TECHNICAL MEMORANDUM

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ENVIRONMENTAL | GEOTECHNICAL | NATURAL RESOURCES

TO: Andy Kallus, Washington State Department of Ecology

FROM: Lawrence D. Beard, P.E., L.G., and Kathryn F. Hartley

DATE: December 7, 2011

RE: ADDENDUM NO. 2 - RI/FS WORK PLAN
SUPPLEMENTAL RI
NORTH MARINA AMERON/HULBERT SITE
EVERETT WASHINGTON

This technical memorandum presents Addendum No. 2 to the Remedial Investigation/Feasibility Study (RI/FS) Work Plan (Work Plan; Landau Associates 2010) for the North Marina Ameron/Hulbert Site (Site). The Port of Everett (Port), Ameron International (Ameron), and the Hulberts [collectively the Potentially Liable Parties (PLPs)] are conducting an RI/FS at the Site under Agreed Order DE 6677 (AO). This Work Plan addendum addresses data gaps identified following completion of the initial phase of RI field activities, as presented in the RI Data Report (Landau Associates 2011), and subsequent comments received from the Washington State Department of Ecology (Ecology), and refined in an August 31, 2011 meeting and November 17, 2011 conference call and subsequent email correspondence with Ecology. The remainder of this technical memorandum presents the proposed scope of work and procedures for conducting supplemental RI activities to address these data gaps.

PROPOSED SCOPE OF WORK

The proposed scope of work to address the RI data gaps is presented in the following sections. The field procedures, analytical methods, and quality assurance/quality control (QA/QC) procedures presented in the Work Plan (Landau Associates 2010) will be used for implementation of these supplemental RI activities.

Soil Investigation

Additional explorations are proposed to complete delineation of the nature and extent of soil contamination for the RI. The proposed additional soil quality characterization consists of the following elements:

- Advance one shallow soil boring (G-FA-105a) in the northwestern portion of Area G to evaluate the vertical extent of metals in the vicinity of G-FA-105.
- Advance five borings (G-FA-115, G-FA-115a, G-FA-115b, G-FA-114, G-FA-114a) in the vicinity of the oil-affected area along the north Site boundary to determine whether soil

contamination encountered on the Norton Industries property to the north is also present on the Site.

- Advance two shallow borings (G-GC-113, G-GC-114) within the Pole Finishing and Dry Storage Building to determine whether shallow soil was affected by operations that occurred in this area, which was unpaved prior to construction of the building.
- Advance five shallow borings (M-GC-102a, -102b, -102c, -102d, -102e) in the vicinity of M-GC-102 to evaluate the lateral bounds of metals in shallow soil in this area.
- Advance two shallow borings in the vicinity of M-FA-103 (M-FA-103c, M-FA-103d) to evaluate the lateral bounds of metals in shallow soil in this area.
- Advance three soil borings (M-FA-102f, -102g, -102h) in the vicinity of M-FA-102 to evaluate the lateral bounds of metals and carcinogenic polycyclic aromatic hydrocarbons (cPAHs) contamination in subsurface soil.
- Advanced one shallow boring (M-GC-107) in the storage yard to the north of the Ameron sublease building to determine whether shallow soil was affected by operations that occurred in this area which was unpaved prior to construction of the building.

The locations for these additional explorations are shown on Figure 1. Table 1 summarizes the planned depth of exploration and proposed analyses for each location. All soil explorations for the Supplemental RI will be advanced using direct-push drilling equipment. Soil samples will be analyzed for the parameters identified below unless field screening (conducted in accordance with the RI Work Plan) indicates additional testing is warranted based on the presence of potential contamination. Blind field duplicate soil samples will be collected and analyzed in accordance with the RI Work Plan. All samples will be collected and preserved consistent with the method-specific requirements presented in Table F-2 for the Final RI/FS Work Plan. Analyses will be conducted within the specified holding times, also presented in Table F-2 of the Final RI/FS Work Plan. In addition, the analyses will be conducted consistent with the quantitation limit goals identified in Table F-3 of the Final RI/FS Work Plan.

Boring G-FA-105 was a test pit exploration where samples were collected from surficial soil containing black sand (apparent sand blast material) and from a fine-medium sand that did not appear to contain black sand at a depth of 1 to 2 ft BGS. However, the soil sample collected from 1 to 2 ft BGS exhibited arsenic and copper concentrations exceeding the soil screening levels and it is possible that the sample contained a small amount of black sand. A deeper sample was not collected from this location. One boring (G-FA-105a) will be advanced about 20 ft south of G-FA-105 to ensure the boring is outside of the footprint of the previous test pit. The boring will be advanced to 4 ft BGS and samples will be collected from 2- to 3-ft and 3- to 4-ft depths in order to delineate the vertical extent of contamination identified at G-FA-105. The sample from 2 to 3 ft will be tested first and will be analyzed for antimony, arsenic, copper and lead. The sample from 3 to 4 ft will be archived and tested for any COC that exceeds the soil screening levels in the 2- to 3-ft sample.

Borings will be advanced to the south of RI borings N-FA-102 and N-FA-103 to determine the southern extent of polychlorinated biphenyl (PCB), cPAH, and petroleum contamination associated with PSL exceedances at these locations, and the extent of these contaminants within the "oil-affected" area located on the Port's property in Area G . Soil borings (G-FA-114 and G-FA-115) will be advanced south of each of these locations, beyond the boundaries of the previous "oil-affected" excavation, and in close proximity of the fence (i.e. just south of the stormwater line) that separates the Site from the Norton Industries property to the north. The borings will be advanced to 12 ft BGS and will be sampled using the same sampling protocols as applied to N-FA-102 and N-FA-103, except that, if no evidence of contamination is observed during drilling, soil samples will be collected from the depth interval that exceeds the soil screening levels in the nearest Area N boring. Soil samples submitted for analysis will be tested for arsenic, copper, cPAHs, polychlorinated biphenyls (PCBs), and total petroleum hydrocarbons using the hydrocarbon identification (HCID) method. Follow-up analysis for gasoline range (TPH-G) and/or diesel-range petroleum hydrocarbons (TPH-D) will be conducted as appropriate based on the HCID results. Soil samples underlying and overlying the target zone will also be tested only if any COCs exceed the soil screening levels in the sample collected from the target zone.

Soil boring G-FA-115b will be advanced as close as practical to the south of the storm water trunk line to evaluate the soil quality of the backfill used in the oil affected area 2005 excavation and the depth of affected soil in the oil affected area. Photographs taken at the time of the excavation indicate that the excavation may have only extended two to three feet south of the trunk line, so it may not be possible to advance a boring through the 2005 excavation area without potentially damaging the trunk line. Additionally, photographs taken at the time of the 2005 excavation indicate the presence of a stockpile of quarry spalls in the excavation area, which may have been used for backfilling the excavation below the water table, so refusal may be encountered during boring advancement. If boring G-FA-115b is advanced through oil affected soil, either associated with the former excavation area or with oil affected soil that extends south of the former excavation (if present), a soil sample will be collected for testing from the most affected zone and from soil below the affected area based on field screening. The sample from the affected zone will be tested for the same analytical parameters as borings G-FA-114 and G-FA-115, and the sample collected from soil underlying the affected area will be tested for any COCs that exceed the PSLs in the overlying sample. If field screening does not indicate the presence of potential contamination, a soil sample will be collected from the depth interval that exceeds the soil screening levels in N-FA-103. If oil affected material is encountered in G-FA-115b, an additional boring will be advanced about 20 ft to the south to bound the southern extent of the oil affected area.

Contingent borings will be advanced to the west (G-FA-115a) and east (G-FA-114a) of the initial borings to collect soil samples for additional testing if COCs exceed the soil screening levels in soil

samples from G-FA-114 and G-FA-115. Soil samples from the contingent borings will only be tested for constituents that exceed the soil screening levels unless field screening (conducted in accordance with the final RI/FS work plan) indicates additional testing is warranted based on the presence of potential contamination during field screening (e.g., petroleum odor or sheen, black granular grit, etc.).

Two shallow borings (G-GC-113 and G-GC-114) will be advanced in the western portion of the Pole Finishing and Dry Storage Building to determine whether shallow soil was affected by operations that occurred in this area prior to pavement installation. According to the historical report prepared for the Site (Pinnacle GeoSciences 2010), the subject area was not paved until between 1980 and 1982 (see Figure 6 from the historical report). Based on available information, sandblasting and other activities that could have caused shallow soil contamination commenced in about 1976, which could have resulted in releases to shallow soil during the intervening 4 to 6 years prior to paving. The two borings will be advanced to 8 ft BGS and samples will be analyzed for cPAHs and select metals (antimony, arsenic, cadmium, chromium, copper, lead, mercury, and zinc) as described in the RI/FS Work Plan for general characterization borings, and as summarized in Table 1. The samples may be analyzed for additional contaminants (e.g., VOCs, TPH, etc.) based on field screening results. A soil sample will be collected from the affected area, if present, based on field screening. If there is no evidence of contamination, soil sampling will be conducted consistent with the general characterization sampling protocol summarized in Appendix F of the Final RI/FS Work Plan.

Shallow borings will be advanced to the north, south, and west of exploration location M-GC-102, where arsenic and copper were detected at concentrations greater than the soil screening levels. It is anticipated that shallow soil contamination at this location is localized, so the initial locations (M-GC-102a, M-GC-102b, and M-GC-102c) will be advanced about 25 ft away from the subject location. Contingent borings (M-GC-102d and -102e) will be advanced half way between the subject boring and the closest exploration not exhibiting a soil screening level exceedance to the south and to the north of M-GC-102. Samples from the contingent borings will only be tested if COCs exceed the soil screening levels in the samples collected in close proximity to M-GC-102, and will only be tested for those COCs that exceed the soil screening levels. A contingent boring will not be advanced to the west of boring M-GC-102c because of the presence of the Ameron sublease building. The need for further characterization within the building footprint will be evaluated if one or more COCs exceed the soil screening levels in the samples collected from M-GC-102c. The borings will be advanced to 4 ft BGS and soil samples will be collected at 1-ft intervals. The uppermost sample will be tested for arsenic and copper, and deeper samples will be tested progressively downward for any COC that exceeds the soil screening level in the overlying sample. The samples may be analyzed for additional contaminants (e.g., other metals, VOCs, TPH, etc.) based on field screening results.

One shallow boring (M-GC-107) will be advanced (to 12 ft BGS) to the north of the Ameron sublease building. This area is currently used as a storage yard by Dunlap Industrial Hardware and was unpaved prior to construction of the sublease building in 1980. Samples will be analyzed for cPAHs and metals (antimony, arsenic, cadmium, chromium, copper, lead, mercury, and zinc) as described in the RI/FS Work Plan for general characterization borings, and as summarized in Table 1. The samples may be analyzed for additional contaminants (e.g., VOCs, TPH, etc.) based on field screening results. A soil sample will be collected from the affected area, if present, based on field screening. If there is no evidence of contamination, soil sampling will be conducted consistent with the general characterization sampling protocol summarized in Appendix F of the Final RI/FS Work Plan.

Shallow borings will be advanced to the south of exploration location M-FA-103 where copper and lead were detected at concentrations greater than the soil screening levels; shallow soil contamination has already been adequately delineated to the north of this location (note previous sampling locations M-FA-103a and M-FA-103b to the north of M-FA-103). It is anticipated that shallow soil contamination at this location is localized, so the initial location (M-FA-103c) will be advanced about 25 ft south of the subject location. A contingent boring (M-FA-103d) will be advanced about half way between the subject boring and the north side of Craftsman Way (13th Street), which is the southern Site boundary. The borings will be advanced to 4 ft BGS and soil samples will be collected at 1-ft intervals. Initially, the uppermost sample (0 to 1 ft BGS) from M-FA-103c will be tested for arsenic, lead, and copper, and the three deeper samples will be archived and tested progressively downward for any COC that exceeds the soil screening level in the overlying sample. A similar procedure will be followed for testing samples from M-FA-103d if any COC exceeds its soil screening level in samples tested from M-FA-103c. The samples may be analyzed for additional contaminants (e.g., other metals, VOCs, TPH, etc.) based on field screening results.

Three explorations (M-FA-102f, M-FA-102g, and M-FA-102h) will be advanced in the vicinity of RI exploration location M-FA-102 to delineate the extent of metals and cPAHs contamination encountered at this location. Black sand (apparent sandblast grit) observed in the 7- to 7.5-ft zone exhibited metals and cPAHs exceeding the soil screening levels. These borings will be advanced to 12 ft BGS. A sample will be collected from the target depth of 7 to 8 ft BGS unless visual or olfactory evidence of contamination is observed at a different depth, in which case a sample will be collected from the zone of observed potential contamination instead of the 7 to 8 ft interval. Soil samples will also be collected from intervals directly above and below the target interval or interval of observed potential contamination to vertically bound the extent of contamination if the soil screening levels are exceeded in the sample collected from the target interval. The soil sample from the target interval will be tested for

metals (antimony, arsenic, copper and lead) and cPAHs, and samples above and below the target interval will be tested for any COCs that exceed the soil screening levels at the target depth.

It is not anticipated that explorations beyond those described above will be advanced in these areas, but additional borings may be advanced if visual or olfactory evidence of contamination is observed at the planned exploration locations.

Groundwater and Surface Water Investigation

Ecology has already approved the proposed scope for supplemental RI groundwater and surface water monitoring due to the time-critical need of collecting the second complete round of groundwater samples during the dry season. The following is a summary of the supplemental groundwater and surface water investigation approved by Ecology in email correspondence dated September 12, 2011:

- Install one monitoring well (RI-MW-6) within 25 ft downgradient from direct-push location J-FA-100 and sample for dissolved metals (arsenic, copper, and lead) and diesel-range and oil-range petroleum hydrocarbons to evaluate whether the groundwater screening level exceedances measured in the groundwater samples collected from the direct-push boring are representative of groundwater quality in this area.
- Install one monitoring well (RI-MW-7) in the vicinity of G-GC-100 and sample for dissolved copper and arsenic to evaluate whether the RI groundwater quality results for groundwater samples collected from the direct-push borings are representative of groundwater quality in this area.
- Collect a round of groundwater samples from all existing wells and analyze for those constituents analyzed for during the first round of RI groundwater quality monitoring.
- Collect an additional round of groundwater elevations for all Site monitoring wells during a low tide event.
- Collect one surface water sample from the 12th Street Marina in the vicinity of RI-MW-1 and analyze the sample for dissolved copper and dissolved arsenic to establish background surface water quality in the shoreline vicinity, and to evaluate whether surface water quality could be affecting groundwater quality in the vicinity of the shoreline.

The locations for the supplemental RI monitoring wells are shown on Figure 2. The new groundwater monitoring wells were constructed of 2-inch diameter schedule 40 PVC using the same well construction and development procedures identified in the Final RI/FS Work Plan. The new wells were constructed as flush-mount wells and will be surveyed by a professional land surveyor. Sampling activities were completed on October 11, 2011. Field and laboratory procedures and QA/QC were conducted consistent with the Work Plan. A blind field duplicate sample was collected at RI-MW-5 and was tested for dissolved metals (antimony, arsenic, cadmium, chromium, copper, lead, mercury, and zinc), cPAHs, TPH-HCID, VOCs, and SVOCs. Well gauging for groundwater elevations were conducted consistent with the procedures in the Final RI/FS Work Plan for the low tide round of water level measurements. It is intended that the round of groundwater monitoring represent the dry season round of

groundwater quality monitoring identified in the Final RI/FS Work Plan. Groundwater elevations during the October 2011 sampling event were an average of 0.79 ft lower than those recorded during the December 15, 2010 wet season sampling event. Additionally, meteorological data indicate that July, August and September are the three driest month of the year (The Weather Channel Website. 2011), Because groundwater sampling was completed by early October, and there is a time lag between precipitation and aquifer response, collection of groundwater samples in early October represents the optimum time for collecting dry season groundwater samples.

The surface water sample was collected by lowering a capped, unpreserved, laboratory-supplied sample bottle beneath the water surface to avoid entraining any surface debris in the sample. The bottle was then slowly uncapped and allowed to fill, and will be recapped prior to removal from the water. The surface water collected in the bottle was field-filtered through a 0.45 micrometer (μm) capsule filter and transferred to a laboratory-supplied sample bottle preserved with nitric acid. Field parameters were not collected during collection of the surface water sample; therefore field parameters measured for each groundwater sample were measured at the approximate location of the surface water sample at low tide on October 19, 2011. The sample was analyzed using U.S. Environmental Protection Agency (EPA) Method 6020; however, extra volume was collected for analysis by EPA Method 1640. The sample will be analyzed by EPA Method 1640 if the results for the initial sample indicate potential interferences.

Stormwater Sediment Investigation

Previous RI stormwater system sediment samples were collected from catch basins along the trunk line. Most of the catch basins have been periodically cleaned out, so the sampled sediment likely represents solids accumulated since the most recent cleaning. Based on a video survey conducted in 2009, much of the trunk line and many of the laterals in the eastern portion of the system contain extensive sediment accumulation (estimated to be up to 80 percent full during the video survey), which may represent older sediment than that present in the catch basins. Because the catch basin sediment quality may not be representative of the sediment quality in the storm sewer lines, and because the volume of accumulated sediment in the storm sewer lines is significant, additional characterization of the storm sewer system sediment will be conducted to adequately evaluate the potential threat posed by the stormwater system to surface water and marine sediment.

Sediment will be collected from up to six locations within the Site storm sewer system. Catch basin sediment sampling will be conducted consistent with Appendix F of the Final RI/FS Work Plan. Anticipated locations include CB-111, SD-4, SD-5, SD-6, SD-7, and SD-10, although specific locations will be selected based on evaluation of accumulated sediment and available access. Samples will be collected from locations with a minimum of 3 to 4 inches of accumulated sediment. Locations CB-111

and SD-4 through SD-7 are located along the trunk line and are accessed through manholes that may require confined space entry procedures to enter for sampling and evaluation. SD-10 is located within the interior of Area G and can be accessed through a shallow catch basin.

CB-111 is identified for collection of storm system solids based on previous sampling data and proximity to the outfall. SD-4 through SD-7 are identified for the collection of storm system solids based on the large volume of accumulated sediment present in this portion of the trunk line during the trunk line video survey and the direct connection to the outfall at the 12th Street Marina. SD-10 is identified for collection of storm system sediment based on the large volume of accumulated sediment present during the video survey and the unknown condition and point of discharge for stormwater from this portion of the stormwater system. The anticipated stormwater system manhole and catch basin access locations and sampling locations are shown on Figure 3. Although Figure 3 shows the sampling locations downstream of the point of access, the stormwater sediment samples will be collected from upstream of the point of access if greater sediment accumulation is present in this direction.

The method for collecting stormwater system solids may vary with access and the nature of the solids. It is anticipated that samples will be obtained by extending a core tube as far as possible into the storm drain line prior to inserting the tube at an angle into the sediment. To the degree possible, the core tube will be inserted through the entire thickness of the accumulated sediment at the point of entry. At locations where the sediment is too granular or consolidated to allow the insertion of a core tube, a hand auger or similar device will be used to obtain a sample. If an auger devise is used, it may not be possible to obtain a sample from the entire sediment column. Regardless of the method of sample collection, the sample interval and the estimated thickness of accumulated sediment within the storm sewer line will be documented on the sample collection form. In addition, the dimensions of the catch basin, the direction of inlet and outlet flows, the presence of water and estimated flow rate, and any indications of flooding, clogging, and/or debris in or around the catch basin will also be recorded. Stormwater system solids will be screened in the field for potential contamination using the same methods applied to soil sampling (i.e., visual/olfactory evidence, PID head space analysis, presence of free product or sheen testing).

Stormwater system solids collected from the trunk line (CB-111, SD-4, SD-5, SD-6, and SD-7) will be composited by the laboratory and tested for dioxins/furans, RCRA metals (total and TCLP), percent solids, TOC, pH, TPH-HCID (with follow up analyses for specific hydrocarbon ranges detected in the HCID analysis), SVOCs, and PCBs. Samples from the individual catch basins will be retained by the laboratory for follow-up testing, if warranted based on the results for the composite sample. Individual samples will be tested for any parameters that are detected at concentrations exceeding the dangerous waste criteria in the composite sample in order to determine if the impact is widespread or limited to a particular segment of the trunk line. The stormwater solids sample from SD-10 will be tested

for RCRA metals, TPH-HCID, percent solids, and TOC. This sample will be tested for specific hydrocarbon ranges, SVOCs, and PCBs if TPH-HCID results indicate the presence of diesel- or oil-range petroleum hydrocarbons at concentrations greater than the laboratory reporting limits. One blind field duplicate will be collected at SD-10 and tested for the same parameters.

Process Waste Sampling

Ecology has requested the collection of samples from the process waste solids generated by Ameron. Solids are managed in a series of six drying bins located to the east of the manufacturing building. The solids are rotated south to north through the drying bins before being transported off-site for disposal as solid waste. Solids from plant processes consist predominately of accumulated sediment from settling ponds and also include smaller amounts of wheelabrator dust, floor sweepings, and sand blast waste. These materials are typically added to the northernmost drying bin to solidify settling pond sediment prior to disposal.

The proposed process waste characterization will consist of collection of composite samples from three of the six drying bins located to the east of the manufacturing building. Composite samples will be collected from the first (southern), third (center), and last (northern) drying bins and will be analyzed for metals (antimony, arsenic, cadmium, chromium, copper, lead, mercury, and zinc).

Each composite sample will consist of at least 3 sub-samples collected from different locations and depths within the bin. If different materials are present in a given bin, at least one sub-sample will be collected from each of the materials present and included in the composite sample. The appearance of each sub-sample will be described on the Sample Collection Form if the appearances of the sub-samples vary.

DATA EVALUATION AND REPORTING

Upon receipt of the analytical data, the data will be validated using the procedures described in the Final RI/FS Work Plan and evaluated and reported in conjunction with other RI data in the RI/FS report. However, if conditions that may warrant remedial action are identified, additional reporting may be undertaken. Such additional reporting would be coordinated with Ecology as soon as a need to do so is identified.

REFERENCES

Ecology, 2011. Email from Andy Kallus, Washington State Department of Ecology to Larry Beard, Landau Associates, re: *Ameron/Hulbert Site – Scope of Work for Supplemental RI Groundwater Monitoring*. September 12.

Landau Associates. 2011. *RI Data Report, North Marina Ameron/Hulbert Site, Everett, Washington*. Prepared for Port of Everett. June 20.

Landau Associates. 2010. *Final Work Plan, Remedial Investigation/Feasibility Study, North Marina Ameron/Hulbert Site, Everett, Washington*. Prepared for Port of Everett. November 17.

Pinnacle GeoSciences 2010. *Historical Site Development Analysis, North Marina Ameron/Hulbert Site.* Prepared for The North Marina Ameron/Hulbert Site PLP Group. May 11.

The Weather Channel Website. 2011. *Average Weather for Everett, WA – Temperature and Precipitation*. www.weather.com/outlook/recreation/golf/wxclimatology/monthly/graph/98201. The Weather Channel. Access of November 11.

Legend

- Proposed Soil Boring Location
- Monitoring Well
- Soil Sample Exceeded Preliminary Screening Level - Represents Soil Remaining
- Soil Sample Exceeds Copper Preliminary Screening Level Based on Protection of Groundwater - Represents Soil Remaining
- Soil Sample Below Preliminary Screening Level
- Soil Sample With No Analytical Data
- Previous Soil Sample Exceeded Preliminary Screening Level - Constituent that exceeds is noted below sample name - Represents Soil Remaining
- Previous Soil Sample Below Preliminary Screening Levels - Represents Soil Remaining
- Previous Soil Sample Exceeds Copper Preliminary Screening Level - Represents Soil Remaining
- Previous Soil Sample Locations with No Analytical Data
- 150' Sample Grid
- Approximate Ameron/Hulbert Site Boundary
- G - Area Designation
- Approximate Size and Location of Ameron Excavation

0 150 300

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Source: Port of Everett (2009 Image)

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig1-ProposedSoilBorings.mxd 11/18/2011 NAD 1983 StatePlane Washington North FIPS 4601 Feet

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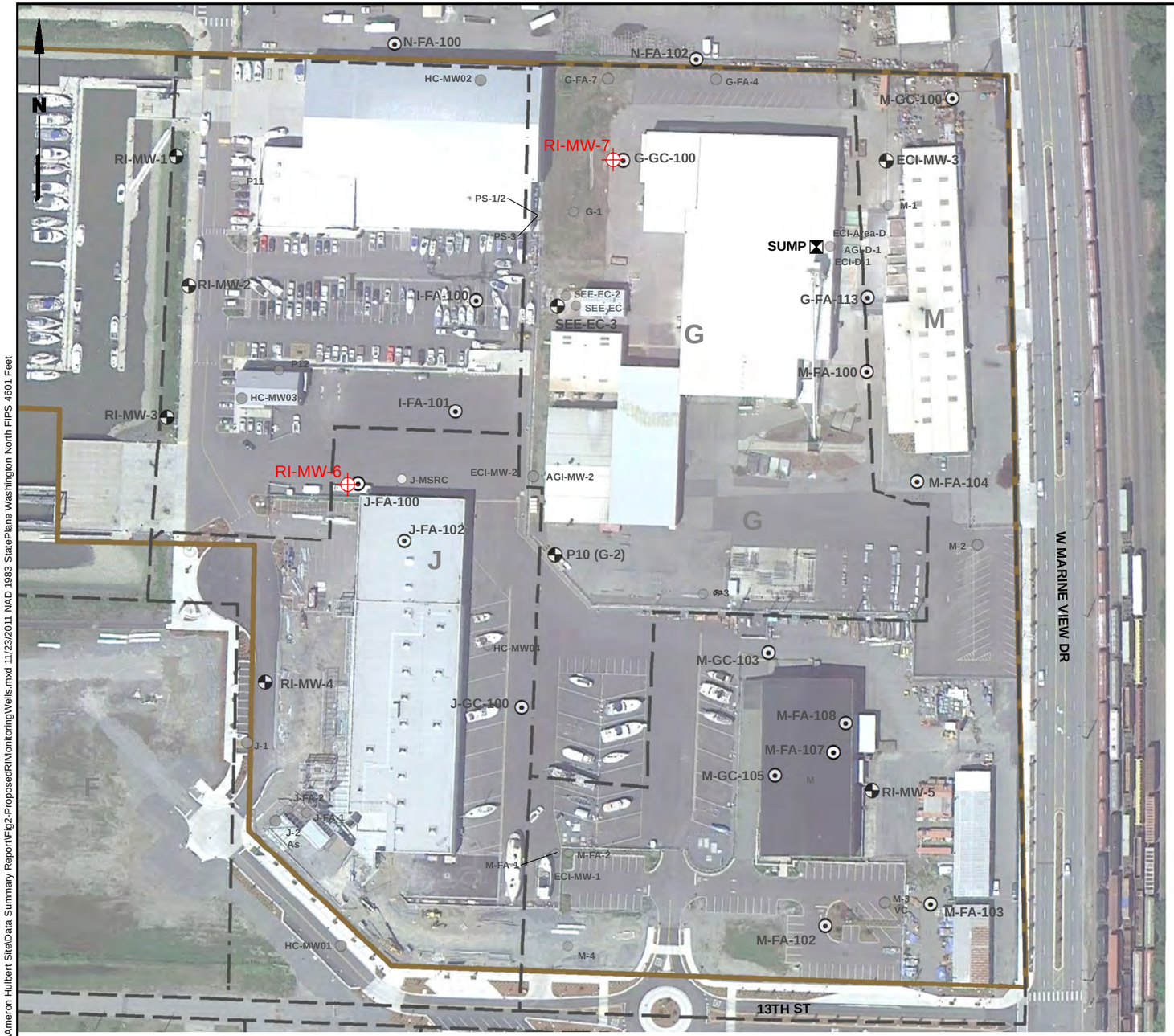
North Marina Ameron/Hulbert Site Supplemental RI Work Plan Port of Everett, Washington	**Proposed Soil Borings**	Figure 1



Legend

- Supplemental RI Monitoring Well
- RI Monitoring Well
- RI Soil Boring
- Pre-RI Groundwater Sample Locations
- Approximate North Marina Ameron/Hulbert Site Boundary
- G - Area Designation

0 150 300

Scale in Feet

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Data Source: 6/19/2002 Google Earth Image

North Marina Ameron/Hulbert Site Supplemental RI Work Plan Port of Everett, Washington	**Proposed RI Monitoring Wells**	Figure 2

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N

Outfall
Outfall
Outfall
Outfall

A/H-SED-5
A/H-SED-7
A/H-SED-1
A/H-SED-2
A/H-SED-3
A/H-SED-6
A/H-SED-8
A2-13
A/H-SED-4

CB110
CB111
CB109
CB108
CB103
CB101
Storm Filter Treatment System
Stormwater Pre-treatment
CB102
CB105
CB104
CB107
Trench Drain
CB106
CB
Outfall
To Sanitary Sewer
Initial Treatment System
CB114
By Pass to Outfall
CB115
CB
Outfall

SD-7
SD-6
SD-5
SD-4
OWS
SD-8
SD-16
SD-15
SD-3
GW-1
SD-9
SD-2
Capped for Future Development
G
M
SD-14
SD-1
SD-10
SD-13
SD-12
SD-11

RI-SED-7
RI-SED-6
RI-SED-5
RI-SED-2
RI-SED-4
RI-SED-3
RI-SED-1
RI-SED-8
RI-SED-9

CB201
CB203
CB202
J
CB
CB
CB219
CB204
CB205
CB206
CB207
CB208
CB209
CB210
CB214
CB212
CB211

13TH ST

Legend

- Sediment Sampling Locations
- Samples Archived for Potential Laboratory Analysis
- Proposed Stormwater Sediment Sampling Location
- Landau Associates Sediment Sampling Locations (2009)
- SAIC Sediment Sample Location (2009)
- Catch Basin and Piping
- Approximate Ameron/Hulbert Site Boundary
- G - Area Designation

Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

0 150 300

Scale in Feet

Data Source: Google Earth Pro (2011 Image)

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North Marina Ameron/Hulbert Site
Supplemental RI Work Plan
Port of Everett, Washington

Proposed Stormwater Sediment Sampling Locations

Figure 3

Y:\Projects\147029\Mapdocs\Ameron Hulbert Site\Data Summary Report\Fig3-ProposedStormwaterSedimentSamplingLocations.mxd 10/5/2011 NAD 1983 StatePlane Washington North FIPS 4601 Feet

TABLE 1
SOIL SAMPLING AND ANALYSIS PLAN
RI/FS WORK PLAN ADDENDUM #2

Exploration	Exploration Depth (ft)	Soil Sample Depth Interval	Analysis[1]
G-FA-105a	4	2-3	Arsenic, copper, lead, antimony
		3-4	Archive - metals
G-FA-114	12	sample affected area and archive samples from interval above and below affected area; if no evidence of comtamination sample 2-3' and 6-7'	Arsenic, copper, cPAHs, PCBs, TPH-HCID[2]
G-FA-115	12	sample affected area and archive samples from interval above and below affected area; if no evidence of comtamination sample 2-3'	Arsenic, copper, cPAHs, PCBs, TPH-HCID[2]
G-FA-114a	12	samples from same intervals as G-FA-114	Archive - Arsenic, copper, cPAHs, PCBs, TPH-HCID[2]
G-FA-115a	12	samples from same intervals as G-FA-115	Archive - Arsenic, copper, cPAHs, PCBs, TPH-HCID[2]
G-FA-115b	12	sample affected area and archive samples from interval above and below affected area; if no evidence of comtamination sample 2-3'	Arsenic, copper, cPAHs, PCBs, TPH-HCID[2]
G-GC-113[4]	8	0-1	cPAHs, metals[3]
		1-2	Archive - cPAHs, metals
		2-3	Archive - cPAHs, metals
		3-4	Archive - cPAHs, metals
G-GC-114[4]	8	0-1	cPAHs, metals[3]
		1-2	Archive - cPAHs, metals
		2-3	Archive - cPAHs, metals
		3-4	Archive - cPAHs, metals
M-GC-102a	4	0-1	Arsenic, copper
		1-2	Archive - metals
		2-3	Archive - metals
		3-4	Archive - metals
M-GC-102b	4	0-1	Arsenic, copper
		1-2	Archive - metals
		2-3	Archive - metals
		3-4	Archive - metals
M-GC-102c	4	0-1	Arsenic, copper
		1-2	Archive - metals
		2-3	Archive - metals
		3-4	Archive - metals
M-GC-102d	4	0-1	Archive - metals
		1-2	Archive - metals
		2-3	Archive - metals
		3-4	Archive - metals

TABLE 1
SOIL SAMPLING AND ANALYSIS PLAN
RI/FS WORK PLAN ADDENDUM #2

Exploration	Exploration Depth (ft)	Soil Sample Depth Interval	Analysis[1]
M-GC-102e	4	0-1	Archive - metals
		1-2	Archive - metals
		2-3	Archive - metals
		3-4	Archive - metals
M-GC-107[4]	12	0-1	cPAHs, metals
		1-2	Archive - cPAHs, metals
		2-3	Archive - cPAHs, metals
		3-4	Archive - cPAHs, metals
M-FA-103c	4	0-1	Arsenic, lead, copper
		1-2	Archive - metals
		2-3	Archive - metals
		3-4	Archive - metals
M-FA-103d	4	0-1	Archive - metals
		1-2	Archive - metals
		2-3	Archive - metals
		3-4	Archive - metals
M-FA-102f	12	sample affected area and archive samples from interval above and below affected area; if no evidence of comtamination sample 7-8'	Antimony, arsenic, copper, lead, cPAHs
M-FA-102g	12	sample affected area and archive samples from interval above and below affected area; if no evidence of comtamination sample 7-8'	Antimony, arsenic, copper, lead, cPAHs
M-FA-102h	12	sample affected area and archive samples from interval above and below affected area; if no evidence of comtamination sample 7-8'	Antimony, arsenic, copper, lead, cPAHs

1. In addition to the parameters listed, samples will be analyzed for VOCs and/or TPH based on field screening, and for arsenic, copper, lead, and antimony where there is evidence of black granular material (sand blast).
2. Follow-up analysis for TPH-G and/or TPH-Dx to be completed based on HCID results.
3. Metals = antimony, arsenic, cadmium, chromium, copper, lead, mercury, and zinc (unless otherwise specified).
4. Screen soil for visual or olfactory evidence of contamination. Sample from affected area, if present, and from below the affected area. If no evidence of contamination, follow general characterization sampling protocol outlined in Appendix f of the Final RI/FS Work Plan.