iron | mg/kg | **42,506** | 48,900 | **85,500** | **157,000** | **164,000** | **67,800** | **79,200** | **57,200** | **52,700** | 38,100 | 41,500 |
| | Lead | mg/kg | **35.39** | 51.68 | **312** | **3080** | **1650** | **217** | **484** | **424** | **277** | **184** | **70.6** |
| | Mercury | mg/kg | **3.077** | 4.958 | 1.02 | 1.58 | 1.95 | 1.37 | 1.15 | 1.69 | 1.4 | 2.69 | **3.64** |
| | Molybdenum | mg/kg | **2.689** | 5.01 | **19.3B** | **25.2B** | **20.9B** | **3.65B** | **7.05B** | **2.82B** | 1.68B | 0.444B,J | <0.561 |
| | Nickel | mg/kg | **110.7** | 178 | **931** | **959** | **404** | **352** | **237** | **292** | **161** | **159** | **164** |
| | Selenium | mg/kg | **NC** | NC | <1.63 | <4.02 | <3.46 | <1.83 | <1.79 | <1.63 | <1.70 | <1.58 | <1.68 |
| | Silver | mg/kg | **0.501** | 0.806 | **1.16** | **10** | **2.45** | **0.894** | **0.773** | **1.59** | 0.402J | **1.76** | **1.58** |
| | Thallium | mg/kg | **NC** | NC | <1.63 | <4.02 | <3.46 | <1.83 | <1.79 | <1.63 | <1.70 | <1.58 | <1.68 |
| | Vanadium | mg/kg | **75.27** | 90.11 | 73.9 | 59.2 | 70.9 | **82.2** | **78.1** | 68.8 | 75.2 | 64.8 | 73.7 |
| | Zinc | mg/kg | **156.5** | 200.1 | **3340** | **6560** | **4270** | **1940** | **5680** | **1270** | **1060** | **248** | **246** |
| PCBs | Aroclor 1016 | µg/kg | **NC** | NC | <210 | <270 | <240 | <120 | <240 | <21 | <22 | <21 | <22 |
| | Aroclor 1221 | µg/kg | **NC** | NC | <210 | <270 | <240 | <120 | <240 | <21 | <22 | <21 | <22 |
| | Aroclor 1232 | µg/kg | **NC** | NC | <210 | <270 | <240 | <120 | <240 | <21 | <22 | <21 | <22 |
| | Aroclor 1242 | µg/kg | **NC** | NC | <210 | <270 | <240 | <120 | <240 | <21 | <22 | <21 | <22 |
| | Aroclor 1248 | µg/kg | **NC** | NC | 1500 | 920 | 1100 | 730 | 1800 | 200 | 95 | 83 | 47 |
| | Aroclor 1254 | µg/kg | **NC** | NC | 650 | 2600 | 2700 | 900 | 870 | 150 | 84 | 19J | 63 |
| | Aroclor 1260 | µg/kg | **NC** | NC | 360 | 3100 | 2400 | 380 | 390 | 140 | 190 | 39 | 71 |
| | Aroclor 1262 | µg/kg | **NC** | NC | <210 | <270 | <240 | <120 | <240 | <21 | <22 | <21 | <22 |
| | Total PCBs | µg/kg | **157.1** | 395 | **2510** | **6620** | **6200** | **2010** | **3060** | **490** | **369** | 141 | **181** |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
J = estimated below laboratory reporting limit
mg/kg = milligrams per kilogram
NC = Not calculated
PCB = polychlorinated biphenyls
UCL = upper confidence limit
UTL = upper tolerance limit
µg/kg = Micrograms per kilogram
Concentrations in bold exceed the 95% UCL
Concentrations in highlighted gray exceed the 95% UTL

**Table 4**
Sediment Sample Analytical Results - Primary and Contingency Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Project Area** | | | Wharf 3 | | | | | | | | |
| | | **Location** | 95% UCL | 95% UTL | W3-10 | W3-11 | W3-12 | W3-13 | W3-14 | W3-15 | W3-16 | W3-17 |
| | | **Location Type** | | | Primary | Primary | Primary | Primary | Primary | Primary | Contingency | Contingency |
| | | **Sample Date** | | | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 |
| | | **Sample Depth** | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| | | **Field Identification** | | | W3-10-SED-0-0.5 | W3-11-SED-0-0.5 | W3-12-SED-0-0.5 | W3-13-SED-0-0.5 | W3-14-SED-0-0.5 | W3-15-SED-0-0.5 | W3-16-SED-0-0.5 | W3-17-SED-0-0.5 |
| **Moisture** | | **%** | | | **67** | **54** | **58** | **65** | **56** | **54** | **54** | **53** |
| Metals | Aluminum | mg/kg | **29,122** | 37,789 | 24,600B | 13,800B | 15,400B | 12,100B | 14,300B | 14,600B | 20,300 | 18,000 |
| | Antimony | mg/kg | **NC** | NC | 4.21B | 11.6B | 0.507B,J | <2.12 | 10.9B | 10.2B | <1.57 | <1.61 |
| | Arsenic | mg/kg | **9.63** | 13.37 | **32** | **79.5** | **56.2** | **19.1** | **103** | **73.1** | **15.9** | **19.7** |
| | Barium | mg/kg | **66.19** | 84.69 | **151** | **182** | **141** | **204** | **491** | **591** | **346** | **421** |
| | Beryllium | mg/kg | **0.693** | 0.852 | 0.676J | 0.357J | 0.45J | **<0.706** | <0.588 | 0.468J | 0.554 | 0.447J |
| | Cadmium | mg/kg | **0.926** | 2.79 | **4.02** | **5.94** | **2.52** | **7.49** | **13.9** | **10.6** | **5.43** | **4.46** |
| | Chromium | mg/kg | **105.7** | 157 | **120** | **461** | **261** | **228** | **261** | **184** | **155** | **137** |
| | Cobalt | mg/kg | **17.23** | 21.3 | **34.6** | **31.8** | **33.5** | **36.3** | **64.4** | **46.2** | **34.9** | **31** |
| | Copper | mg/kg | **61.3** | 90.98 | **365** | **2320** | **2230** | **1640** | **1950** | **2790** | **981** | **1070** |
| | Iron | mg/kg | **42,506** | 48,900 | **60,200** | **164,000** | **141,000** | **193,000** | **181,000** | **104,000** | **74,800** | **74,100** |
| | Lead | mg/kg | **35.39** | 51.68 | **171** | **379** | **1120** | **469** | **1570** | **1110** | **507** | **568** |
| | Mercury | mg/kg | **3.077** | 4.958 | 1.7 | 1.27 | 0.448 | 0.641 | 1.51 | 2.7 | 1.28 | 1.68 |
| | Molybdenum | mg/kg | **2.689** | 5.01 | 2.54 | **20.2** | **25** | **30.8** | **37.2** | **12.5** | **6.34** | **6.88** |
| | Nickel | mg/kg | **110.7** | 178 | **705** | **222** | **218** | **688** | **459** | **348** | **241** | **180** |
| | Selenium | mg/kg | **NC** | NC | <2.31 | <1.71 | <1.73 | 1.41J | 2.21 | <1.59 | 1.17J | <1.61 |
| | Silver | mg/kg | **0.501** | 0.806 | **1.38** | **6** | **1.84** | **1.28** | **5.45** | **3.54** | **1.75** | **1.24** |
| | Thallium | mg/kg | **NC** | NC | <2.31 | <1.71 | <1.73 | <2.12 | <1.76 | <1.59 | <1.57 | <1.61 |
| | Vanadium | mg/kg | **75.27** | 90.11 | **83.3** | **82.3** | **80.9** | 60.4 | 64.9 | 61.7 | 69.3 | 60.6 |
| | Zinc | mg/kg | **156.5** | 200.1 | **1770** | **4740** | **3120** | **4910** | **11,200** | **7600** | **4250** | **4310** |
| PCBs | Aroclor 1016 | µg/kg | **NC** | NC | <31 | <110 | <120 | <140 | <230 | <220 | <220 | <210 |
| | Aroclor 1221 | µg/kg | **NC** | NC | <31 | <110 | <120 | <140 | <230 | <220 | <220 | <210 |
| | Aroclor 1232 | µg/kg | **NC** | NC | <31 | <110 | <120 | <140 | <230 | <220 | <220 | <210 |
| | Aroclor 1242 | µg/kg | **NC** | NC | <31 | <110 | <120 | <140 | <230 | <220 | <220 | <210 |
| | Aroclor 1248 | µg/kg | **NC** | NC | 100 | 540 | 710 | 990 | 1100 | 1400 | 2200 | 4200 |
| | Aroclor 1254 | µg/kg | **NC** | NC | 64 | 800 | 490 | 600 | 1800 | 1900 | 1600 | 2500 |
| | Aroclor 1260 | µg/kg | **NC** | NC | 140 | 330 | 470 | 350 | 650 | 880 | 540 | 820 |
| | Aroclor 1262 | µg/kg | **NC** | NC | <31 | <110 | <120 | <140 | <230 | <220 | <220 | <210 |
| | Total PCBs | µg/kg | **157.1** | 395 | **304** | **1670** | **1670** | **1940** | **3550** | **4180** | **4340** | **7520** |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
J = estimated below laboratory reporting limit
mg/kg = milligrams per kilogram
NC = Not calculated
PCB = polychlorinated biphenyls
UCL = upper confidence limit
UTL = upper tolerance limit
µg/kg = Micrograms per kilogram
Concentrations in bold exceed the 95% UCL
Concentrations in highlighted gray exceed the 95% UTL

**Table 4**
Sediment Sample Analytical Results - Primary and Contingency Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | | | | Wharf 3 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Project Area** | 95% UCL | 95% UTL | | | | | | | | |
| | | **Location** | | | W3-18 | W3-19 | W3-20 | W3-21 | W3-22 | W3-23 | W3-24 | W3-25 |
| | | **Location Type** | | | Contingency | Contingency | Contingency | Contingency | Primary | Primary | Primary | Contingency |
| | | **Sample Date** | | | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 |
| | | **Sample Depth** | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| | | **Field Identification** | | | W3-18-SED-0-0.5 | W3-19-SED-0-0.5 | W3-20-SED-0-0.5 | W3-21-SED-0-0.5 | W3-22-SED-0-0.5 | W3-23-SED-0-0.5 | W3-24-SED-0-0.5 | W3-25-SED-0-0.5 |
| **Moisture** | | **%** | | | **53** | **63** | **63** | **64** | **45** | **40** | **46** | **45** |
| Metals | Aluminum | mg/kg | **29,122** | 37,789 | 21,800 | 25,400 | 27,700 | 28,600 | 7320B | 8440B | 10,100B | 13,700 |
| | Antimony | mg/kg | **NC** | NC | <1.62 | <2.04 | <1.96 | <2.17 | 16.9B | 22.3B | 16.7B | <1.39 |
| | Arsenic | mg/kg | **9.63** | 13.37 | **37.5** | **12.8** | **20.5** | **11.7** | **158** | **118** | **82.9** | **12** |
| | Barium | mg/kg | **66.19** | 84.69 | **321** | **148** | **120** | **99.7** | **594** | **778** | **769** | **442** |
| | Beryllium | mg/kg | **0.693** | 0.852 | **0.736** | 0.677J | **0.709** | **0.742** | <0.477 | <0.417 | 0.352J | 0.317J |
| | Cadmium | mg/kg | **0.926** | 2.79 | **2.3** | **1.56** | **3.51** | **1.55** | **17.4** | **11.4** | **10.9** | **3.1** |
| | Chromium | mg/kg | **105.7** | 157 | **169** | 101 | **122** | **107** | **163** | **249** | **280** | **113** |
| | Cobalt | mg/kg | **17.23** | 21.3 | **30.2** | **21.6** | **25** | **22.7** | **49.1** | **64.3** | **51.3** | **30** |
| | Copper | mg/kg | **61.3** | 90.98 | **379** | **238** | **185** | **132** | **1310** | **3330** | **3110** | **1270** |
| | Iron | mg/kg | **42,506** | 48,900 | **50,600** | 41,500 | **54,100** | **46,300** | **199,000** | **195,000** | **146,000** | **71,000** |
| | Lead | mg/kg | **35.39** | 51.68 | **311** | **106** | **152** | **76.9** | **1450** | **1820** | **1620** | **712** |
| | Mercury | mg/kg | **3.077** | 4.958 | 0.761 | 0.526 | 0.798 | 1.45 | **3.92** | **4.19** | **3.44** | 1.78 |
| | Molybdenum | mg/kg | **2.689** | 5.01 | **12.9** | **3.13** | **4.43** | 2.43 | **26.2** | **35** | **21.2** | **18.8** |
| | Nickel | mg/kg | **110.7** | 178 | **166** | 108 | **130** | **124** | **609** | **658** | **591** | **189** |
| | Selenium | mg/kg | **NC** | NC | 2.2 | <2.04 | <1.96 | <2.17 | <1.43 | 2.8 | <1.45 | <1.39 |
| | Silver | mg/kg | **0.501** | 0.806 | **0.907** | 0.403J | 0.402J | **0.522J** | **4.52** | **4.19** | **3.06** | **1.13** |
| | Thallium | mg/kg | **NC** | NC | 1.13J | <2.04 | <1.96 | <2.17 | <1.43 | <1.25 | <1.45 | <1.39 |
| | Vanadium | mg/kg | **75.27** | 90.11 | 68.4 | 74.2 | **80.1** | **81.4** | 44.2 | 54.4 | 56.7 | 50.6 |
| | Zinc | mg/kg | **156.5** | 200.1 | **2340** | **541** | **955** | **572** | **28,500** | **22,800** | **9390** | **5440** |
| PCBs | Aroclor 1016 | µg/kg | **NC** | NC | <210 | <130 | <54 | <28 | <360 | <330 | <370 | <360 |
| | Aroclor 1221 | µg/kg | **NC** | NC | <210 | <130 | <54 | <28 | <360 | <330 | <370 | <360 |
| | Aroclor 1232 | µg/kg | **NC** | NC | <210 | <130 | <54 | <28 | <360 | <330 | <370 | <360 |
| | Aroclor 1242 | µg/kg | **NC** | NC | <210 | <130 | <54 | <28 | <360 | <330 | <370 | <360 |
| | Aroclor 1248 | µg/kg | **NC** | NC | 1100 | 430 | 580 | 240 | 3400 | 300J | 2100 | 4300 |
| | Aroclor 1254 | µg/kg | **NC** | NC | 790 | 590 | 370 | 180 | 2100 | 2200 | 1700 | 2700 |
| | Aroclor 1260 | µg/kg | **NC** | NC | 470 | 270 | 100 | 120 | 1300 | 1100 | 1000 | 760 |
| | Aroclor 1262 | µg/kg | **NC** | NC | <210 | <130 | <54 | <28 | <360 | <330 | <370 | <360 |
| | Total PCBs | µg/kg | **157.1** | 395 | **2360** | **1290** | **1050** | **540** | **6800** | **3600** | **4800** | **7760** |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
J = estimated below laboratory reporting limit
mg/kg = milligrams per kilogram
NC = Not calculated
PCB = polychlorinated biphenyls
UCL = upper confidence limit
UTL = upper tolerance limit
µg/kg = Micrograms per kilogram
Concentrations in bold exceed the 95% UCL
Concentrations in highlighted gray exceed the 95% UTL

**Table 4**
Sediment Sample Analytical Results - Primary and Contingency Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Project Area** | | | Wharf 3 | | | | | | | | |
| | | **Location** | 95% UCL | 95% UTL | W3-26 | W3-27 | W3-28 | W3-29 | W3-30 | W3-31 | W3-32 | W3-33 |
| | | **Location Type** | | | Primary | Primary | Primary | Contingency | Contingency | Contingency | Contingency | Contingency |
| | | **Sample Date** | | | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/8/2016 | 6/9/2016 |
| | | **Sample Depth** | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| | | **Field Identification** | | | W3-26-SED-0-0.5 | W3-27-SED-0-0.5 | W3-28-SED-0-0.5 | W3-29-SED-0-0.5 | W3-30-SED-0-0.5 | W3-31-SED-0-0.5 | W3-32-SED-27-27.5 | W3-33-SED-19.0-19.5 |
| **Moisture** | | **%** | | | **62** | **59** | **55** | **52** | **61** | **29** | **56** | **58** |
| Metals | Aluminum | mg/kg | **29,122** | 37,789 | 20,700B | 13,100B | 18,000B | 16,900 | 26,800 | 13,000 | 26,200 | 27,400 |
| | Antimony | mg/kg | **NC** | NC | 5.71B | 6.13B | 6.75B | <1.48 | <1.88 | <1.09 | 0.382J | <1.89 |
| | Arsenic | mg/kg | **9.63** | 13.37 | **23.4** | **68.7** | **46.7** | **16.8** | **12.8** | **14.6** | **10.4** | 9.58 |
| | Barium | mg/kg | **66.19** | 84.69 | **80.1** | **219** | **243** | **158** | **92.3** | **296** | **92** | 65.3 |
| | Beryllium | mg/kg | **0.693** | 0.852 | 0.618J | <0.647 | 0.553 | 0.448J | **0.706** | 0.319J | **0.748** | **0.736** |
| | Cadmium | mg/kg | **0.926** | 2.79 | 0.555J | **3.33** | **5.38** | **1.33** | 0.644J | **1.96** | 0.804J | 0.504J |
| | Chromium | mg/kg | **105.7** | 157 | 104 | **488** | **161** | **114** | 95.7 | **141** | **106** | 97.9 |
| | Cobalt | mg/kg | **17.23** | 21.3 | **21.1** | **73.8** | **26.7** | **18.3** | **20.8** | **18.8** | **19.5** | **19.2** |
| | Copper | mg/kg | **61.3** | 90.98 | **212** | **3970** | **623** | **579** | **77.7** | **358** | **73.8** | **68.2** |
| | Iron | mg/kg | **42,506** | 48,900 | **75,300** | **128,000** | **81,700** | **46,200** | **45,100** | **48,600** | 41,900 | **43,500** |
| | Lead | mg/kg | **35.39** | 51.68 | **77.2** | **614** | **447** | **147** | **51.1** | **569** | **96.9** | **36.8** |
| | Mercury | mg/kg | **3.077** | 4.958 | 0.323 | 0.562 | 0.672 | 0.507 | 0.338 | 0.434 | 0.375 | 0.353 |
| | Molybdenum | mg/kg | **2.689** | 5.01 | 2.42 | **42.7** | **7.55** | **3.95** | <0.628 | **5.04** | <0.569 | <0.629 |
| | Nickel | mg/kg | **110.7** | 178 | **122** | **371** | **180** | 98.7 | 101 | **386** | 103 | 99.3 |
| | Selenium | mg/kg | **NC** | NC | <2.02 | <1.94 | 4.3 | 1.5 | 1.12J | <1.09 | <1.71 | <1.89 |
| | Silver | mg/kg | **0.501** | 0.806 | **1.24** | **2.54** | **1.5** | **0.729** | 0.431J | 0.345J | 0.288J | 0.262J |
| | Thallium | mg/kg | **NC** | NC | <2.02 | <1.94 | <1.62 | <1.48 | 0.922J | <1.09 | 0.576J | <1.89 |
| | Vanadium | mg/kg | **75.27** | 90.11 | 72.5 | **97.8** | **79.8** | 54.5 | 74.3 | 54 | 74.8 | 74 |
| | Zinc | mg/kg | **156.5** | 200.1 | **913** | **3610** | **2670** | **919** | **342** | **1470** | **459** | **191** |
| PCBs | Aroclor 1016 | µg/kg | **NC** | NC | <26 | <120 | <110 | <100 | <25 | <140 | <23 | <24 |
| | Aroclor 1221 | µg/kg | **NC** | NC | <26 | <120 | <110 | <100 | <25 | <140 | <23 | <24 |
| | Aroclor 1232 | µg/kg | **NC** | NC | <26 | <120 | <110 | <100 | <25 | <140 | <23 | <24 |
| | Aroclor 1242 | µg/kg | **NC** | NC | <26 | <120 | <110 | <100 | <25 | <140 | <23 | <24 |
| | Aroclor 1248 | µg/kg | **NC** | NC | 60 | 1100 | 540 | 740 | 93 | 520 | 30 | 39 |
| | Aroclor 1254 | µg/kg | **NC** | NC | 52 | 620 | 340 | 560 | 85 | 530 | 45 | 35 |
| | Aroclor 1260 | µg/kg | **NC** | NC | 41 | 290 | 190 | 200 | 64 | 340 | 41 | 28 |
| | Aroclor 1262 | µg/kg | **NC** | NC | <26 | <120 | <110 | <100 | <25 | <140 | <23 | <24 |
| | Total PCBs | µg/kg | **157.1** | 395 | 153 | **2010** | **1070** | **1500** | **242** | **1390** | 116 | 102 |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
J = estimated below laboratory reporting limit
mg/kg = milligrams per kilogram
NC = Not calculated
PCB = polychlorinated biphenyls
UCL = upper confidence limit
UTL = upper tolerance limit
µg/kg = Micrograms per kilogram
Concentrations in bold exceed the 95% UCL
Concentrations in highlighted gray exceed the 95% UTL

**Table 4**
Sediment Sample Analytical Results - Primary and Contingency Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | | 95% UCL | 95% UTL | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Project Area** | | | Wharf 3 | | | | | | |
| | | **Location** | | | W3-34 | W3-35 | W3-36 | W3-37 | W3-38 | W3-39 | W3-40 |
| | | **Location Type** | | | Contingency | Contingency | Contingency | Contingency | Contingency | Contingency | Contingency |
| | | **Sample Date** | | | 6/9/2016 | 6/9/2016 | 6/9/2016 | 6/9/2016 | 6/9/2016 | 6/9/2016 | 6/9/2016 |
| | | **Sample Depth** | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| | | **Field Identification** | | | W3-34-SED-21.5-22.0 | W3-35-SED-11.4-11.9 | W3-36-SED-9.4-9.9 | W3-37-SED-8.3-8.8 | W3-38-SED-5.4-5.9 | W3-39-SED-5.0-5.5 | W3-40-SED-4.7-5.2 |
| **Moisture** | | **%** | | | **55** | **62** | **53** | **60** | **61** | **63** | **62** |
| Metals | Aluminum | mg/kg | **29,122** | 37,789 | 22,000 | 25,700 | 24,800 | 26,100 | 24,000 | 25,900 | 25,400 |
| | Antimony | mg/kg | **NC** | NC | <1.74 | <2.03 | <1.61 | <1.89 | <1.93 | <2.04 | <1.96 |
| | Arsenic | mg/kg | **9.63** | 13.37 | 6.78 | 9.02 | **9.7** | 9.57 | 6.89 | 7.68 | 7.93 |
| | Barium | mg/kg | **66.19** | 84.69 | **91.5** | 61.7 | **86** | **73.5** | **101** | **67.1** | **81** |
| | Beryllium | mg/kg | **0.693** | 0.852 | 0.681 | **0.696** | **0.713** | **0.75** | 0.676 | **0.759** | **0.707** |
| | Cadmium | mg/kg | **0.926** | 2.79 | 0.593J | 0.58J | **0.974J** | 0.692J | 0.872J | 0.502J | 0.823J |
| | Chromium | mg/kg | **105.7** | 157 | 82.4 | 92.2 | **109** | 99.7 | **110** | 103 | **106** |
| | Cobalt | mg/kg | **17.23** | 21.3 | 16.5 | **17.9** | **19.5** | **19.5** | **19.2** | **18.9** | **18.8** |
| | Copper | mg/kg | **61.3** | 90.98 | **534** | 56.7 | **80.7** | **76.2** | **68.5** | **67.8** | **77.8** |
| | Iron | mg/kg | **42,506** | 48,900 | 36,800 | 40,900 | 42,100 | **44,300** | 39,600 | **42,900** | 42,500 |
| | Lead | mg/kg | **35.39** | 51.68 | **41.2** | 34.7 | **53.4** | **44.4** | **52.2** | **40.4** | **154** |
| | Mercury | mg/kg | **3.077** | 4.958 | <0.181 | 0.374 | 0.531 | 0.529 | 0.855 | 0.0613J | 0.616 |
| | Molybdenum | mg/kg | **2.689** | 5.01 | 0.414J | <0.677 | **5.05** | <0.63 | <0.644 | <0.681 | <0.653 |
| | Nickel | mg/kg | **110.7** | 178 | 88.5 | 93.3 | **142** | **112** | **118** | 107 | 110 |
| | Selenium | mg/kg | **NC** | NC | <1.74 | <2.03 | <1.61 | <1.89 | <1.93 | <2.04 | <1.96 |
| | Silver | mg/kg | **0.501** | 0.806 | 0.23J | 0.417J | 0.363J | 0.356J | 0.262J | 0.455J | 0.258J |
| | Thallium | mg/kg | **NC** | NC | 0.512B,J | <2.03 | <1.61 | <1.89 | <1.93 | <2.04 | <1.96 |
| | Vanadium | mg/kg | **75.27** | 90.11 | 63.2 | 68.9 | 72.5 | 74.4 | 69.1 | 74.8 | 70.6 |
| | Zinc | mg/kg | **156.5** | 200.1 | **228** | **163** | **266** | **245** | **243** | **200** | **250** |
| PCBs | Aroclor 1016 | µg/kg | **NC** | NC | <22 | <26 | <21 | <24 | <25 | <27 | <26 |
| | Aroclor 1221 | µg/kg | **NC** | NC | <22 | <26 | <21 | <24 | <25 | <27 | <26 |
| | Aroclor 1232 | µg/kg | **NC** | NC | <22 | <26 | <21 | <24 | <25 | <27 | <26 |
| | Aroclor 1242 | µg/kg | **NC** | NC | <22 | <26 | <21 | <24 | <25 | <27 | <26 |
| | Aroclor 1248 | µg/kg | **NC** | NC | 160 | 21J | 91 | 82 | 100 | 34 | 240 |
| | Aroclor 1254 | µg/kg | **NC** | NC | 140 | 25J | 61 | 75 | 96 | 45 | 100 |
| | Aroclor 1260 | µg/kg | **NC** | NC | 72 | 26J | 32 | 37 | 69 | 28 | 52 |
| | Aroclor 1262 | µg/kg | **NC** | NC | <22 | <26 | <21 | <24 | <25 | <27 | <26 |
| | Total PCBs | µg/kg | **157.1** | 395 | **372** | 72 | **184** | **194** | **265** | 107 | **392** |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
J = estimated below laboratory reporting limit
mg/kg = milligrams per kilogram
NC = Not calculated
PCB = polychlorinated biphenyls
UCL = upper confidence limit
UTL = upper tolerance limit
µg/kg = Micrograms per kilogram
Concentrations in bold exceed the 95% UCL
Concentrations in highlighted gray exceed the 95% UTL

**Table 4**
Sediment Sample Analytical Results - Primary and Contingency Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | | 95% UCL | 95% UTL | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Project Area** | | | Wharf 3 | | | | | | |
| | | **Location** | | | W3-41 | W3-42 | W3-43 | W3-44 | W3-45 | W3-46 | W3-47 |
| | | **Location Type** | | | Primary | Primary | Primary | Primary | Primary | Contingency | Primary |
| | | **Sample Date** | | | 6/9/2016 | 6/10/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 |
| | | **Sample Depth** | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| | | **Field Identification** | | | W3-41-SED-9.2-9.7 | W3-42-SED-17.2-17.7 | W3-43-SED-7.5-8.0 | W3-44-SED-9.4-9.9 | W3-45-SED-11.2-11.7 | W3-46-SED-10.8-11.3 | W3-47-SED-5.1-5.6 |
| **Moisture** | | **%** | | | **61** | **64** | **64** | **65** | **64** | **56** | **67** |
| Metals | Aluminum | mg/kg | **29,122** | 37,789 | 21,200B | 27,100B | **33,900** | **30,000** | **35,200** | 22,600 | **37,100** |
| | Antimony | mg/kg | **NC** | NC | <1.98 | <2.00 | <2.01 | <2.14 | <2.13 | <1.81 | <2.18 |
| | Arsenic | mg/kg | **9.63** | 13.37 | **15.8** | 8.35 | **20.2** | **17.3** | **15.2** | 7.81 | **21.4** |
| | Barium | mg/kg | **66.19** | 84.69 | **132** | **75** | **173** | **117** | **95.1** | **86.3** | **103** |
| | Beryllium | mg/kg | **0.693** | 0.852 | 0.581J | **0.727** | **0.716** | 0.626J | **0.781** | 0.598J | **0.754** |
| | Cadmium | mg/kg | **0.926** | 2.79 | **5.49** | **1.07J** | **2.59** | 0.741J | 0.531J | 0.739J | **<1.46** |
| | Chromium | mg/kg | **105.7** | 157 | **149** | 104 | **159** | 95 | **108** | 87.7 | **155** |
| | Cobalt | mg/kg | **17.23** | 21.3 | **23.4** | **18.2** | **17.4** | 12.6 | 14.4 | 17 | 15.6 |
| | Copper | mg/kg | **61.3** | 90.98 | **458** | **113** | **511** | **117** | **89.1** | **73.2** | **1710** |
| | Iron | mg/kg | **42,506** | 48,900 | **80,400B** | **44,600B** | **58,400B** | **42,800B** | **47,900B** | 38,500 | **64,800B** |
| | Lead | mg/kg | **35.39** | 51.68 | **2240** | **54.2** | **114** | **63.8** | **53.6** | **40.2** | **63.3** |
| | Mercury | mg/kg | **3.077** | 4.958 | 0.434 | 0.309 | 0.443B | 0.549B | 0.876B | 0.688 | 0.456B |
| | Molybdenum | mg/kg | **2.689** | 5.01 | **3.99** | 0.884 | **6.91** | **4.52** | **4.48** | <0.602 | **13.7** |
| | Nickel | mg/kg | **110.7** | 178 | **160** | 106 | **118** | 96.3 | 107 | 96.3 | **131** |
| | Selenium | mg/kg | **NC** | NC | <1.98 | <2.00 | <2.01 | <2.14 | <2.13 | <1.81 | <2.18 |
| | Silver | mg/kg | **0.501** | 0.806 | **3.8** | **<0.666** | 0.309J | 0.37J | 0.439J | 0.218J | **<0.728** |
| | Thallium | mg/kg | **NC** | NC | <1.98 | <2.00 | <2.01 | <2.14 | <2.13 | <1.81 | <2.18 |
| | Vanadium | mg/kg | **75.27** | 90.11 | 71.3 | **78.6** | **84.5B** | 70.2B | **80.1B** | 64 | **86.8B** |
| | Zinc | mg/kg | **156.5** | 200.1 | **1700B** | **334B** | **780** | **390** | **275** | **232** | **572** |
| PCBs | Aroclor 1016 | µg/kg | **NC** | NC | <26 | <28 | <28 | <28 | <28 | <23 | <30 |
| | Aroclor 1221 | µg/kg | **NC** | NC | <26 | <28 | <28 | <28 | <28 | <23 | <30 |
| | Aroclor 1232 | µg/kg | **NC** | NC | <26 | <28 | <28 | <28 | <28 | <23 | <30 |
| | Aroclor 1242 | µg/kg | **NC** | NC | <26 | <28 | <28 | <28 | <28 | <23 | <30 |
| | Aroclor 1248 | µg/kg | **NC** | NC | 450 | 140 | 260 | 210 | 69 | 60 | 200 |
| | Aroclor 1254 | µg/kg | **NC** | NC | 270 | 76 | 220 | 130 | 56 | 53 | 96 |
| | Aroclor 1260 | µg/kg | **NC** | NC | 270 | 65 | 230 | 120 | 48 | 36 | 60 |
| | Aroclor 1262 | µg/kg | **NC** | NC | <26 | <28 | <28 | <28 | <28 | <23 | <30 |
| | Total PCBs | µg/kg | **157.1** | 395 | **990** | **281** | **710** | **460** | **173** | 149 | **356** |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
J = estimated below laboratory reporting limit
mg/kg = milligrams per kilogram
NC = Not calculated
PCB = polychlorinated biphenyls
UCL = upper confidence limit
UTL = upper tolerance limit
µg/kg = Micrograms per kilogram
Concentrations in bold exceed the 95% UCL
Concentrations in highlighted gray exceed the 95% UTL

**Table 4**
Sediment Sample Analytical Results - Primary and Contingency Locations
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Project Area** | 95% UCL | 95% UTL | Wharf 3 | | | | |
| | | **Location** | | | W3-48 | W3-49 | W3-50 | W3-51 | W3-52 |
| | | **Location Type** | | | Primary | Primary | Contingency | Contingency | Contingency |
| | | **Sample Date** | | | 6/10/2016 | 6/10/2016 | 6/13/2016 | 6/13/2016 | 6/13/2016 |
| | | **Sample Depth** | | | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 | 0-0.5 |
| | | **Field Identification** | | | W3-48-SED-2.5-3.0 | W3-49-SED-2.5-3.0 | W3-50-SED-7.6-8.1 | W3-51-SED-13.0-13.5 | W3-52-SED-8.0-8.5 |
| **Moisture** | | **%** | | | **59** | **63** | **58** | **64** | **59** |
| Metals | Aluminum | mg/kg | **29,122** | 37,789 | 22,500B | 24,900B | 21,500 | 19,800 | 22,900 |
| | Antimony | mg/kg | **NC** | NC | <1.75 | <1.96 | <1.71 | <2.14 | <1.87 |
| | Arsenic | mg/kg | **9.63** | 13.37 | **16.5** | **12.1** | **11.7** | 7.18 | 8.93 |
| | Barium | mg/kg | **66.19** | 84.69 | **254** | **156** | **152** | 64.7 | **72.4** |
| | Beryllium | mg/kg | **0.693** | 0.852 | 0.607 | 0.665 | 0.615 | 0.611J | 0.642 |
| | Cadmium | mg/kg | **0.926** | 2.79 | **5.12** | **2.38** | **1.22** | 0.701J | 0.734J |
| | Chromium | mg/kg | **105.7** | 157 | **169** | **115** | **115** | 79.6 | 90.5 |
| | Cobalt | mg/kg | **17.23** | 21.3 | **25** | **20.4** | **20** | **20.8** | **17.3** |
| | Copper | mg/kg | **61.3** | 90.98 | **3120** | **217** | **237** | 58.6 | **68** |
| | Iron | mg/kg | **42,506** | 48,900 | **78,000B** | **50,000B** | **44,400** | 35,200 | 37,200 |
| | Lead | mg/kg | **35.39** | 51.68 | **186** | **103** | **103** | 33.9 | **44.5** |
| | Mercury | mg/kg | **3.077** | 4.958 | **10.5** | 0.484 | 0.371 | 0.379 | 0.252 |
| | Molybdenum | mg/kg | **2.689** | 5.01 | **9.07** | 1.32 | 1.63 | <0.714 | <0.624 |
| | Nickel | mg/kg | **110.7** | 178 | **182** | **120** | **121** | 91.6 | 97.2 |
| | Selenium | mg/kg | **NC** | NC | 2.17 | <1.96 | <1.71 | <2.14 | <1.87 |
| | Silver | mg/kg | **0.501** | 0.806 | **0.779** | **1.16** | 0.476J | **<0.714** | 0.269J |
| | Thallium | mg/kg | **NC** | NC | <1.75 | <1.96 | <1.71 | <2.14 | <1.87 |
| | Vanadium | mg/kg | **75.27** | 90.11 | **77.4** | **75.7** | 66.6 | 61.4 | 66 |
| | Zinc | mg/kg | **156.5** | 200.1 | **2180B** | **658B** | **591** | **173** | **227** |
| PCBs | Aroclor 1016 | µg/kg | **NC** | NC | <240 | <27 | <24 | <27 | <24 |
| | Aroclor 1221 | µg/kg | **NC** | NC | <240 | <27 | <24 | <27 | <24 |
| | Aroclor 1232 | µg/kg | **NC** | NC | <240 | <27 | <24 | <27 | <24 |
| | Aroclor 1242 | µg/kg | **NC** | NC | <240 | <27 | <24 | <27 | <24 |
| | Aroclor 1248 | µg/kg | **NC** | NC | 780 | 250 | 430 | 37 | 61 |
| | Aroclor 1254 | µg/kg | **NC** | NC | 410 | 180 | 260 | 38 | 73 |
| | Aroclor 1260 | µg/kg | **NC** | NC | 860 | 130 | 110 | 32 | 40 |
| | Aroclor 1262 | µg/kg | **NC** | NC | <240 | <27 | <24 | <27 | <24 |
| | Total PCBs | µg/kg | **157.1** | 395 | **2050** | **560** | **800** | 107 | **174** |

Notes:
< = analyte not detected above laboratory reporting limit
B = analyte was present in an associated method blank
J = estimated below laboratory reporting limit
mg/kg = milligrams per kilogram
NC = Not calculated
PCB = polychlorinated biphenyls
UCL = upper confidence limit
UTL = upper tolerance limit
µg/kg = Micrograms per kilogram
Concentrations in bold exceed the 95% UCL
Concentrations in highlighted gray exceed the 95% UTL

**Table 5**
Statistical Evaluation - Primary and Contingency Sediment Data
Sediment Investigation Report
Sims Metal Management, Redwood City, California

terraphase engineering

| Parameter | Sample Depth | Area | Number of Samples | Number of Detects | Minimum | Maximum | Mean | Standard Deviation | Fit | 95% UCL |
|---|---|---|---|---|---|---|---|---|---|---|
| Antimony | Surface | Primary | 29 | 17 | 0.51 | 22.3 | 5 | 5.9 | 95% KM (t) UCL | 6.9 |
| | | Contingency | 23 | 1 | 0.38 | 0.38 | 0.87 | 0.17 | -- | TFD |
| | | Combined Areas | 52 | 18 | 0.38 | **22.3** | 3.2 | 4.8 | 95% KM (Percentile Bootstrap) UCL | 4.2 |
| | Subsurface | Combined Areas | 6 | 2 | 30.6 | **93.1** | 21 | 37 | -- | TFD |
| Arsenic | Surface | Primary | 29 | 29 | 8.4 | 158 | 41 | 37 | 95% Chebyshev (Mean, Sd) UCL | 71.0 |
| | | Contingency | 23 | 23 | 6.8 | 37.5 | 12 | 6.7 | 95% Adjusted Gamma UC | 14.9 |
| | | Combined Areas | 52 | 52 | 6.8 | **158** | 28 | 31 | 95% Chebyshev (Mean, Sd) UCL | 47.3 |
| | Subsurface | Combined Areas | 6 | 6 | 14.4 | **76** | 40 | 27 | 95% Student's-t UCL | 62.3 |
| Barium | Surface | Primary | 29 | 29 | 55.2 | 778 | 231 | 205 | 95% H-UCL | 304.5 |
| | | Contingency | 23 | 23 | 61.7 | 442 | 154 | 120 | 95% Chebyshev (Mean, Sd) UCL | 263 |
| | | Combined Areas | 52 | 52 | 55.2 | **778** | 197 | 175 | 95% Chebyshev (Mean, Sd) UCL | 303.1 |
| | Subsurface | Combined Areas | 6 | 6 | 62.7 | **1,290** | 464 | 511 | 95% Student's-t UCL | 884.5 |
| Beryllium | Surface | Primary | 29 | 24 | 0.35 | 0.78 | 0.57 | 0.17 | 95% KM (t) UCL | 0.64 |
| | | Contingency | 23 | 23 | 0.32 | 0.76 | 0.63 | 0.13 | 95% Student's-t UCL | 0.68 |
| | | Combined Areas | 52 | 47 | 0.32 | **0.78** | 0.6 | 0.16 | 95% KM (Chebyshev) UCL | 0.70 |
| | Subsurface | Combined Areas | 6 | 4 | 0.54 | **0.65** | 0.6 | 0.05 | 95% Student's-t UCL | 0.64 |
| Cadmium | Surface | Primary | 29 | 23 | 0.52 | 17.4 | 4.4 | 4.5 | 95% Adjusted Gamma KM-UCL | 6.3 |
| | | Contingency | 23 | 23 | 0.50 | 5.4 | 1.5 | 1.4 | 95% Chebyshev (Mean, Sd) UCL | 2.8 |
| | | Combined Areas | 52 | 46 | 0.50 | **17.4** | 3.1 | 3.7 | 95% KM (Chebyshev) UCL | 5.4 |
| | Subsurface | Combined Areas | 6 | 6 | 1.49 | **103** | 26 | 40 | 95% Student's-t UCL | 58.6 |
| Chromium | Surface | Primary | 29 | 29 | 89.7 | 780 | 194 | 151 | 95% Chebyshev (Mean, Sd) UCL | 316.6 |
| | | Contingency | 23 | 23 | 79.6 | 169 | 110 | 22 | 95% Adjusted Gamma UCL | 118.8 |
| | | Combined Areas | 52 | 52 | 79.6 | **780** | 157 | 121 | 95% Modified-t UCL | 186.5 |
| | Subsurface | Combined Areas | 6 | 6 | 116 | **264** | 170 | 57 | 95% Student's-t UCL | 216.9 |
| Cobalt | Surface | Primary | 29 | 29 | 12.6 | 73.8 | 31 | 16 | 95% H-UC | 36.2 |
| | | Contingency | 23 | 23 | 16.5 | 34.9 | 22 | 5.1 | 95% Modified-t UCL | 23.5 |
| | | Combined Areas | 52 | 52 | 12.6 | **73.8** | 27 | 13 | 95% Modified-t UCL | 29.80 |
| | Subsurface | Combined Areas | 6 | 6 | 19.9 | **32** | 26 | 4.3 | 95% Student's-t UCL | 29.3 |
| Copper | Surface | Primary | 29 | 29 | 65.5 | 3,970 | 1,176 | 1,229 | 95% Adjusted Gamma UCL | 1805 |
| | | Contingency | 23 | 23 | 56.7 | 1,270 | 296 | 358 | 95% Chebyshev (Mean, Sd) UCL | 621.5 |
| | | Combined Areas | 52 | 52 | 56.7 | **3,970** | 787 | 1,039 | 95% Chebyshev (Mean, Sd) UCL | 1,415 |
| | Subsurface | Combined Areas | 6 | 6 | 80.5 | **3,280** | 835 | 1,216 | 95% Adjusted Gamma UCL | 5012 |
| Lead | Surface | Primary | 29 | 29 | 41.5 | 2,240 | 517 | 643 | 95% Adjusted Gamma UCL | 800.4 |
| | | Contingency | 23 | 23 | 33.9 | 712 | 173 | 207 | 95% Chebyshev (Mean, Sd) UCL | 361.4 |
| | | Combined Areas | 52 | 52 | 33.9 | **2,240** | 365 | 525 | 95% Chebyshev (Mean, Sd) UCL | 682 |
| | Subsurface | Combined Areas | 6 | 6 | 70.6 | **3,080** | 982 | 1,173 | 95% Student's-t UCL | 1,947 |
| Mercury | Surface | Primary | 29 | 29 | 0.31 | 10.5 | 1.4 | 2.1 | 95% Chebyshev (Mean, Sd) UCL | 3.1 |
| | | Contingency | 23 | 22 | 0.06 | 1.8 | 0.65 | 0.47 | 95% Adjusted Gamma KM-UCL | 0.86 |
| | | Combined Areas | 52 | 51 | 0.06 | **10.5** | 1.1 | 1.6 | 95% KM (Chebyshev) UCL | 2.1 |
| | Subsurface | Combined Areas | 6 | 6 | 1.2 | **3.6** | 2.1 | 0.90 | 95% Student's-t UCL | 2.9 |



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**Table 5**
Statistical Evaluation - Primary and Contingency Sediment Data
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| Parameter | Sample Depth | Area | Number of Samples | Number of Detects | Minimum | Maximum | Mean | Standard Deviation | Fit | 95% UCL |
|---|---|---|---|---|---|---|---|---|---|---|
| Molybdenum | Surface | Primary | 29 | 24 | 0.88 | 42.7 | 12 | 13 | 95% KM (Chebyshev) UCL | 22.1 |
| | | Contingency | 23 | 12 | 0.41 | 18.8 | 3.2 | 4.6 | 95% Adjusted Gamma KM-UCL | 5.9 |
| | | Combined Areas | 52 | 36 | 0.41 | **42.7** | 7.9 | 11 | 95% Approximate Gamma KM-UCL | 11.1 |
| | Subsurface | Combined Areas | 6 | 5 | 0.44 | **25.2** | 9.4 | 11 | 95% KM (t) UCL | 18.6 |
| Nickel | Surface | Primary | 29 | 29 | 96.3 | 931 | 286 | 238 | 95% Chebyshev (Mean, Sd) UCL | 479.1 |
| | | Contingency | 23 | 23 | 88.5 | 386 | 135 | 66 | 95% Modified-t UCL | 160 |
| | | Combined Areas | 52 | 52 | 88.5 | **931** | 219 | 197 | 95% Chebyshev (Mean, Sd) UCL | 338.4 |
| | Subsurface | Combined Areas | 6 | 6 | 159 | **959** | 369 | 303 | 95% Student's-t UCL | 618.4 |
| Selenium | Surface | Primary | 29 | 6 | 1.3 | 4.3 | 1.3 | 0.75 | 95% KM (Percentile Bootstrap) UCL | 1.8 |
| | | Contingency | 23 | 4 | 1.1 | 2.2 | 1 | 0.32 | 95% KM (t) UCL | 1.4 |
| | | Combined Areas | 52 | 10 | 1.1 | **4.3** | 1.2 | 0.60 | 95% KM (Percentile Bootstrap) UCL | 1.6 |
| | Subsurface | Combined Areas | 6 | 0 | <1.58 | <4.02 | -- | -- | -- | TFD |
| Silver | Surface | Primary | 29 | 27 | 0.31 | 6 | 1.8 | 1.6 | 95% KM (Chebyshev) UCL | 3.126 |
| | | Contingency | 23 | 22 | 0.22 | 1.8 | 0.52 | 0.38 | 95% KM (Chebyshev) UCL | 0.875 |
| | | Combined Areas | 52 | 49 | 0.22 | **6** | 1.2 | 1.4 | 95% KM (Chebyshev) UCL | 2.1 |
| | Subsurface | Combined Areas | 6 | 6 | 0.77 | **10** | 3 | 3.5 | 95% Adjusted Gamma UCL | 10.9 |
| Thallium | Surface | Primary | 29 | 0 | <1.09 | <2.6 | -- | -- | -- | TFD |
| | | Contingency | 23 | 4 | 0.51 | 1.1 | 0.88 | 0.17 | 95% KM (t) UCL | 0.99 |
| | | Combined Areas | 52 | 4 | 0.51 | **1.1** | 0.93 | 0.17 | 95% KM (t) UCL | 0.99 |
| | Subsurface | Combined Areas | 6 | 0 | <1.58 | <4.02 | -- | -- | -- | TFD |
| Vanadium | Surface | Primary | 29 | 29 | 44.2 | 97.8 | 74 | 11 | 95% Student's-t UCL | 77.6 |
| | | Contingency | 23 | 23 | 50.6 | 81.4 | 68 | 8.1 | 95% Student's-t UCL | 71.1 |
| | | Combined Areas | 52 | 52 | 44.2 | **97.8** | 72 | 10 | 95% Student's-t UCL | 73.9 |
| | Subsurface | Combined Areas | 6 | 6 | 59.2 | **78.1** | 69 | 6.7 | 95% Student's-t UCL | 74.7 |
| Zinc | Surface | Primary | 29 | 29 | 202 | 28,500 | 4,020 | 6,659 | 95% Adjusted Gamma UCL | 6,492 |
| | | Contingency | 23 | 23 | 163 | 5,440 | 1,070 | 1,525 | 95% Chebyshev (Mean, Sd) UCL | 2,456 |
| | | Combined Areas | 52 | 52 | 163 | **28,500** | 2,715 | 5,248 | 95% Chebyshev (Mean, Sd) UCL | 5,887 |
| | Subsurface | Combined Areas | 6 | 6 | 246 | **6,560** | 3,046 | 2,815 | 95% Student's-t UCL | 5,361 |
| Aluminum | Surface | Primary | 29 | 29 | 7,320 | 37,100 | 21,247 | 7,685 | 95% Student's-t UCL | 23,675 |
| | | Contingency | 23 | 23 | 13,000 | 28,600 | 22,891 | 4,314 | 95% Student's-t UCL | 24,436 |
| | | Combined Areas | 52 | 52 | 7,320 | **37,100** | 21,974 | 6,414 | 95% Student's-t UCL | 23,464 |
| | Subsurface | Combined Areas | 6 | 6 | 12,500 | **23,000** | 17,950 | 4,392 | 95% Student's-t UCL | 21,563 |
| Iron | Surface | Primary | 29 | 29 | 42,800 | 199,000 | 90,759 | 52,730 | 95% Chebyshev (Mean, Sd) UCL | 133,440 |
| | | Contingency | 23 | 23 | 35,200 | 74,800 | 47,048 | 11,284 | 95% Modified-t UCL | 51,229 |
| | | Combined Areas | 52 | 52 | 35,200 | **199,000** | 71,425 | 45,409 | 95% Modified-t UCL | 82,234 |
| | Subsurface | Combined Areas | 6 | 6 | 38,100 | **164,000** | 89,500 | 56,924 | 95% Student's-t UCL | 136,328 |
| Total PCBs Aroclors | Surface | Primary | 29 | 29 | 119 | 6,800 | 1,499 | 1,681 | 95% Adjusted Gamma UCL | 2,236 |
| | | Contingency | 23 | 23 | 72 | 7,760 | 1,349 | 2,214 | 95% Chebyshev (Mean, Sd) UCL | 3,361 |
| | | Combined Areas | 52 | 52 | 72 | **7,760** | 1,432 | 1,916 | 95% Chebyshev (Mean, Sd) UCL | 2,590 |
| | Subsurface | Combined Areas | 6 | 6 | 141 | **6,620** | 2,782 | 3,016 | 95% Student's-t UCL | 5,263 |



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**Table 5**
Statistical Evaluation - Primary and Contingency Sediment Data
Sediment Investigation Report
Sims Metal Management, Redwood City, California

| Parameter | Sample Depth | Area | Number of Samples | Number of Detects | Minimum | Maximum | Mean | Standard Deviation | Fit | 95% UCL |
|---|---|---|---|---|---|---|---|---|---|---|

Notes:
< = analyte not detected above laboratory reporting limit
-- = not calculated
Metals concentrations in milligrams per kilogram
PCB concentrations in micrograms per kilogram
PCB = polychlorinated biphenyls
TFD = Too few detects to calculate UCL
Total PCBs summations from Aroclors were calculated using 0 for non-detect results
UCL = upper confidence limit
95%UCL = 95-percent upper confidence limit on the mean
95%UCL calculated with using ProUCL 5.0.00 Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations



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**Table 6**
Reference Area PCB Data
Sims Metal Management, Redwood City, California

| Reference Area | Number of Samples | Number of NDs | Min | Max | SD | Mean | 95% UCL | 90th Percentile 90% UTL (2015 Ambient Value) | 99th Percentile 90% UTL[1] |
|---|---|---|---|---|---|---|---|---|---|
| USACE Redwood Creek, 2014[2] (-32.0 to -32.5-Z) | 12 | 0 | 43 | 356 | 93.03 | 126.9 | 197 | -- | -- |
| USACE Redwood Creek, 2015[3] (-30.0 to -30.5-Z) | 12 | 0 | 2.09 | 30.1 | 7.219 | 13.64 | 17.39 | -- | -- |
| USACE Redwood Creek, 2015[3] (-31.0 to -31.5-Z) | 12 | 0 | 4.56 | 28.3 | 7.241 | 15.26 | 19.01 | -- | -- |
| USACE Redwood Creek, 2015[3] (-32.0 to -32.5-Z) | 12 | 0 | 1.22 | 132.4 | 38.43 | 37.68 | 73.61 | -- | -- |
| San Francisco Bay Area Sediments calculated from data between 2002 and 2014[4] | -- | -- | -- | -- | -- | -- | N/A | 18.2 | 29.5 |

Notes:
PCB = polychlorinated biphenyls
PCB concentrations in micrograms per kilogram
Total PCB from summation of PCB congeners
-- not calculated
1 = 99th percentile required only for PCBs. Indicates approximate (non-outlier) upper limit for other constituents
2 = United States of Army Corp. of Engineers (USACE), San Francisco District. 2015. Redwood City Harbor Navigation Improvement Feasibility Report and Integrated EIS/EIR. HydroPlan LLC, in collaboration with GAIA and Moffatt and Nichol
3 = Data provide by United States Environmental Protection Agency staff during meeting with Sims and Terraphase representatives on March 8, 2016
4 = San Francisco Estuary Institute (SFEI). 2016. Technical Memorandum, Updated Ambient Concentrations of Toxic Chemicals in the San Francisco Bay Area Sediments
(-30.0 to -30.5-Z) = sample depth shown as elevation relative to Mean Lower Low Water



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| | | |
|---|---|---|
| **SAFETY FIRST** | CLIENT: Sims Metal Management | **DRAFT** |
| terraphase engineering | PROJECT: Sediment Investigation Report | **Site Location Map** |
| | PROJECT NUMBER: **0012.001.007** | **FIGURE 1** |

File Name: Figure 1 – Site Location Map Prepared by: ptz Checked by: jrr

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_2_Project Area_0012-001-006.mxd Created by: DJR/JK Checked by: DCR

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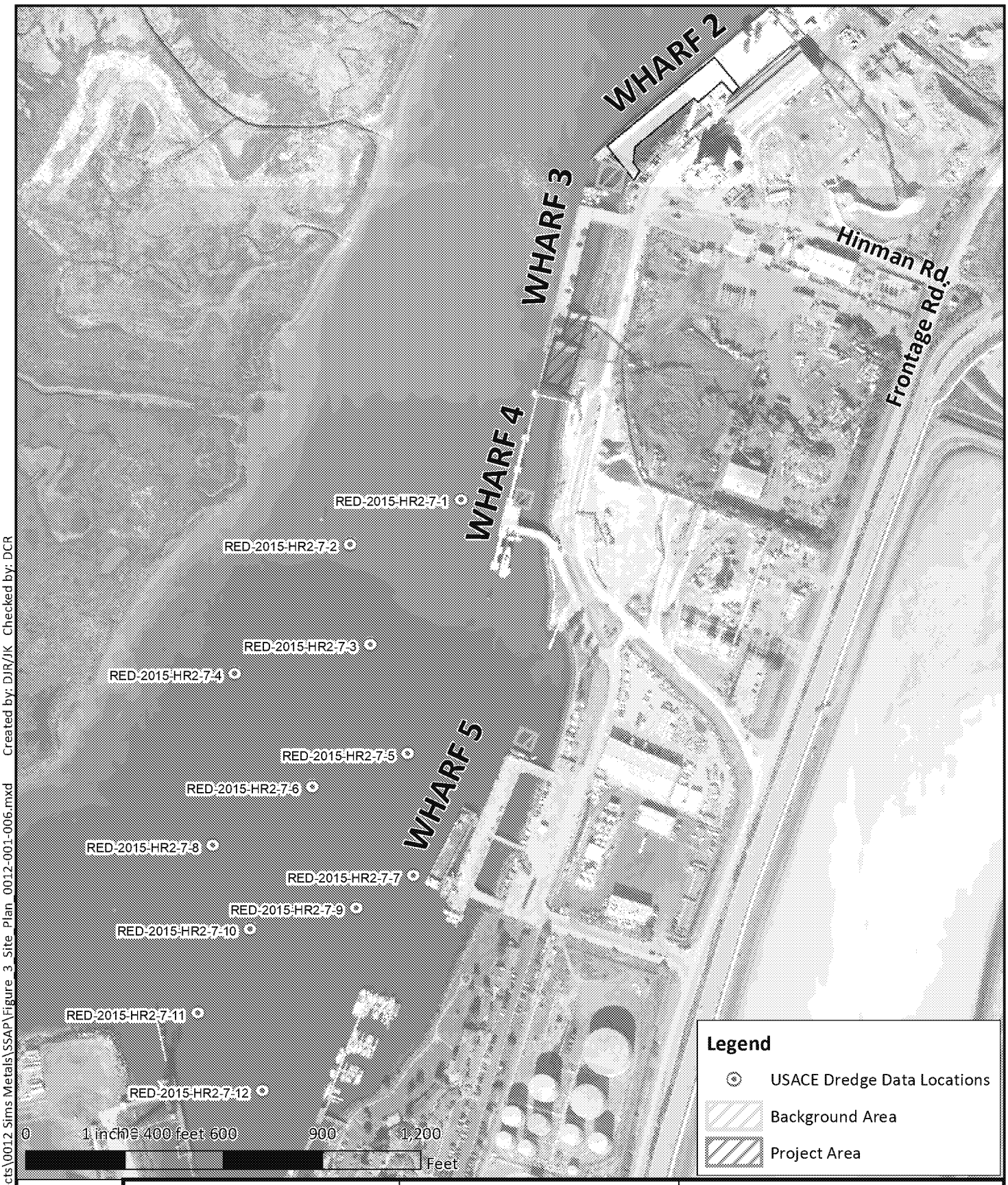
| | |
|---|---|
| CLIENT: Sims Metal Management | Project Area |
| PROJECT: Sediment Sampling and Analysis Plan | |
| PROJECT NUMBER: 0012.001.006 | FIGURE 2 |




File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_3_Site_Plan_0012-001-006.mxd Created by: DJR/JK Checked by: DCR

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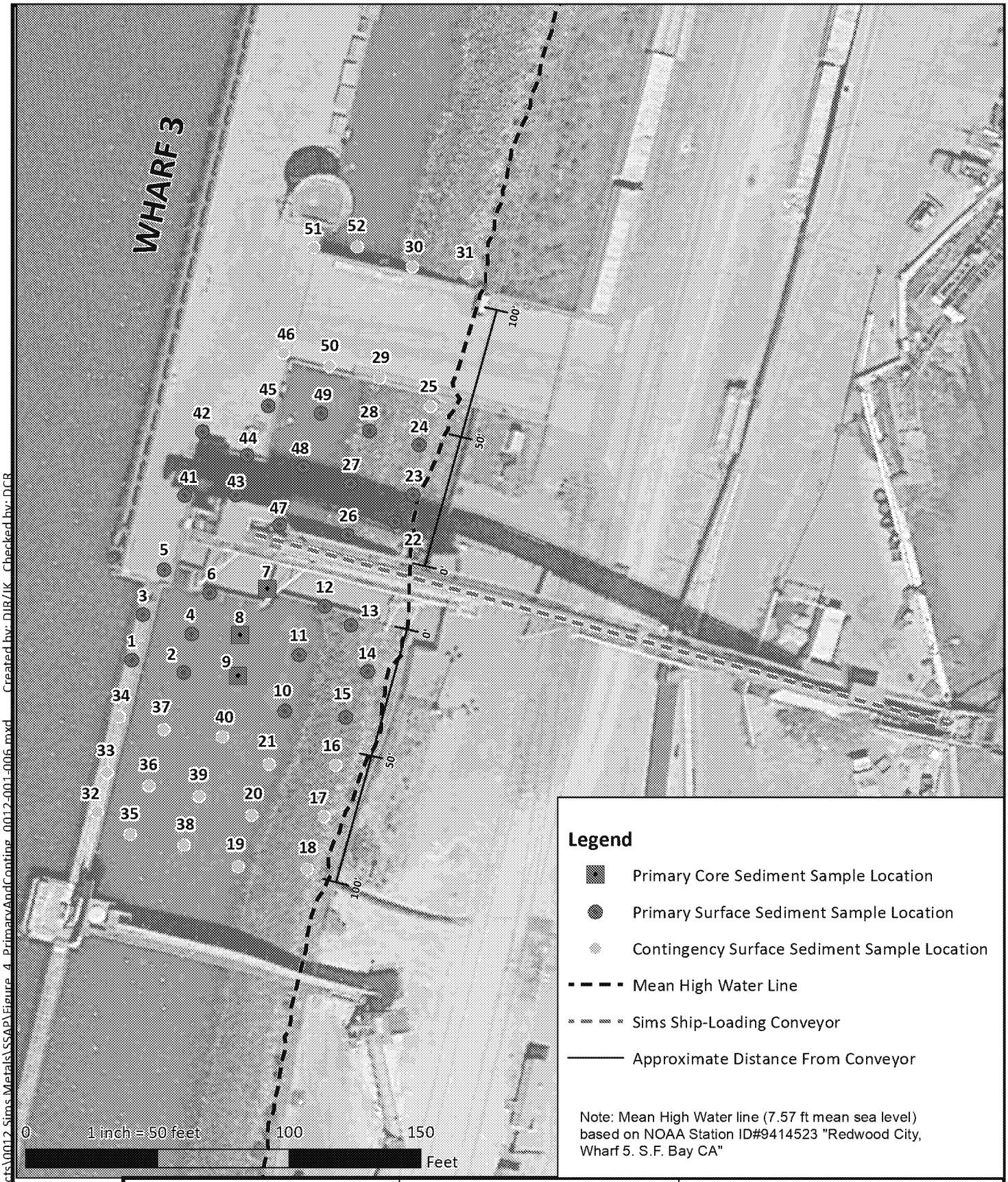
| | |
|---|---|
| CLIENT: Sims Metal Management | **Overview of Sediment Sampling Locations** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.006 | **FIGURE 3** |

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| | |
|---|---|
| CLIENT: Sims Metal Management | **Primary and Contingency Sediment Sample Locations - Wharf 3** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 4** |

File: C:\GIS_Local\Projects\0012_Sims Metals\SSAP\Figure_4_PrimaryAndContingent_0012-001-006.mxd Created by: DJR/JK Checked by: DCR

File: J:\GIS Backup\GIS Data\0012 Sims Metals\SSAP\Figure_5a_Wharf2_0012-001-006.mxd Created by: DJR Checked by: DCR

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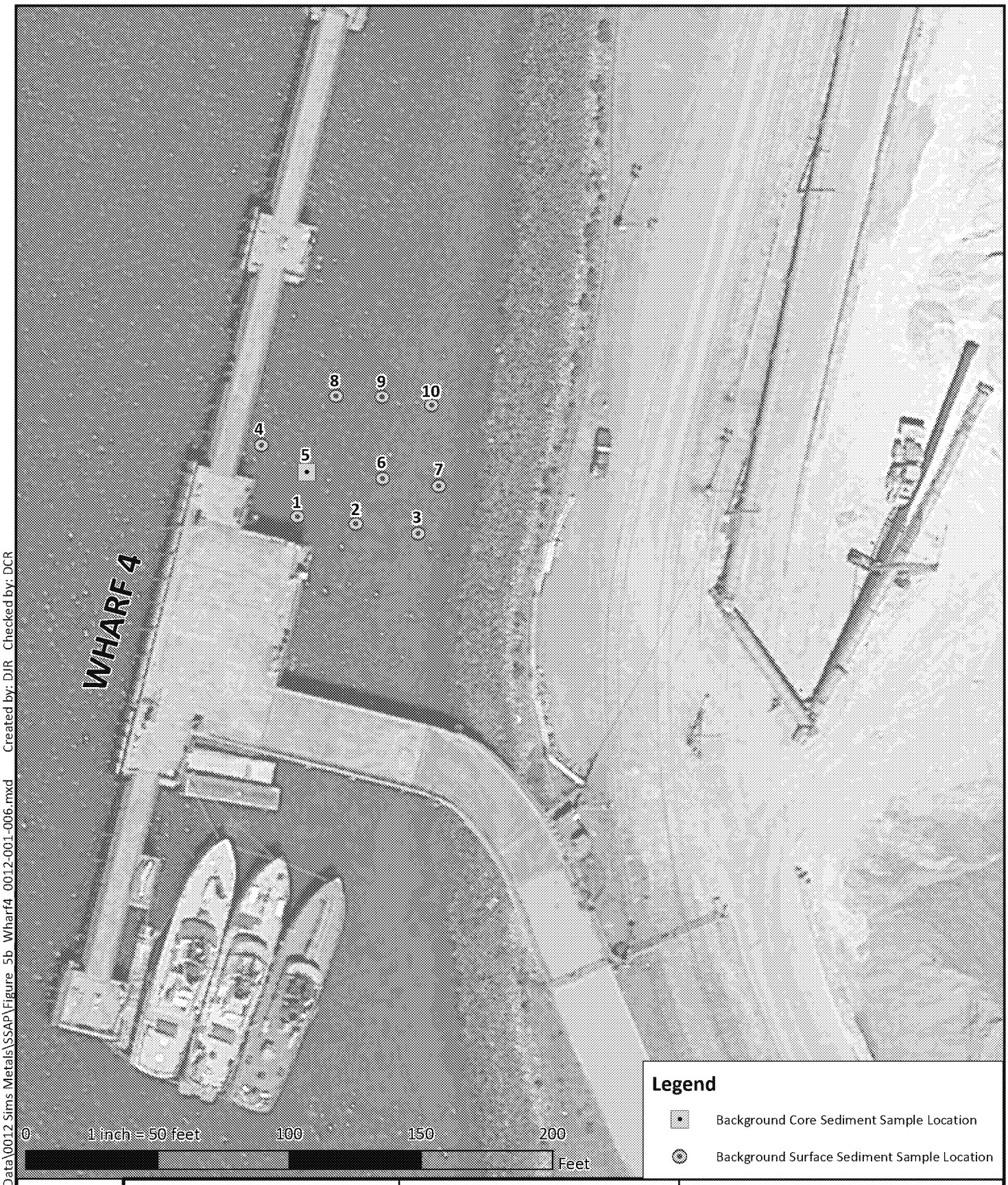
|---|---|
| CLIENT: Sims Metal Management | Background Sediment Sample Locations - Wharf 2 |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | FIGURE 5a |




File: J:\GIS Backup\GIS Data\0012 Sims Metals\SSAP\Figure_5b_Wharf4_0012-001-006.mxd Created by: DJR Checked by: DCR

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|---|---|
| CLIENT: Sims Metal Management | Background Sediment Sample Locations - Wharf 4 |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | FIGURE 5b |

File: J:\GIS Backup\GIS Data\0012 Sims Metals\SSAP\Figure_5c_Wharf5_0012-001-006.mxd Created by: DJR Checked by: DCR

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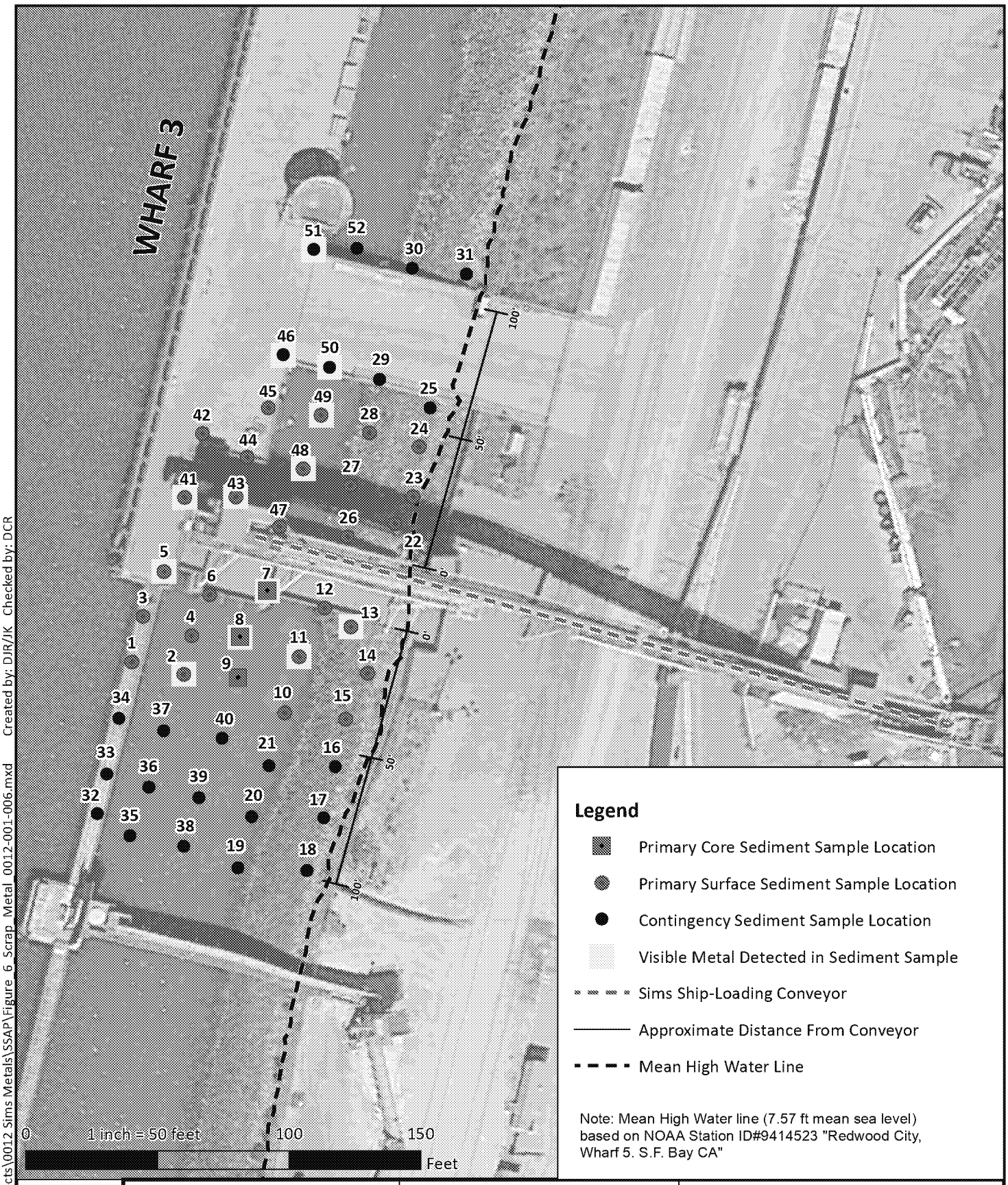
|---|---|
| CLIENT: Sims Metal Management | **Background Sediment Sample Locations - Wharf 5** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 5c** |




File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_6_Scrap_Metal_0012-001-006.mxd Created by: DJR/JK Checked by: DCR

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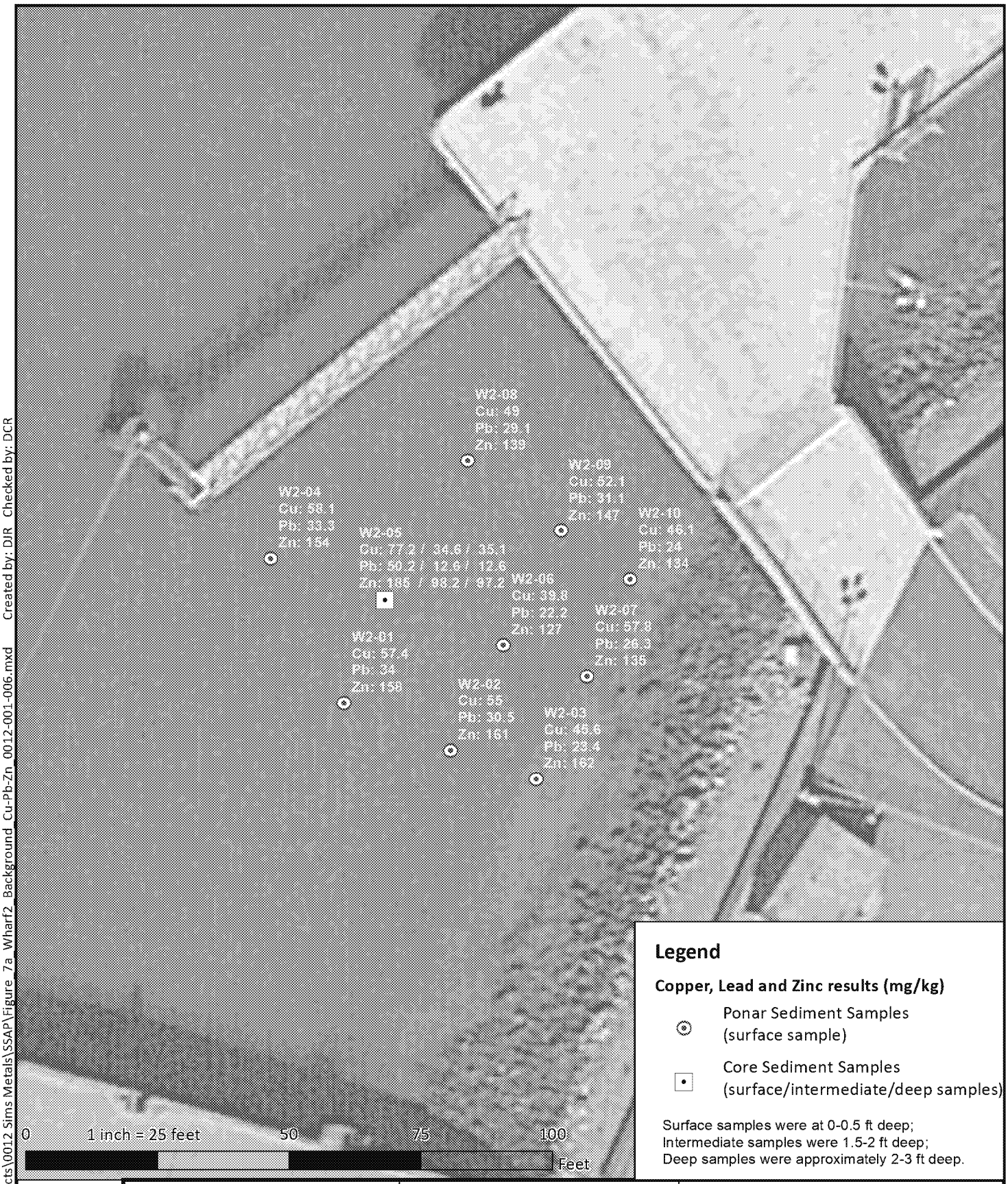
|---|---|
| CLIENT: Sims Metal Management | **Scrap Metal Observations in Project-Area Sediment Samples** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 6** |




## Legend

**Copper, Lead and Zinc results (mg/kg)**

Ponar Sediment Samples (surface sample)

Core Sediment Samples (surface/intermediate/deep samples)

Surface samples were at 0-0.5 ft deep;
Intermediate samples were 1.5-2 ft deep;
Deep samples were approximately 2-3 ft deep.

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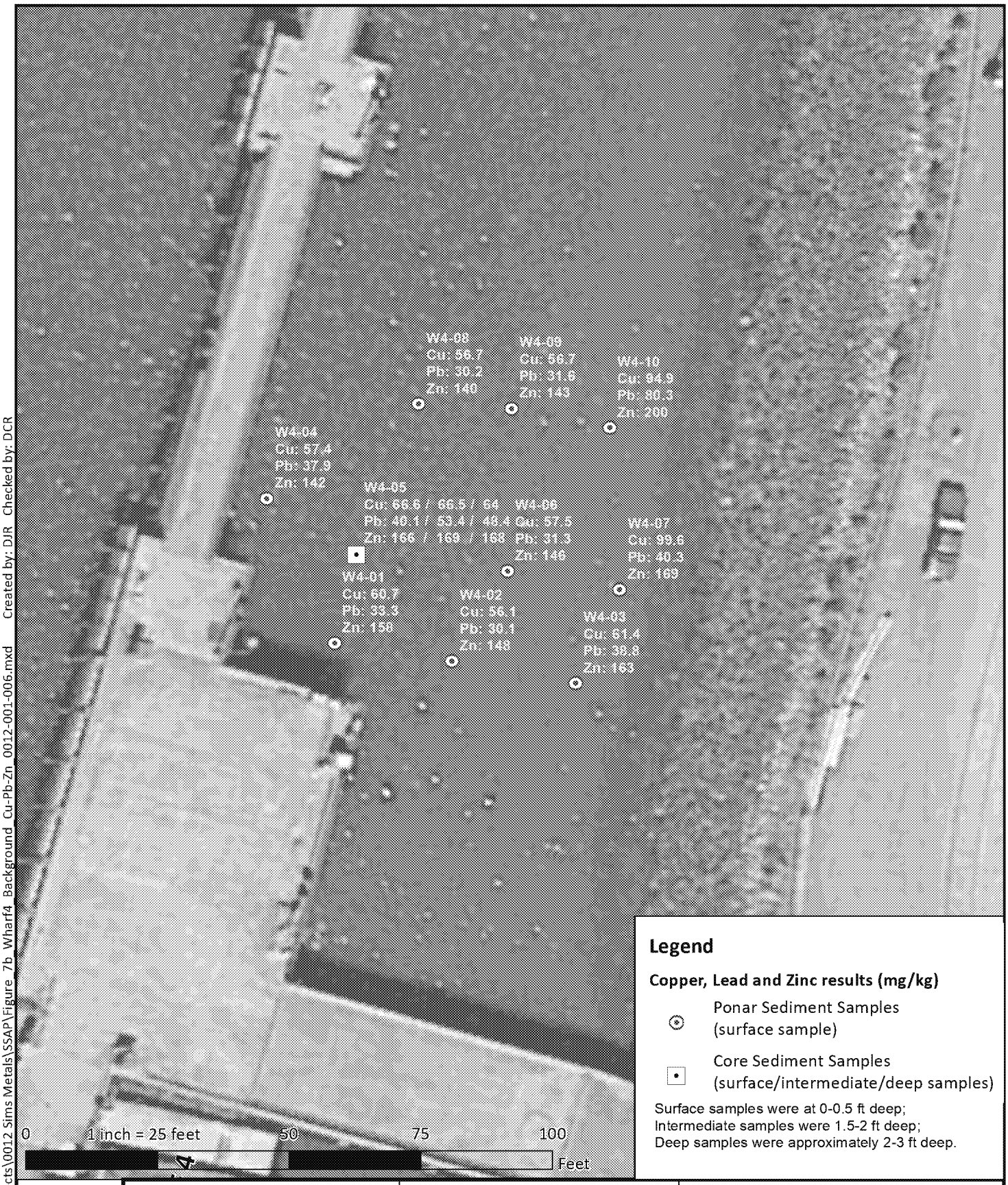
| | |
|---|---|
| CLIENT: Sims Metal Management | **Copper, Lead and Zinc Concentrations in Background Sediment - Wharf 2** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 7a** |

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_7a_Wharf2_Background_Cu-Pb-Zn_0012-001-006.mxd Created by: DJR Checked by: DCR




## Legend

**Copper, Lead and Zinc results (mg/kg)**

Ponar Sediment Samples (surface sample)

Core Sediment Samples (surface/intermediate/deep samples)

Surface samples were at 0-0.5 ft deep;
Intermediate samples were 1.5-2 ft deep;
Deep samples were approximately 2-3 ft deep.

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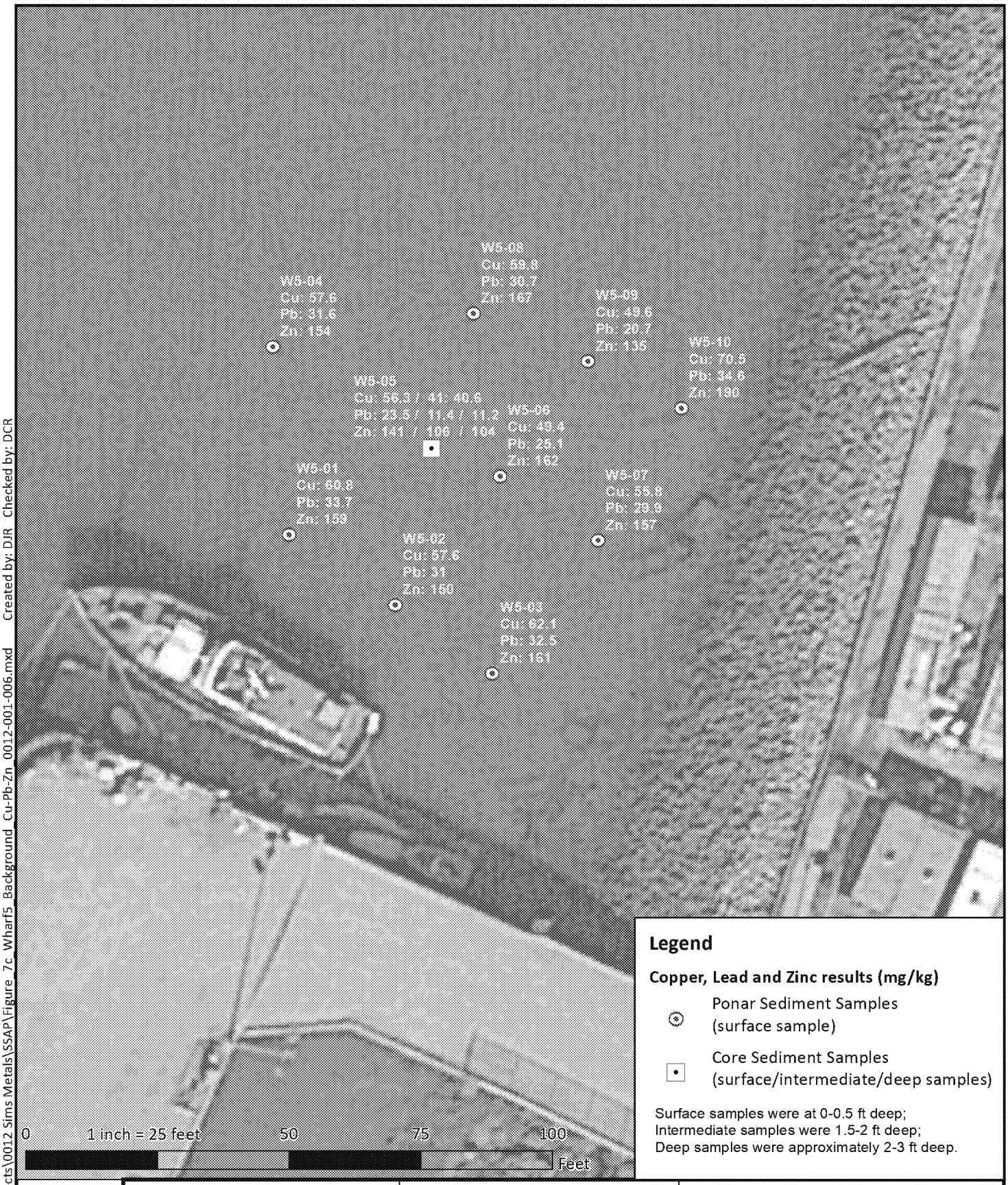
|---|---|
| CLIENT: Sims Metal Management | **Copper, Lead and Zinc Concentrations in Background Sediment - Wharf 4** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 7b** |

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_7b_Wharf4_Background_Cu-Pb-Zn_0012-001-006.mxd Created by: DJR Checked by: DCR




## Legend

**Copper, Lead and Zinc results (mg/kg)**

Ponar Sediment Samples (surface sample)

Core Sediment Samples (surface/intermediate/deep samples)

Surface samples were at 0-0.5 ft deep;
Intermediate samples were 1.5-2 ft deep;
Deep samples were approximately 2-3 ft deep.

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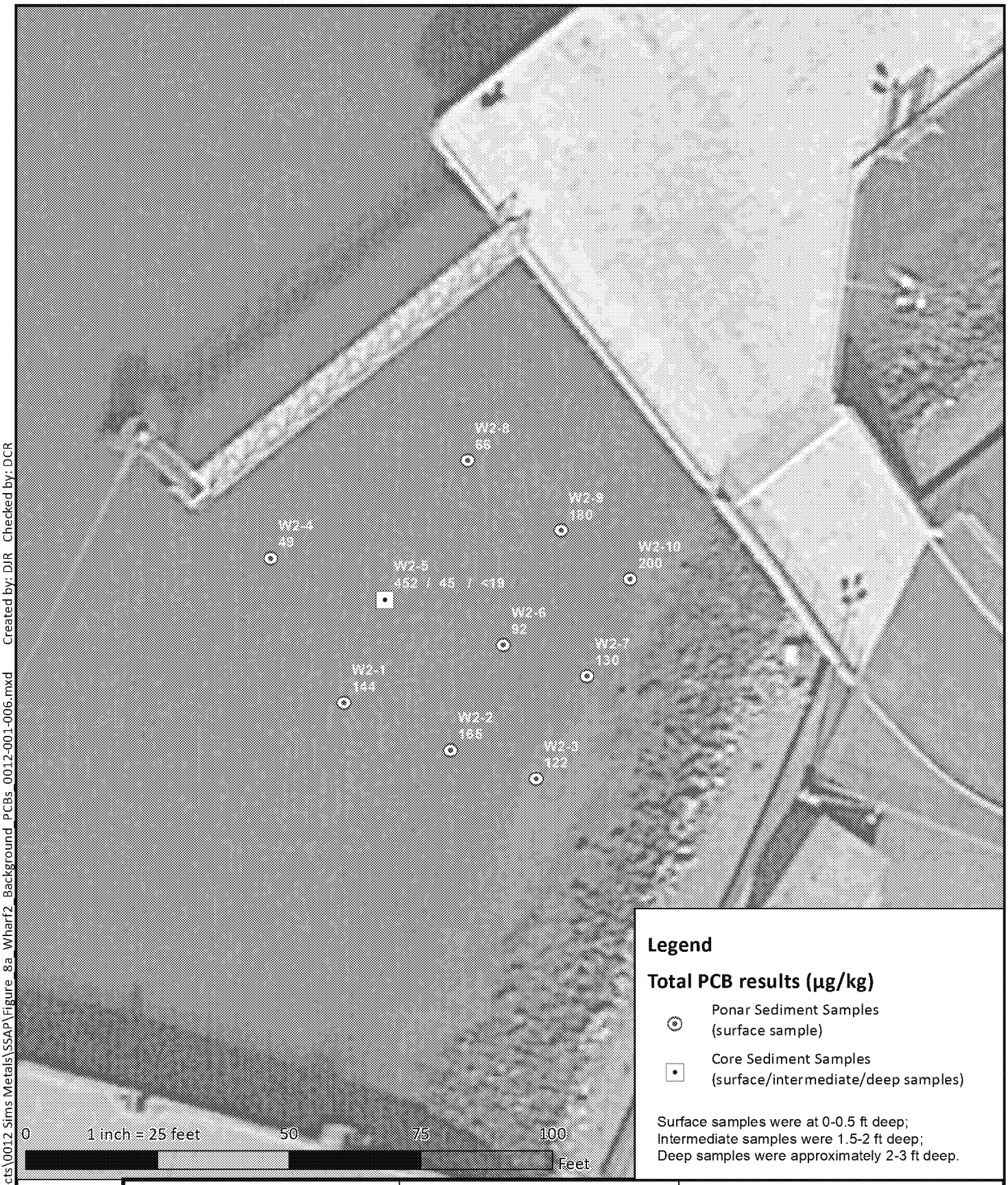
| | |
|---|---|
| CLIENT: Sims Metal Management | **Copper, Lead and Zinc Concentrations in Background Sediment - Wharf 5** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 7c** |

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_7c_Wharf5_Background_Cu-Pb-Zn_0012-001-006.mxd Created by: DJR Checked by: DCR




**Legend**

**Total PCB results (µg/kg)**

Ponar Sediment Samples (surface sample)

Core Sediment Samples (surface/intermediate/deep samples)

Surface samples were at 0-0.5 ft deep;
Intermediate samples were 1.5-2 ft deep;
Deep samples were approximately 2-3 ft deep.

N

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| | |
|---|---|
| CLIENT: Sims Metal Management | **Total PCB Concentrations in Background Sediment - Wharf 2** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 8a** |

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_8a_Wharf2_Background_PCBs_0012-001-006.mxd Created by: DJR Checked by: DCR

## Legend

**Total PCB results (µg/kg)**

Ponar Sediment Samples (surface sample)

Core Sediment Samples (surface/intermediate/deep samples)

Surface samples were at 0-0.5 ft deep;
Intermediate samples were 1.5-2 ft deep;
Deep samples were approximately 2-3 ft deep.

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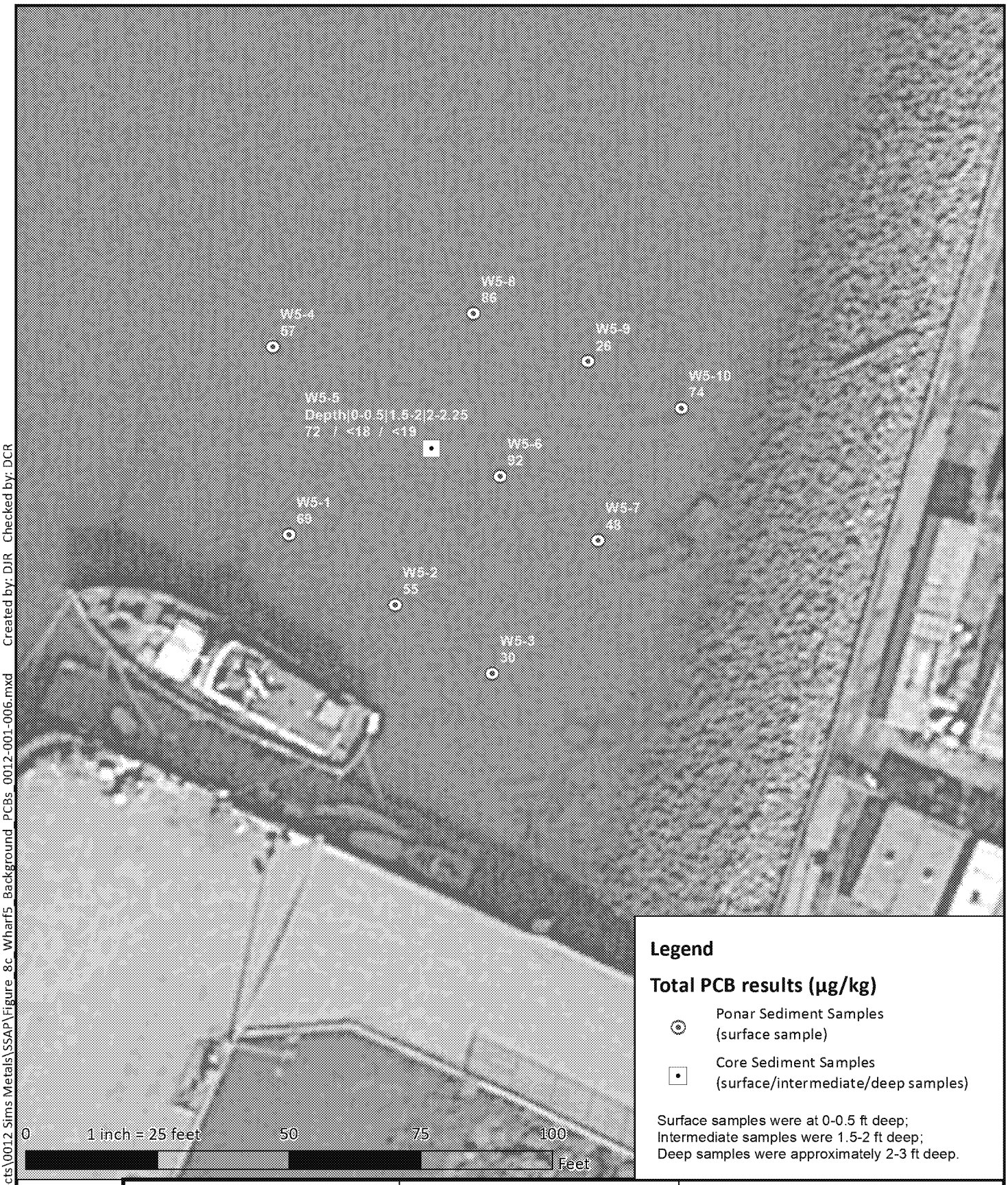
|---|---|
| CLIENT: | Sims Metal Management |
| PROJECT: | Sediment Investigation Report |
| PROJECT NUMBER: | 0012.001.007 |

**Total PCB Concentrations in Background Sediment - Wharf 4**

**FIGURE 8b**

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_8b_Wharf4_Background_PCBs_0012-001-006.mxd Created by: DJR Checked by: DCR




**Legend**

**Total PCB results (µg/kg)**

Ponar Sediment Samples (surface sample)

Core Sediment Samples (surface/intermediate/deep samples)

Surface samples were at 0-0.5 ft deep;
Intermediate samples were 1.5-2 ft deep;
Deep samples were approximately 2-3 ft deep.

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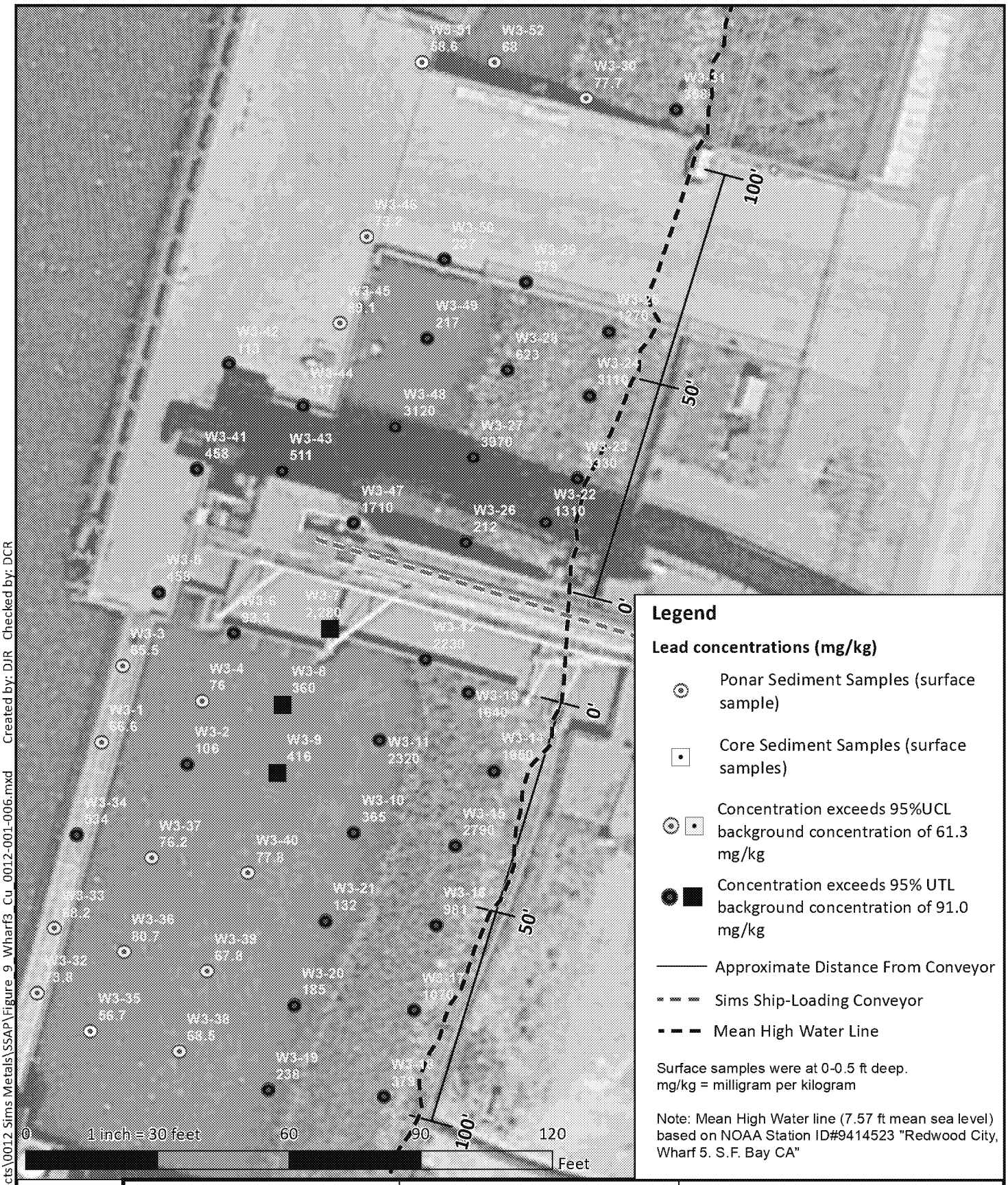
|---|---|
| CLIENT: | Sims Metal Management |
| PROJECT: | Sediment Investigation Report |
| PROJECT NUMBER: | 0012.001.007 |

**Total PCB Concentrations in Background Sediment - Wharf 5**

**FIGURE 8c**

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_8c_Wharf5_Background_PCBs_0012-001-006.mxd Created by: DJR Checked by: DCR




## Legend

**Lead concentrations (mg/kg)**

- Ponar Sediment Samples (surface sample)
- Core Sediment Samples (surface samples)
- Concentration exceeds 95%UCL background concentration of 61.3 mg/kg
- Concentration exceeds 95% UTL background concentration of 91.0 mg/kg
- Approximate Distance From Conveyor
- Sims Ship-Loading Conveyor
- Mean High Water Line

Surface samples were at 0-0.5 ft deep.
mg/kg = milligram per kilogram

Note: Mean High Water line (7.57 ft mean sea level) based on NOAA Station ID#9414523 "Redwood City, Wharf 5. S.F. Bay CA"

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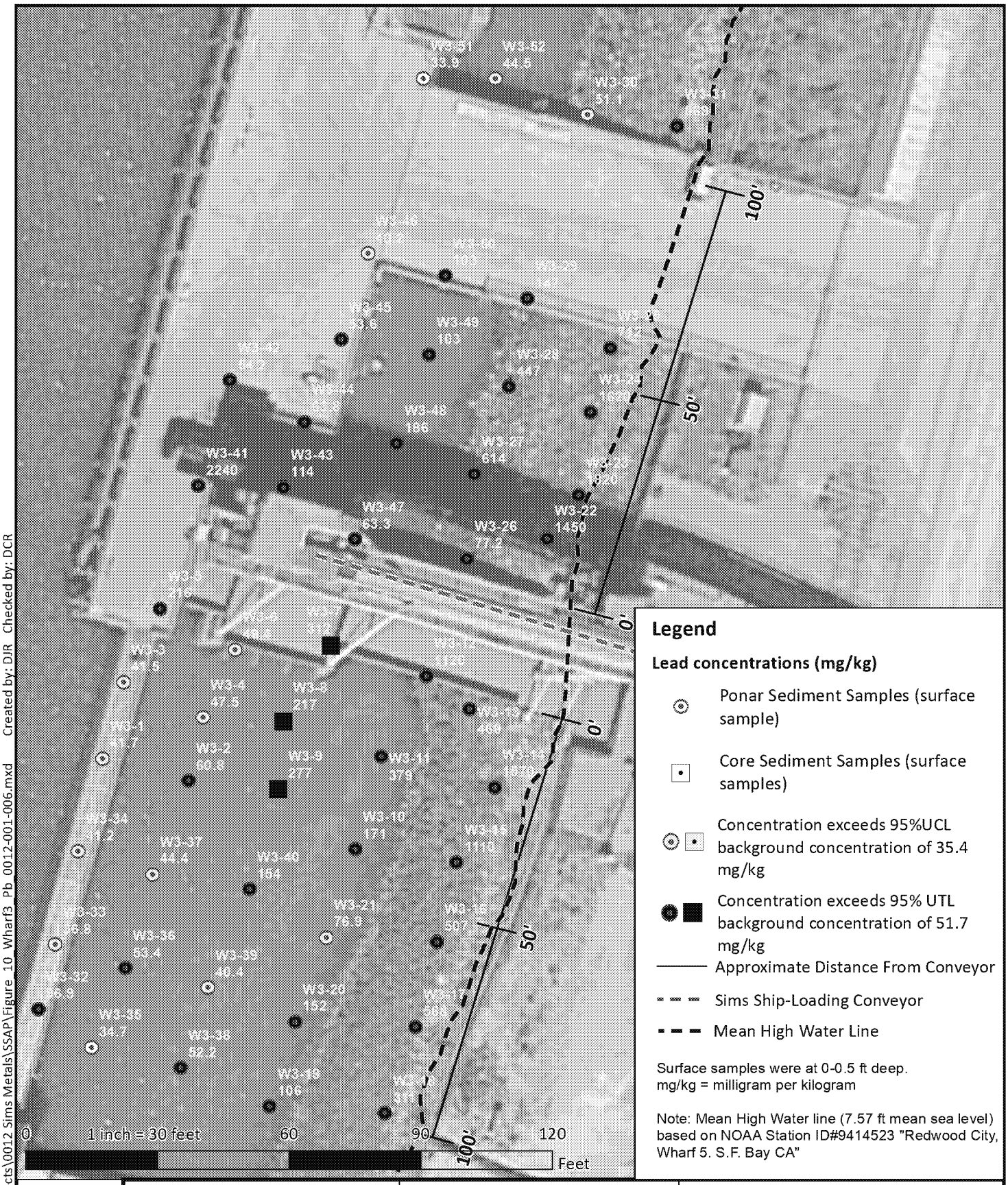
|---|---|
| CLIENT: Sims Metal Management | **Copper Concentrations in Project-Area Surface Sediment** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 9** |

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_9_Wharf3_Cu_0012-001-006.mxd Created by: DJR Checked by: DCR




## Legend

**Lead concentrations (mg/kg)**

- Ponar Sediment Samples (surface sample)
- Core Sediment Samples (surface samples)
- Concentration exceeds 95%UCL background concentration of 35.4 mg/kg
- Concentration exceeds 95% UTL background concentration of 51.7 mg/kg
- Approximate Distance From Conveyor
- Sims Ship-Loading Conveyor
- Mean High Water Line

Surface samples were at 0-0.5 ft deep.
mg/kg = milligram per kilogram

Note: Mean High Water line (7.57 ft mean sea level) based on NOAA Station ID#9414523 "Redwood City, Wharf 5. S.F. Bay CA"

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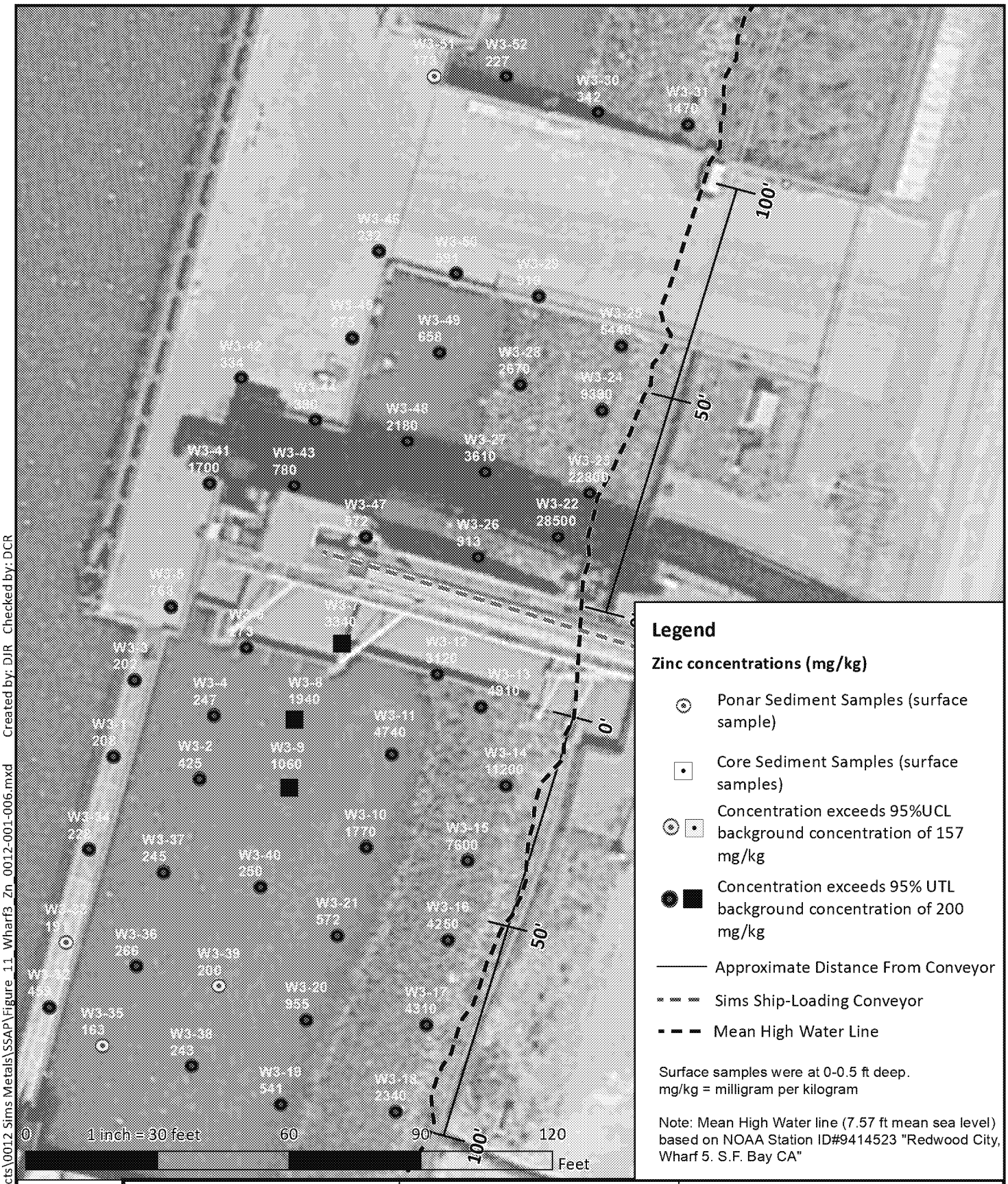
| CLIENT: | Sims Metal Management |
| PROJECT: | Sediment Investigation Report |
| PROJECT NUMBER: | 0012.001.007 |

**Lead Concentrations in Project-Area Surface Sediment**

**FIGURE 10**

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_10_Wharf3_Pb_0012-001-006.mxd Created by: DJR Checked by: DCR




File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_11_Wharf3_Zn_0012-001-006.mxd Created by: DJR Checked by: DCR

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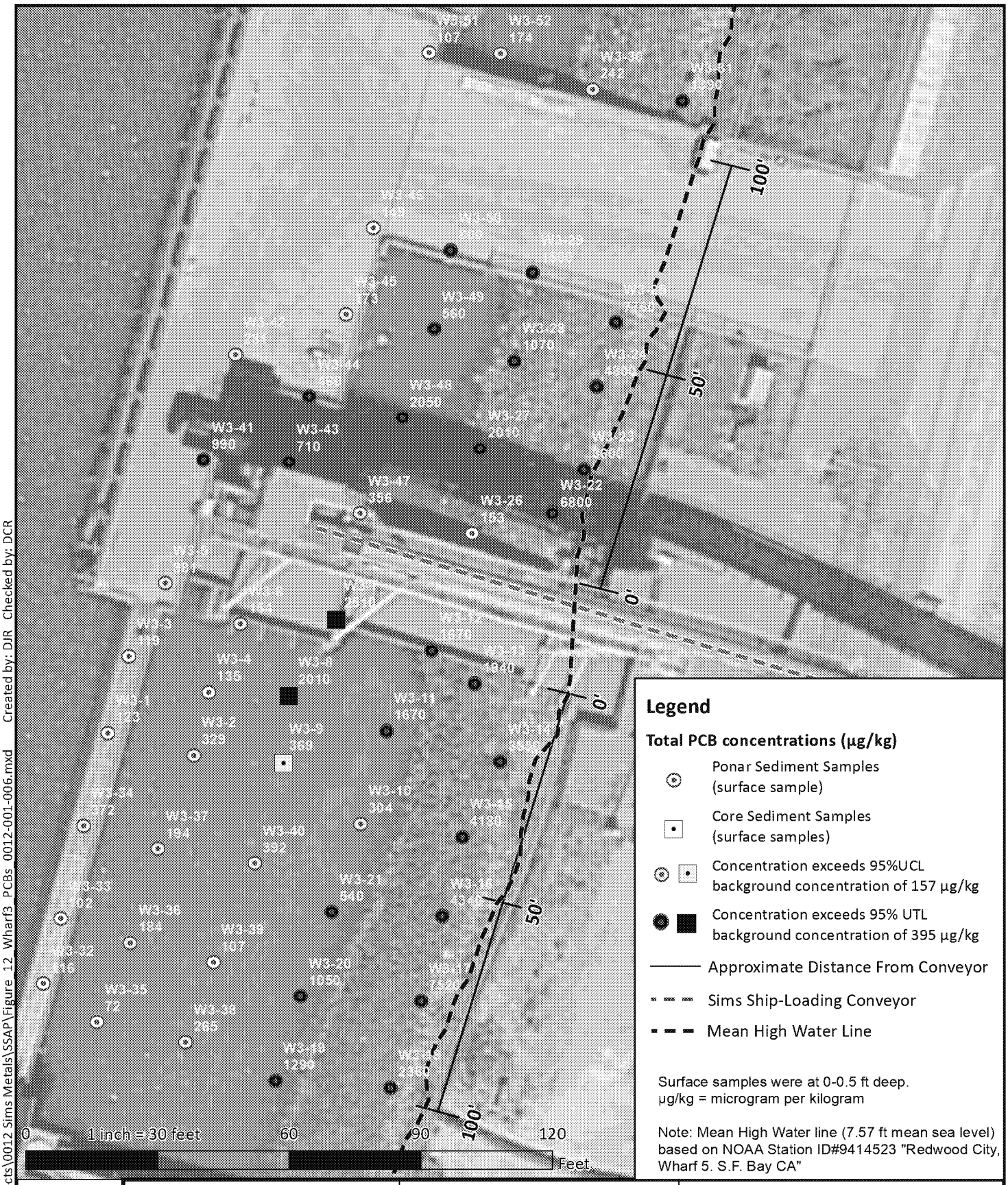
| CLIENT: Sims Metal Management | Zinc Concentrations in Project-Area Surface Sediment |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | FIGURE 11 |




## Legend

**Total PCB concentrations (µg/kg)**

- Ponar Sediment Samples (surface sample)
- Core Sediment Samples (surface samples)
- Concentration exceeds 95%UCL background concentration of 157 µg/kg
- Concentration exceeds 95% UTL background concentration of 395 µg/kg
- Approximate Distance From Conveyor
- Sims Ship-Loading Conveyor
- Mean High Water Line

Surface samples were at 0-0.5 ft deep.
µg/kg = microgram per kilogram

Note: Mean High Water line (7.57 ft mean sea level) based on NOAA Station ID#9414523 "Redwood City, Wharf 5. S.F. Bay CA"

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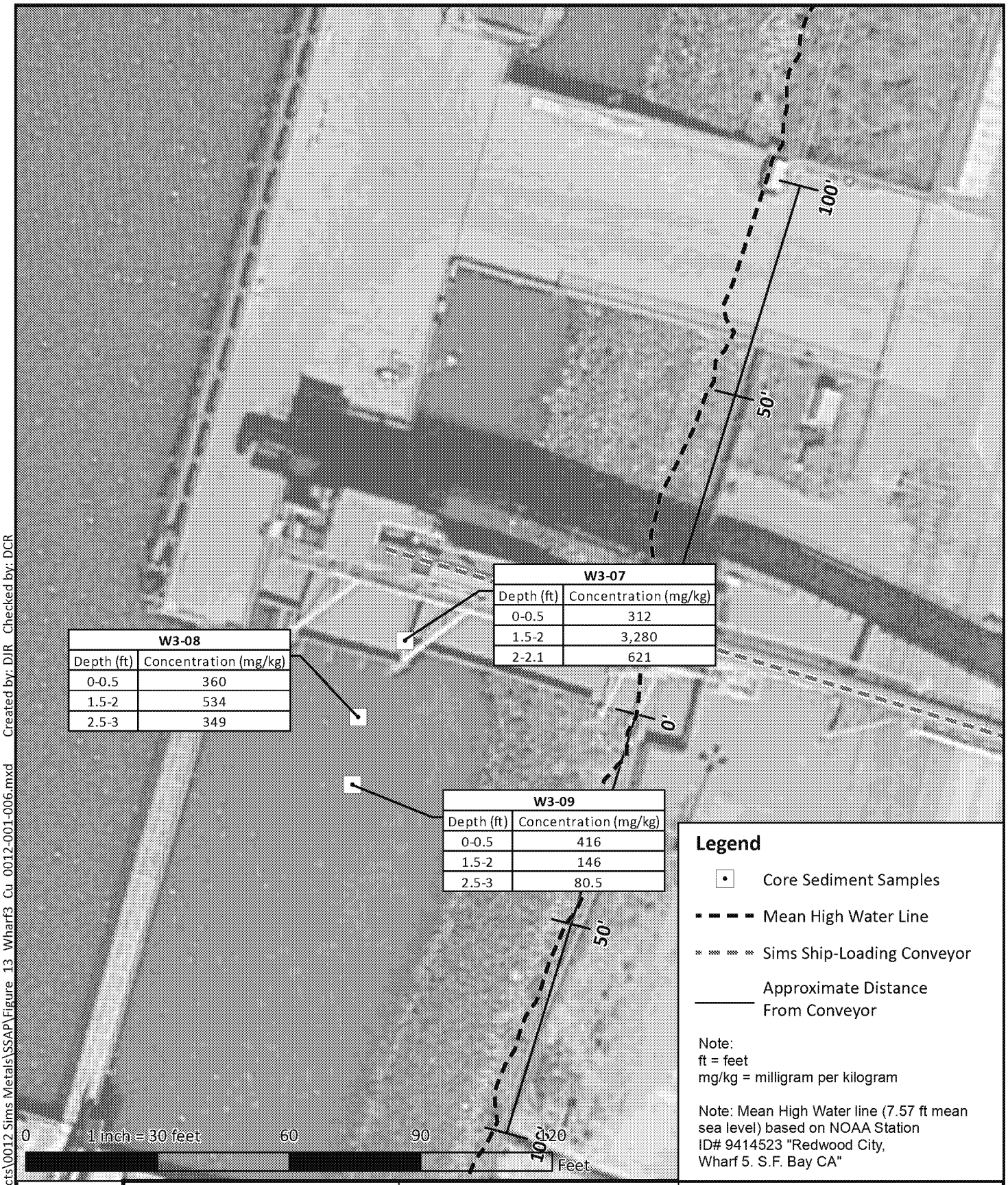
|---|---|
| CLIENT: Sims Metal Management | **Total PCB Concentrations in Project-Area Surface Sediment** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 12** |

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_12_Wharf3_PCBs_0012-001-006.mxd Created by: DJR Checked by: DCR




| W3-07 | |
|---|---|
| Depth (ft) | Concentration (mg/kg) |
| 0-0.5 | 312 |
| 1.5-2 | 3,280 |
| 2-2.1 | 621 |

| W3-08 | |
|---|---|
| Depth (ft) | Concentration (mg/kg) |
| 0-0.5 | 360 |
| 1.5-2 | 534 |
| 2.5-3 | 349 |

| W3-09 | |
|---|---|
| Depth (ft) | Concentration (mg/kg) |
| 0-0.5 | 416 |
| 1.5-2 | 146 |
| 2.5-3 | 80.5 |

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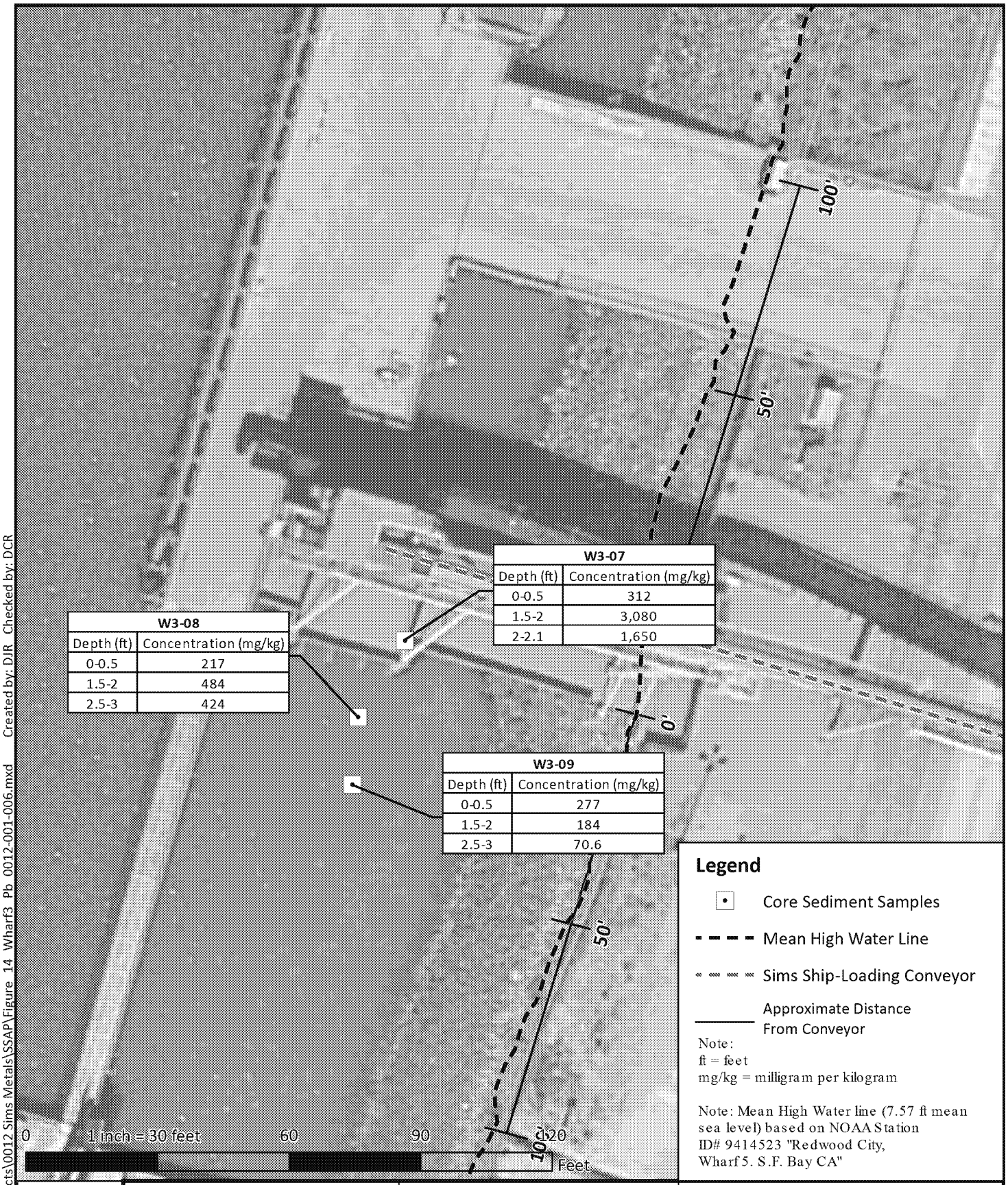
PROJECT: Sediment Investigation Report

PROJECT NUMBER: 0012.001.007

**Copper Concentrations in Project-Area Sediment Cores**

**FIGURE 13**

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_13_Wharf3_Cu_0012-001-006.mxd Created by: DJR Checked by: DCR




| W3-07 | |
|---|---|
| Depth (ft) | Concentration (mg/kg) |
| 0-0.5 | 312 |
| 1.5-2 | 3,080 |
| 2-2.1 | 1,650 |

| W3-08 | |
|---|---|
| Depth (ft) | Concentration (mg/kg) |
| 0-0.5 | 217 |
| 1.5-2 | 484 |
| 2.5-3 | 424 |

| W3-09 | |
|---|---|
| Depth (ft) | Concentration (mg/kg) |
| 0-0.5 | 277 |
| 1.5-2 | 184 |
| 2.5-3 | 70.6 |

**Legend**

- Core Sediment Samples
- Mean High Water Line
- Sims Ship-Loading Conveyor
- Approximate Distance From Conveyor

Note:
ft = feet
mg/kg = milligram per kilogram

Note: Mean High Water line (7.57 ft mean sea level) based on NOAA Station ID# 9414523 "Redwood City, Wharf 5. S.F. Bay CA"

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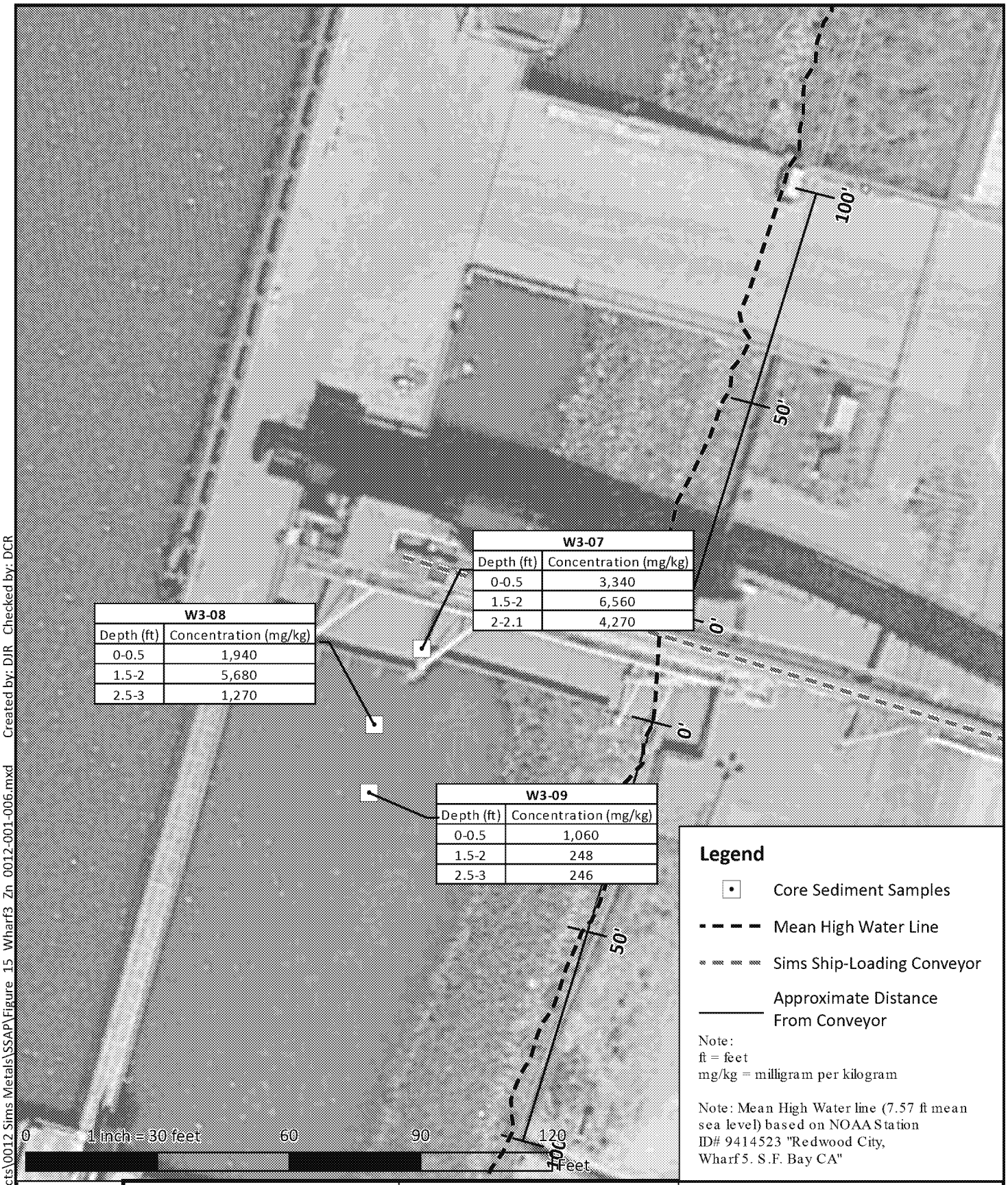
PROJECT: Sediment Investigation Report

PROJECT NUMBER: 0012.001.007

**Lead Concentrations in Project-Area Sediment**

**FIGURE 14**

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_14_Wharf3_Pb_0012-001-006.mxd Created by: DJR Checked by: DCR




| W3-07 | |
|---|---|
| Depth (ft) | Concentration (mg/kg) |
| 0-0.5 | 3,340 |
| 1.5-2 | 6,560 |
| 2-2.1 | 4,270 |

| W3-08 | |
|---|---|
| Depth (ft) | Concentration (mg/kg) |
| 0-0.5 | 1,940 |
| 1.5-2 | 5,680 |
| 2.5-3 | 1,270 |

| W3-09 | |
|---|---|
| Depth (ft) | Concentration (mg/kg) |
| 0-0.5 | 1,060 |
| 1.5-2 | 248 |
| 2.5-3 | 246 |

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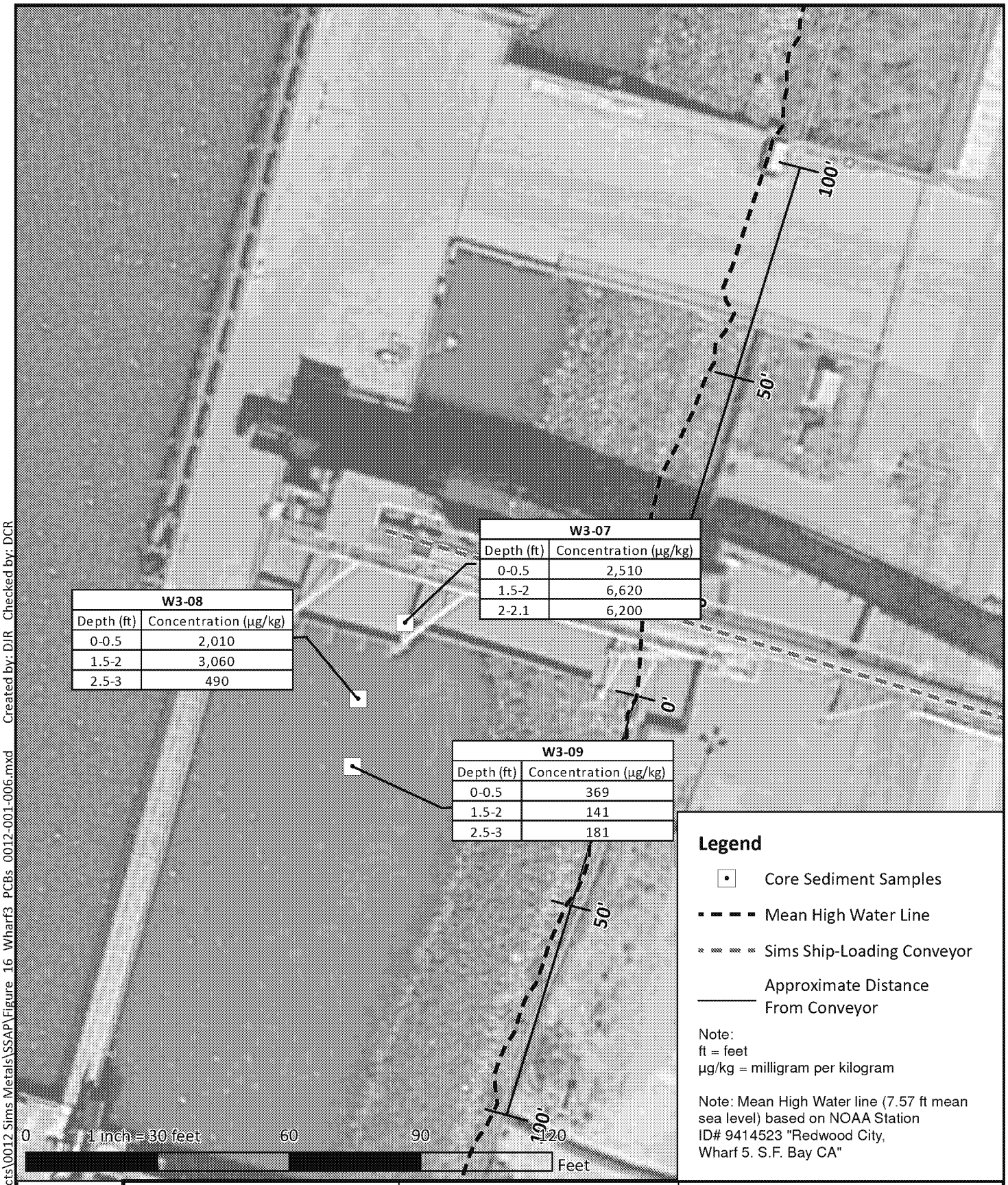
PROJECT: Sediment Investigation Report

PROJECT NUMBER: 0012.001.007

**Zinc Concentrations in Project-Area Sediment Cores**

**FIGURE 15**

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_15_Wharf3_Zn_0012-001-006.mxd Created by: DJR Checked by: DCR




| W3-07 | |
|---|---|
| Depth (ft) | Concentration (µg/kg) |
| 0-0.5 | 2,510 |
| 1.5-2 | 6,620 |
| 2-2.1 | 6,200 |

| W3-08 | |
|---|---|
| Depth (ft) | Concentration (µg/kg) |
| 0-0.5 | 2,010 |
| 1.5-2 | 3,060 |
| 2.5-3 | 490 |

| W3-09 | |
|---|---|
| Depth (ft) | Concentration (µg/kg) |
| 0-0.5 | 369 |
| 1.5-2 | 141 |
| 2.5-3 | 181 |

**Legend**

- Core Sediment Samples
- Mean High Water Line
- Sims Ship-Loading Conveyor
- Approximate Distance From Conveyor

Note:
ft = feet
µg/kg = milligram per kilogram

Note: Mean High Water line (7.57 ft mean sea level) based on NOAA Station ID# 9414523 "Redwood City, Wharf 5. S.F. Bay CA"

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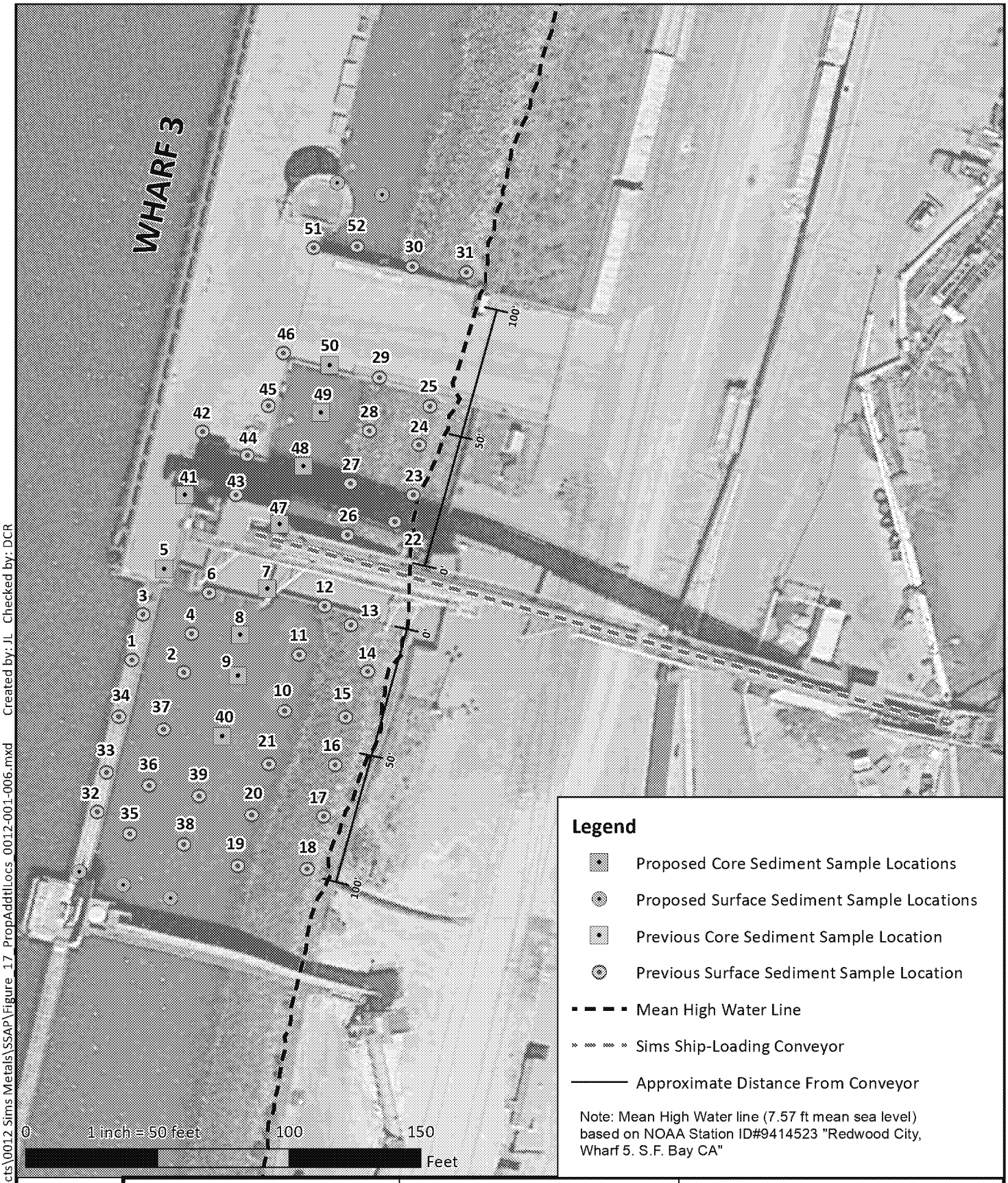
**Total PCB Concentrations in Project-Area Sediment Cores**

**FIGURE 16**

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_16_Wharf3_PCBs_0012-001-006.mxd Created by: DJR Checked by: DCR




File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_17_PropAddtlLocs_0012-001-006.mxd Created by: JL Checked by: DCR

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|---|---|
| CLIENT: Sims Metal Management | **Proposed Additional Surface and Coring Sediment Locations - Wharf 3** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 17** |

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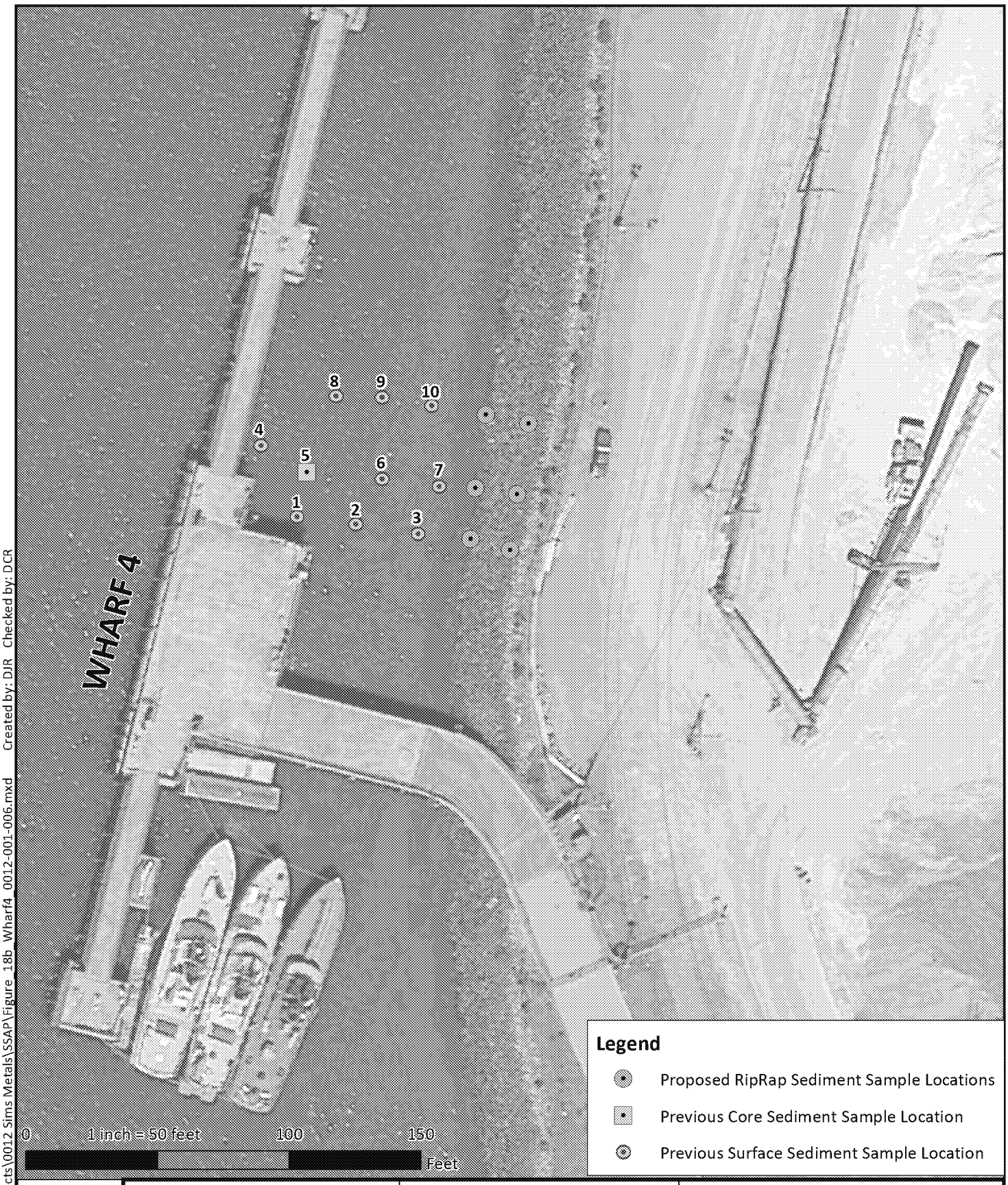
PROJECT: Sediment Investigation Report

PROJECT NUMBER: 0012.001.007

**Proposed Additional Background Riprap Sediment Sample Locations - Wharf 2**

**FIGURE 18a**

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_18a_Wharf2_0012-001-006.mxd Created by: DJR Checked by: DCR




File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_18b_Wharf4_0012-001-006.mxd Created by: DJR Checked by: DCR

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| | |
|---|---|
| CLIENT: Sims Metal Management | **Proposed Additional Background Riprap Sediment Sample Locations - Wharf 4** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 18b** |

File: C:\GIS_Local\Projects\0012 Sims Metals\SSAP\Figure_18c_Wharf5_0012-001-006.mxd Created by: DJR Checked by: DCR

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| | |
|---|---|
| CLIENT: Sims Metal Management | **Proposed Additional Background Riprap Sediment Sample Locations - Wharf 5** |
| PROJECT: Sediment Investigation Report | |
| PROJECT NUMBER: 0012.001.007 | **FIGURE 18c** |

# SEDIMENT SAMPLING WITH VIBRACORE

## 1.0 PERFORMANCE OBJECTIVE

The purpose of this Standard Operating Procedures (SOP) document is to describe the procedures that shall be used for the collection of sediment samples for chemical analysis by vibracore methods.

## 2.0 EQUIPMENT AND MATERIALS

The following is a list of equipment necessary to carry out the procedures contained in this SOP:

- Approved documents, including sampling plan and health and safety plan
- Health and safety equipment
- Sampling plan and sample coordinates
- Camera and cell phone
- Sampling vessel equipped with outboard motor, derrick, winch assembly, spuds, or anchors
- Differential global positioning system (DGPS) navigation
- Vibracore sampling device and associated equipment
- Core tubes and caps
- Decontamination materials
- Lead line
- Tape measure
- Sample processing equipment (stainless steel bowls, sieves, hand tools, etc.)

## 3.0 PROCEDURES

### 3.1 General

Sediment sampling should be performed in teams of two or more persons for safety. The following are general procedures to be followed when collecting sediment samples.

1. Wear appropriate safety (e.g., flotation vests) and protective gear (e.g., gloves, boots, and glasses).

2. Use DGPS to maneuver to sample target, secure vessel in place with spuds or anchors.

3. Identify the sampling location and document it in the field book.

4. Measure the depth to water.

5. Pre-label sample containers. Use a water-proof marker and include sample number, location, date collected, and initials of sampler.



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Depending on the site conditions, number of cores to be collected and production rate, consideration should be given to establishing a core processing area off the sampling vessel. However, the field team may elect to process cores on board if practical.

## 3.2 Using the Vibracore

Subsurface sediment core samples will be collected at locations described in the sampling plan. The cores will be collected into a cellulose acetate or Lexan (or similar) liner inside a metal tube.

Sediment core collection will be performed using the following general procedures:

1. A new core liner of the desired length will be placed into the core tube and secured to the vibratory assembly head and deployed from the vessel. It is recommended that a line a few feet longer than the desired penetration depth be used. The core diameter will be approximately 4 inches. A core catcher will be used.
2. The cable umbilical to the vibrator assembly will be drawn taut and perpendicular, as the core rests on the bottom sediment.
3. The location will be recorded by the location control personnel, and depth to sediment will be measured with a survey tape attached to the head assembly and lead line.
4. The core tube will be vibratory-driven into the sediment.
5. A continuous core sample will be collected to the designated coring depth or until refusal.
6. The depth of core penetration will be measured and recorded.
7. The vibrator motor will be turned off and the core barrel will be extracted from the sediment using the winch.
8. While suspended from the try-pod or A-frame hoist, sediment adhered to the assembly head and outside of the core barrel will be sprayed off with site water and then placed on the vessel deck.
9. The core sample will be evaluated at the visible ends of the core tube, the length of recovered sediment will be recorded, and, if accepted, the core tube will be cut open to facilitate collection of sediment material.

Acceptance criteria for sediment core samples are as follows:

1. Overlying water is present and the surface is intact.
2. The core tube appears intact without obstruction or blocking.
3. Recovery is greater than 75 percent of drive length.



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If sample acceptance criteria are not achieved, the sample is rejected unless modified acceptance criteria are approved by the Field Team Leader and/or multiple attempts have been made at the sampling location.

Personnel will record field conditions and drive notes on a standard core log. Logs will include the following information:

- Sample ID
- Date and time of collection of each sediment core sample
- Names of field personnel collecting and handling the samples
- Geographic position of the actual coring location as determined by DGPS
- Depth to sediment surface
- Length of drive penetration and estimated recovery measurements
- Characteristics of the sediment including:
- Texture
- Color (Munsell scale)
- Presence and type of debris, especially metal debris
- Visible staining
- Qualitative notation of apparent resistance of sediment column to coring (how the core drove)
- Other observations

## 3.3 Sample Collection

Samples will be collected from the core at the prescribed intervals in accordance with the sampling plan and placed into sample jars. Excess sediment will be containerized and managed as investigation-derived waste.

## 3.4 Equipment Decontamination

Reusable equipment that may come in contact with the sediment samples will be properly decontaminated between sample locations to prevent cross-contamination of samples. Field personnel should first change all personal protective equipment that will come in contact with the equipment being decontaminated and rinse all visible debris (e.g., sediment, leaves, twigs, etc.) from the equipment using site water. The decontamination process will include the following:

- washing the equipment with a laboratory-grade detergent and water solution,
- rinsing with distilled water,
- rinsing with a 10-percent nitric-acid solution, and
- a final rinse with distilled water.



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After the equipment is decontaminated, if it will not be used immediately, keep the equipment clean by placing it in dedicated plastic or stainless-steel bins, boxes, or other appropriately sized containers.



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