FLOYD | SNIDER
strategy ▪ science ▪ engineering

Two Union Square
601 Union Street, Suite 600
Seattle, WA 98101
tel: 206.292.2078 fax: 206.682.7867

Technical Memorandum

To: Andy Kallus, Washington State Department of Ecology

Copies: Elise Gronewald, Port of Everett
Larry Beard, Landau Associates
Owen Reese, Aspect Consulting
Janet Knox, Pacific Groundwater Group

From: Tom Colligan, Kristin Anderson, Floyd|Snider

Date: April 23, 2014

Project No: Oldcastle-Everett/Oldcastle-G1B Emergency Action

Re: **Addendum No. 1 - Emergency Action Work Plan for Areas G-1B and G-3 Supplemental Soil Investigation – Area G-1B Emergency Action SD8 Area North Marina Ameron/Hulbert Site, Everett, Washington**

This technical memorandum presents Addendum No.1 to the Emergency Action (EA) Work Plan for Areas G-1B and G-3, and describes the scope of work for additional soil characterization to be completed as part of the Area G-1B EA for the North Marina Ameron/Hulbert Site (Site). A remedial investigation/feasibility study (RI/FS) has been completed for the Site under Agreed Order No. 6677 between the Port of Everett (Port), Ameron International and the Hulberts [the potentially liable parties (PLPs)], and the Washington State Department of Ecology (Ecology). The planned EA was presented in a February 6, 2014 work plan (Aspect Consulting 2014) and was authorized by Ecology.

This EA includes in part the excavation of soils contaminated with sandblast grit containing heavy metals including soil with contaminant concentrations greater than the Site cleanup standards, as well as replacement of the storm drain system that runs through this area of the Site. This supplemental scope of work addresses the characterization of residual arsenic detected at concentrations exceeding its cleanup level in soils surrounding the former storm drain SD8, which was replaced as part of the EA (refer to Figure 1). The results of this investigation will be used to determine the extent of arsenic soil contamination within the SD8 storm drain area, as well as to determine whether this arsenic contamination is comingled with the Area G-2 cleanup area. This work will inform the potential need for additional excavation in this area as part of the EA, and will identify areas that may be deferred to the Area G-2 cleanup area. Area G-2 will be remediated as part of the final cleanup action for the Site. Ecology and the PLPs are preparing a draft Cleanup Action Plan (DCAP) that will detail how the final cleanup action for the Site will be conducted.

PROPOSED SCOPE OF WORK

The proposed scope of work will delineate the extent of arsenic contamination underlying and around the former SD8 catch basin. The field procedures, analytical methods, and quality assurance/quality control (QA/QC) procedures will be consistent with those presented in the

Emergency Action Work Plan for Areas G-1B and G-3 (Aspect Consulting 2014) and the RI/FS Work Plan in general (Landau Associates 2010).

Additional soil investigation in the vicinity of the former SD8 will include the following:

- Advancement of four soil borings (G1B-SB1 through G1B-SB4) to 12 feet below ground surface (bgs) in locations previously hand sampled to depths ranging from 6 to 6.5 feet bgs, including the north and south sidewalls and base of the existing SD8 excavation area/sample location HA-3a area.
- Advancement of two additional soil borings (G1B-SB5 and G1B-SB6) to 12 feet bgs at new locations within Area G-1B; one location will be north of the SD8 excavation area and one boring will be between the new and old SD8 structures.
- Advancement of additional lateral step-out borings to 12 feet bgs in the event that evidence of anthropogenic contamination such as sandblast grit or woodwaste is encountered in the initial boring locations. These additional borings will be stepped out laterally 5 feet farther from the former SD8 than the original location. These borings will be designated by appending "-a, -b" and so forth to the primary boring location name.
- Advancement of three soil borings (G1B-SB7 through G1B-SB9) to 12 feet bgs at locations within and to the south of the adjacent Area G-2, to the east of the former SD8 excavation.

Proposed soil boring locations are presented in Figure 2. Soil borings will be advanced using direct-push (Geoprobe) technology, logged, and field screened (by visual, olfactory, and photoionization detector [PID] screening) for evidence of sandblast grit or other anthropogenic contaminants. Samples will be collected for analysis as follows:

- At the four borings (G1B-SB1 to G1B-SB4) in locations that were previously hand sampled (to approximately 6.5 feet bgs), soil samples for laboratory analysis will be collected beginning at 7 feet bgs and ending at 12 feet bgs.
- At the two borings in locations inside the Area G-1B excavation that were not previously sampled (G1B-SB5 and G1B-SB6), soil samples will be collected beginning at the observed contact between the imported backfill placed during the EA and the preexisting dredge fill material and ending at 12 feet bgs.
- If lateral step-out borings are advanced, soil samples will also be collected beginning at the observed contact between the imported backfill and preexisting dredge fill and ending at 12 feet bgs.
- At the three boring locations within and adjacent to Area G-2 (G1B-SB7 through G1B-SB9), soil samples will be collected beginning at 5.5 feet bgs and ending at 12 feet bgs, immediately below the contamination at 5.5 feet bgs noted at location G-FA-101d.

Samples will be collected directly from the polyethylene drill rod liners and processed according to the procedures detailed in the aforementioned Work Plan(s). Soil samples for laboratory analysis will be collected continuously from 1-foot depth intervals, or from 2-foot depth intervals if sample recovery is poor (If sufficient volume for laboratory analysis cannot be achieved over a 2-foot depth interval, the boring will be relocated within 5 feet of the original location and re-

driven). The presence of sandblast grit, or other potential contamination based on field screening, will be noted if observed. Samples will also be collected separately from any interval containing anthropogenic debris or other potential contamination based on field screening. Soil samples will be identified by their location, top depth and bottom depth. The target sample locations, depths, and rationale for sampling are presented in Table 1.

The two uppermost samples collected from each boring will be submitted for analysis, the remaining samples will be archived, unless field screening indicates potential contamination. All samples will be analyzed for arsenic with 24-hour turnaround time requested for receipt of analytical data. If field screening indicates the potential presence of additional contaminants in soil, then the soil sample will be analyzed for the appropriate additional analytes, based on field screening observations according to the aforementioned Work Plan(s). Archived samples will be analyzed sequentially, as needed, until the vertical extent of arsenic greater than 20 milligrams per kilogram (mg/kg), or potentially other contaminants exceeding Site cleanup standards, has been delineated at all soil boring locations.

DATA EVALUATION AND REPORTING

Laboratory data will be validated using the procedures described in the Work Plan (Aspect Consulting 2014). Preliminary data will be disseminated to Ecology and the additional recipients of this memorandum as soon as is practical after it has been received. Final validated data will be presented along with excavation confirmation sampling results in the EA completion report.

REFERENCES

Aspect Consulting. 2014. *Emergency Action Work Plan for Areas G-1B and G-3, North Marina Ameron/Hulbert Site, Everett, Washington*. Prepared for Washington Department of Ecology. 6 February.

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

ATTACHMENTS

Table 1 Soil Sample Collection Plan

Figure 1 Supplemental Soil Investigation Area

Figure 2 Proposed Soil Boring Map (Revised 5/23/2013)

Table 1 Soil Sample Collection Plan

Soil Boring ID	Rationale	Top Sample Depth (bgs)	Bottom Sample Depth (bgs)	Sampling Frequency
G1B-SB1	Determine vertical extent of arsenic at previous G1B-SD8-PitN sample (As 150 mg/kg at 6.5 ft bgs)	7 ft	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening
G1B-SB2	Determine vertical extent of arsenic at previous G1B-SD8-PitB sample (As 140 mg/kg at 6.5 ft bgs)	7 ft	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening
G1B-SB3	Determine vertical extent of arsenic at previous G1B-HA-3a sample (excavated with old SD8--As 77 mg/kg at 6 ft bgs)	7 ft	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening
G1B-SB4	Confirm arsenic concentrations less than 20 mg/kg G1B-SD8-PitS sample (As 18 mg/kg at 6.5 ft bgs)	7 ft	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening
G1B-SB5	Determine lateral and vertical extent of arsenic to west of former SD8	(backfill/ dredge fill contact)	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening
G1B-SB6	Determine lateral and vertical extent of arsenic north of former SD8	(backfill/ dredge fill contact)	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening
Step-out Borings	If necessary--determine lateral and vertical extent of field indications of contamination	(backfill/ dredge fill contact)	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening

G1B-SB7	Determine lateral and vertical extent of arsenic to northeast of former SD8 in area G2	5.5 ft	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening
G1B-SB8	Determine lateral and vertical extent of arsenic to east of former SD8 in area G2	5.5 ft	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening
G1B-SB9	Determine lateral and vertical extent of arsenic to southeast of former SD8	5.5 ft	12 ft	1-foot intervals, or 2-foot intervals if poor recovery; or interval with potential contamination based on field screening

DRAFT

Investigation Area

Area I-5b

Area G-2

Area G-1b

Area I-13

Area M-5

Area M-4

G-FA-115a
G-FA-101b
G-FA-101f
G-FA-101
G-FA-2
G-FA-101e
G-FA-114
G-FA-103
G-FA-103c
G-FA-103a
G-FA-101d
G-FA-101a
G-FA-100
G-FA-101c
G-FA-103b
G-FA-101h
G-FA-101l
G-FA-101i
G-FA-101m
G-FA-101j
G-FA-101n
G-FA-101g
G-FA-101k
G-FA-101o

N

Legend

- Proposed Soil Boring Location
- Soil Sample with a Concentration Greater than 5x the Preliminary Screening Level
- Soil Sample Exceeded Preliminary Screening Level - Represents Soil Remaining
- Soil Sample Below Preliminary Screening Level
- Previous Soil Sample Exceeded Preliminary Screening Level - Represents Soil Remaining
- Previous Soil Sample Below Preliminary Screening Levels - Represents Soil Remaining
- Monitoring Well to be Included in Compliance Monitoring
- Isolated Cleanup Areas to be Addressed Under Soil Management Plan
- Cleanup Areas
- 1976 Pavement Line (Approximate)

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

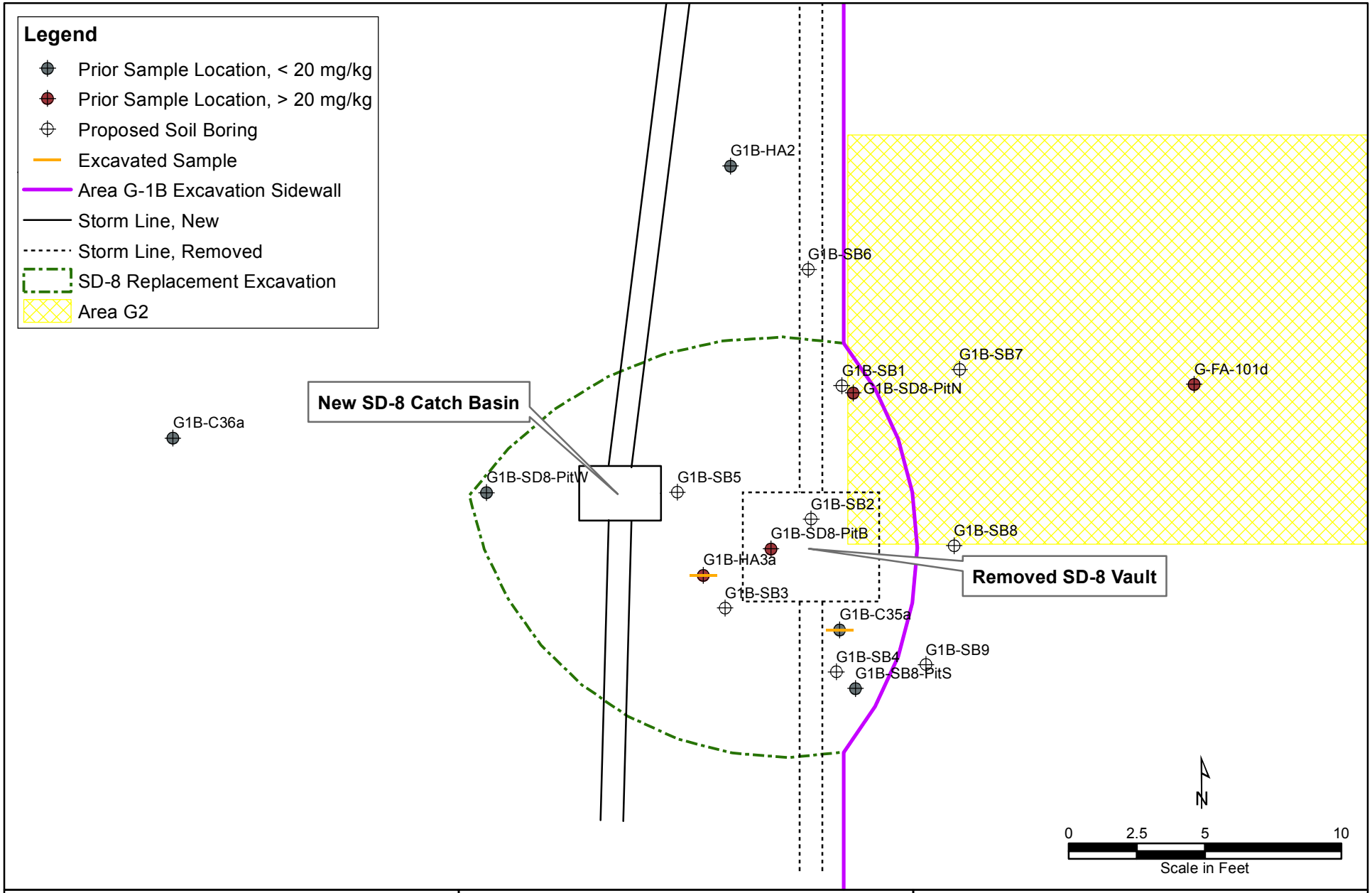
0 50 100
Scale in Feet

LANDAU ASSOCIATES

Addendum No. 1 - Emergency Action Work Plan for Areas G-1B and G-3 Supplemental Soil Investigation - Area G-1B Emergency Action SD8 Area

Figure 1
Supplemental Soil Investigation Area

G:\Projects\147029\500\570\Addendum Number 4 Work Plan\F1-Addendum4SoilSampleLocations.mxd 2/10/2014 NAD 1983 StatePlane Washington North FIPS 4601 Feet



FLOYD | SNIDER
strategy • science • engineering

Addendum No. 1–Emergency Action Work Plan
Areas G-1B and G-3
Supplemental Soil Investigation
Area G-1B Emergency Action SD-8 Area
Everett, Washington

Figure 2
Proposed Soil Boring Map

I:\GIS\Projects\OldCastle-Everett\MXD\Figure 2 (Proposed Soil Boring Map).mxd
5/23/2014