MAUL FOSTER ALONGI
400 East Mill Plain Blvd., Suite 400 | Vancouver, WA 98660 | 360 694 2691 | www.maulfoster.com



December 12, 2016
Project No. 1114.01.02

Mr. Nicholas Acklam
Washington State Department of Ecology
PO Box 47775
Olympia, Washington 98504-7775

Re: Quarterly Compliance Groundwater Monitoring for the Schmid 32nd Street Property, Washougal, Washington
Voluntary Cleanup Program Site Number SW1430

Dear Mr. Acklam:

On behalf of City of Washougal, Maul Foster & Alongi, Inc. has completed groundwater monitoring at the Schmid 32nd Street Property located at 1411 32nd Street, Washougal, Washington, for compliance monitoring consistent with the cleanup action plan.[1]

The groundwater potentiometric surface from the October 2016 monitoring event shows that flow is generally to the west and is consistent with past events (see attached figure). Field parameters are shown on the field sampling data sheets included as Attachment A. Groundwater samples were analyzed for total petroleum hydrocarbons (TPH) by the Northwest Total Petroleum Hydrocarbons Method NWTPH-Dx and for total arsenic by U.S. Environmental Protection Agency Method 6020. The analyses were completed by Specialty Analytical in Clackamas, Oregon, and the results are included as Attachment B. Groundwater monitoring results from March 2014 to October 2016 are summarized in the attached table. The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned (see Attachment C).

The October 2016 monitoring results for TPH and/or arsenic in the former diesel underground storage tank and fill areas were below Model Toxics Control Act Method A cleanup levels (CULs) of 0.5 milligram per liter (mg/L) and 0.005 mg/L, respectively (see attached table). A sample was not collected from monitoring well MW02 because there was insufficient water to sample. Prior to treatment, the highest detected TPH in the groundwater remedial action (RA) area was in MW03, at 1.695 mg/L (March 2014). Samples collected from all monitoring wells for the four post-RA compliance groundwater sampling events monitoring wells have not detected TPH or arsenic above CULs. Therefore, in accordance with Exhibit D

[1] MFA. Soil remedial action completion report: Schmid 32nd Street property—remedial action. Prepared for George Schmid & Sons, Inc. Maul Foster and Alongi, Inc., Vancouver, Washington, January 21, 2016.

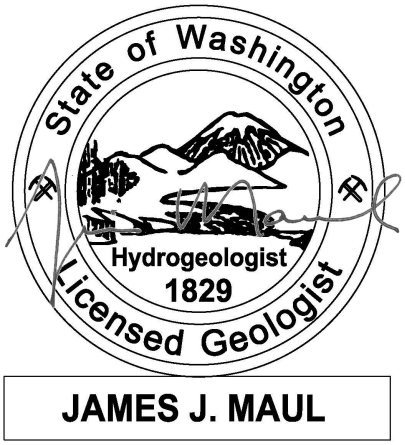
of the environmental covenant[2] (i.e., groundwater monitoring plan), the compliance groundwater monitoring can be discontinued and the monitoring wells will be decommissioned because there were four consecutive monitoring events with results below CULs.

The City of Washougal would also like to discuss the process to remove the groundwater and stormwater restrictions in the current environmental covenant at your convenience; understanding that the vapor restrictions will need to remain in place.

Please contact either one of us if you have any questions.

Sincerely,

Maul Foster & Alongi, Inc.




Alan R. Hughes, LG
Senior Geologist

James J. Maul, LHG
Principal Hydrogeologist

Attachments: Limitations
Table
Figure
A—Water Field Sampling Data Sheets
B—Laboratory Analytical Results
C—Data Validation Memorandum

cc: Trevor Evers, City of Washougal

[2] Environmental covenant for tax parcel numbers 13188-0-000 (tax lot 160). Signed and acknowledged by R. Lawson, Washington State Department of Ecology, February 18, 2016. Recorded with Clark County, Washington on February 23, 2016.

## LIMITATIONS

The services undertaken in completing this letter were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This letter is solely for the use and information of our client unless otherwise noted. Any reliance on this letter by a third party is at such party's sole risk.

Opinions and recommendations contained in this letter apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, or the use of segregated portions of this letter.

# TABLE

**Table**
**Groundwater Analytical Results (mg/L)**
**Schmid 32nd Street Property**
**City of Washougal**
**Washougal, Washington**

| | | Former Diesel UST Area | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | MW01 | | | MW02 | | | MW03 | | | | | | | | | |
| Date Collected | | 03/19/14 | 10/06/14 | 01/12/15 | 03/19/14 | 04/24/15 | 01/26/16 | 03/18/14 | 10/06/14 | 01/12/15 | 04/24/15 | 09/16/15 | 01/26/16 | 04/18/16 | 07/18/16 | 10/21/16 | 10/21/2016 (DUP) |
| | MTCA A CULs | | | | | | | | | | | | | | | | |
| **Total Metals** | | | | | | | | | | | | | | | | | |
| Arsenic | 0.005 | -- | -- | -- | -- | -- | 0.00076 | -- | -- | -- | -- | -- | 0.00012 | 0.00027 | 0.00061 | 0.00015 | 0.00018 |
| Barium | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | 0.05 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Lead | 0.015 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| **Petroleum Hydrocarbons** | | | | | | | | | | | | | | | | | |
| Diesel | 0.5 | **0.610** | 0.353 J | 0.489 | 0.0787 U | 0.0768 U | 0.0799 U | 0.225 | 0.0755 U | 0.0798 U | 0.12 | 0.191 | 0.0799 U | 0.0787 U | 0.0896 | 0.0866 | 0.0851 |
| Lube Oil | 0.5 | 0.314 | 0.194 | 0.191 U | 0.197 U | 0.192 U | 0.2 U | **1.47** | 0.189 U | 0.2 U | 0.217 | 0.239 | 0.2 U | 0.197 U | 0.192 U | 0.249 | 0.226 |
| TPH | 0.5 | **0.924** | **0.547** | **0.5845** | ND | ND | ND | **1.695** | ND | ND | 0.317 | 0.430 | ND | ND | 0.186 | 0.336 | 0.311 |
| **Groundwater Parameters** | | | | | | | | | | | | | | | | | |
| BOD | NV | -- | -- | 2 U | -- | -- | -- | -- | -- | 2 U | -- | -- | -- | -- | -- | -- | -- |
| COD | NV | -- | -- | 10 U | -- | -- | -- | -- | -- | 10 U | -- | -- | -- | -- | -- | -- | -- |
| Iron (total) | NV | -- | -- | 7.51 | -- | -- | -- | -- | -- | 0.1 U | -- | -- | -- | -- | -- | -- | -- |
| Iron (dis) | NV | -- | -- | 5.56 | -- | -- | -- | -- | -- | 0.1 U | -- | -- | -- | -- | -- | -- | -- |
| Manganese (total) | NV | -- | -- | 2.75 | -- | -- | -- | -- | -- | 0.00148 | -- | -- | -- | -- | -- | -- | -- |
| Manganese (dis) | NV | -- | -- | 2.43 | -- | -- | -- | -- | -- | 0.0005 U | -- | -- | -- | -- | -- | -- | -- |
| Methane | NV | -- | -- | 0.0665 U | -- | -- | -- | -- | -- | 0.0665 U | -- | -- | -- | -- | -- | -- | -- |

**Table**
**Groundwater Analytical Results (mg/L)**
**Schmid 32nd Street Property**
**City of Washougal**
**Washougal, Washington**

| | | Former Diesel UST Area | | | | | | | | Former Fill Area | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | MW07 | | | | | | | | MW04 | | | | | | | | |
| Date Collected | | 10/06/14 | 01/12/15 | 04/24/15 | 09/16/15 | 01/26/16 | 04/18/16 | 07/18/16 | 10/21/16 | 03/18/14 | 10/06/14 | 01/12/15 | 01/26/16 | 01/26/16 (DUP) | 04/18/16 | 04/18/16 (DUP) | 07/18/16 | 10/21/16 |
| | MTCA A CULs | | | | | | | | | | | | | | | | | |
| **Total Metals** | | | | | | | | | | | | | | | | | | |
| Arsenic | 0.005 | -- | 0.00026 | -- | -- | 0.00016 | 0.00020 | 0.00023 | 0.00027 | **0.00618** | **0.00735** | 0.00476 | 0.00180 | 0.00184 | 0.00315 | 0.00334 | 0.00435 | 0.00254 |
| Barium | NV | -- | -- | -- | -- | -- | -- | -- | -- | 0.507 | -- | -- | -- | -- | -- | -- | -- | -- |
| Chromium | 0.05 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00044 | -- | -- | -- | -- | -- | -- | -- | -- |
| Lead | 0.015 | -- | -- | -- | -- | -- | -- | -- | -- | 0.00233 | -- | -- | -- | -- | -- | -- | -- | -- |
| **Petroleum Hydrocarbons** | | | | | | | | | | | | | | | | | | |
| Diesel | 0.5 | 0.0753 U | 0.0769 U | 0.0755 U | 0.0816 U | 0.0772 U | 0.0809 U | 0.0777 | 0.0814 U | 0.114 | 0.118 | 0.0757 U | 0.0832 U | 0.0847 U | 0.0791 U | 0.0774 U | 0.08 U | 0.123 |
| Lube Oil | 0.5 | 0.188 U | 0.192 U | 0.189 U | 0.204 U | 0.193 U | 0.202 U | 0.194 | 0.448 | 0.320 | 0.316 | 0.189 U | 0.239 | 0.212 U | 0.198 U | 0.193 U | 0.2 U | 0.198 U |
| TPH | 0.5 | ND | ND | ND | ND | ND | ND | ND | 0.489 | 0.434 | 0.434 | ND | 0.281 | ND | ND | ND | ND | 0.222 |
| **Groundwater Parameters** | | | | | | | | | | | | | | | | | | |
| BOD | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| COD | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Iron (total) | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Iron (dis) | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Manganese (total) | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Manganese (dis) | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methane | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Table**
**Groundwater Analytical Results (mg/L)**
**Schmid 32nd Street Property**
**City of Washougal**
**Washougal, Washington**

| | | Former Fill Area | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Location | | MW05 | | | | | | | | MW06 | | | | | | |
| Date Collected | | 03/18/14 | 10/06/14 | 01/12/15 | 01/26/16 | 04/18/16 | 07/18/16 | 7/18/2016 (DUP) | 10/21/16 | 03/18/14 | 10/06/14 | 01/12/15 | 01/26/16 | 04/18/16 | 07/18/16 | 10/21/16 |
| | MTCA A CULs | | | | | | | | | | | | | | | |
| **Total Metals** | | | | | | | | | | | | | | | | |
| Arsenic | 0.005 | 0.00030 | 0.00050 U | 0.00030 | 0.00019 | 0.00021 | 0.00019 | 0.00020 | 0.00018 | 0.00046 | 0.00050 U | 0.00027 | 0.00032 | 0.00053 | 0.00028 | 0.00032 |
| Barium | NV | 0.00712 | -- | -- | -- | -- | -- | -- | -- | 0.00666 | -- | -- | -- | -- | -- | -- |
| Chromium | 0.05 | 0.00023 | -- | -- | -- | -- | -- | -- | -- | 0.00025 | -- | -- | -- | -- | -- | -- |
| Lead | 0.015 | 0.0001 U | -- | -- | -- | -- | -- | -- | -- | 0.0001 U | -- | -- | -- | -- | -- | -- |
| **Petroleum Hydrocarbons** | | | | | | | | | | | | | | | | |
| Diesel | 0.5 | 0.0766 U | 0.0753 U | 0.0762 U | 0.0808 U | 0.0783 U | 0.0782 U | 0.0773 U | 0.0865 | 0.0760 U | 0.076 U | 0.0764 U | 0.0761 U | 0.0827 U | 0.0785 U | 0.0785 U |
| Lube Oil | 0.5 | 0.196 | 0.188 U | 0.19 U | 0.202 U | 0.196 U | 0.196 U | 0.193 U | 0.364 | 0.230 | 0.19 U | 0.191 U | 0.19 U | 0.207 U | 0.196 U | 0.196 U |
| TPH | 0.5 | 0.234 | ND | ND | ND | ND | ND | ND | 0.451 | 0.268 | ND | ND | ND | ND | ND | ND |
| **Groundwater Parameters** | | | | | | | | | | | | | | | | |
| BOD | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| COD | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Iron (total) | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Iron (dis) | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Manganese (total) | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Manganese (dis) | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Methane | NV | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

**Table**
**Groundwater Analytical Results (mg/L)**
**Schmid 32nd Street Property**
**City of Washougal**
**Washougal, Washington**

NOTES:
**Bold** results exceed MTCA Method A groundwater CULs.
-- = not analyzed.
BOD = biological oxygen demand.
COD = chemical oxygen demand.
CUL = cleanup level.
dis = dissolved.
DUP = duplicate.
J = estimated.
mg/L = milligrams per liter.
MTCA A CULs = Model Toxics Control Act, Method A cleanup levels.
ND = not detected; TPH value was not calculated because petroleum hydrocarbons were not detected.
NV = no value.
TPH = sum of diesel- and lube-oil-range hydrocarbons, using half the method reporting limit where non-detect.
U = not detected.
UST = underground storage tank.

FIGURE


# Figure
# Groundwater Elevation
# October 2016

City of Washougal
Washougal, Washington

## Legend

- Monitoring Well Location
- Decommissioned Monitoring Well
- Groundwate Elevation Contour (in feet NAVD88)
- Subject Property

0 25 50
Feet

Notes:
NAVD88 = North American Vertical Datum of 1988

Source: Aerial photograph obtained from Esri ArcGIS Online

MAUL FOSTER ALONGI
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# ATTACHMENT A

## WATER FIELD SAMPLING DATA SHEETS

# Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | City of Washougal | **Sample Location** | MW02 |
| **Project #** | 1114.01.02 | **Sampler** | ENH |
| **Project Name** | 32nd Street - Schmid Property | **Sampling Date** | |
| **Sampling Event** | October 2016 | **Sample Name** | |
| **Sub Area** | | **Sample Depth** | |
| **FSDS QA:** | BEH 10/24/16 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/21/2016 | 8:41 | 28.07 | | 27.03 | | 1.04 | 0.17 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| Final Field Parameters | | | | | | | | | |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| | | | VOA-Glass | | |
| | | | Amber Glass | | |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | | |
| | | | Red Dissolved Poly | | |
| | | | Total Bottles | 0 | |

### General Sampling Comments

Not enough water in well column to purge and collect groundwater sample.

Signature _____

# Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

## Water Field Sampling Data Sheet

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Client Name** | City of Washougal | **Sample Location** | MW03 | | | | |
| **Project #** | 1114.01.02 | **Sampler** | ENH | | | | |
| **Project Name** | 32nd Street - Schmid Property | **Sampling Date** | 10/21/2016 | | | | |
| **Sampling Event** | October 2016 | **Sample Name** | MW03-102116 | | | | |
| **Sub Area** | | **Sample Depth** | 29 | | | | |
| **FSDS QA:** | BEH 10/24/16 | **Easting** | | **Northing** | | **TOC** | |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/21/2016 | 8:44 | 32.85 | | 24.83 | | 8.02 | 1.31 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 11:59:00 AM | 0.2 | 0.11 | 6.15 | 14.33 | 163 | 2.74 | 268.5 | 2.68 |
| | 12:03:00 PM | 0.3 | 0.11 | 6.23 | 14.33 | 163 | 2.67 | 255.6 | 2.56 |
| | 12:07:00 PM | 0.4 | 0.1 | 6.25 | 14.34 | 163 | 2.42 | 252.3 | 1.85 |
| | 12:11:00 PM | 0.5 | 0.1 | 6.26 | 14.35 | 163 | 2.35 | 250.7 | 1.94 |
| | | | | | | | | | |
| | | | | | | | | | |
| Final Field Parameters | 12:14:00 PM | 0.6 | 0.1 | 6.28 | 14.43 | 163 | 2.25 | 249.1 | 2.1 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Clear and colorless.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 12:14:00 PM | VOA-Glass | | |
| | | | Amber Glass | 2 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | | |
| | | | Total Bottles | 3 | |

### General Sampling Comments

Began purging at 11:52. Water level for each parameter reading (feet below top of casing): 24.89, 24.89, 24.88, 24.88, 24.88. Collected duplicate sample: MWDUP-102116.
Equipment: VANC Turbidity Meter #1, VANC WL Meter #1, VANC P-Pump #2, VANC YSI #1.

Signature _____

# Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

## Water Field Sampling Data Sheet

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Client Name** | City of Washougal | **Sample Location** | MW03 | | | | |
| **Project #** | 1114.01.02 | **Sampler** | ENH | | | | |
| **Project Name** | 32nd Street - Schmid Property | **Sampling Date** | 10/21/2016 | | | | |
| **Sampling Event** | October 2016 | **Sample Name** | MWDUP-102116 | | | | |
| **Sub Area** | | **Sample Depth** | 29 | | | | |
| **FSDS QA:** | BEH 10/24/16 | **Easting** | | **Northing** | | **TOC** | |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/21/2016 | 8:44 | 32.85 | | 24.83 | | 8.02 | 1.31 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 11:59:00 AM | 0.2 | 0.11 | 6.15 | 14.33 | 163 | 2.74 | 268.5 | 2.68 |
| | 12:03:00 PM | 0.3 | 0.11 | 6.23 | 14.33 | 163 | 2.67 | 255.6 | 2.56 |
| | 12:07:00 PM | 0.4 | 0.1 | 6.25 | 14.34 | 163 | 2.42 | 252.3 | 1.85 |
| | 12:11:00 PM | 0.5 | 0.1 | 6.26 | 14.35 | 163 | 2.35 | 250.7 | 1.94 |
| | | | | | | | | | |
| | | | | | | | | | |
| Final Field Parameters | 12:14:00 PM | 0.6 | 0.1 | 6.28 | 14.43 | 163 | 2.25 | 249.1 | 2.1 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Clear and colorless.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 12:14:00 PM | VOA-Glass | | |
| | | | Amber Glass | 2 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | | |
| | | | Total Bottles | 3 | |

### General Sampling Comments

Began purging at 11:52. Water level for each parameter reading (feet below top of casing): 24.89, 24.89, 24.88, 24.88, 24.88. Duplicate sample for MW03-102116.
Equipment: VANC Turbidity Meter #1, VANC WL Meter #1, VANC Small P-Pump #2, VANC YSI #1.

Signature _____

# Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | City of Washougal | **Sample Location** | MW04 |
| **Project #** | 1114.01.02 | **Sampler** | ENH |
| **Project Name** | 32nd Street - Schmid Property | **Sampling Date** | 10/21/2016 |
| **Sampling Event** | October 2016 | **Sample Name** | MW04-102116 |
| **Sub Area** | | **Sample Depth** | 25 |
| **FSDS QA:** | BEH 10/24/16 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/21/2016 | 8:48 | 29.78 | | 17.42 | | 12.36 | 2.01 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| Purge Method | Time | Purge Vol (gal) | Flowrate l/min | pH | Temp (C) | E Cond (uS/cm) | DO (mg/L) | ORP | Turbidity |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 1:19:00 PM | 0.2 | 0.15 | 7 | 15.33 | 1053 | 0.97 | -37.7 | 1.67 |
| | 1:23:00 PM | 0.3 | 0.15 | 7.01 | 15.2 | 1055 | 0.64 | -38.5 | 1.29 |
| | 1:27:00 PM | 0.4 | 0.15 | 7 | 15.04 | 1069 | 0.55 | -42.9 | 0.82 |
| | 1:31:00 PM | 0.5 | 0.15 | 7 | 15.08 | 1070 | 0.48 | -46.7 | 1.42 |
| | 1:35:00 PM | 0.6 | 0.15 | 7.01 | 15.18 | 1073 | 0.33 | -53.4 | 1.08 |
| | | | | | | | | | |
| Final Field Parameters | 1:39:00 PM | 0.7 | 0.15 | 7.01 | 15.12 | 1074 | 0.26 | -54.3 | 1.43 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

**Water Quality Observations:** Clear and colorless.

### Sample Information

| Sampling Method | Sample Type | Sampling Time | Container Code/Preservative | # | Filtered |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 1:39:00 PM | VOA-Glass | | |
| | | | Amber Glass | 2 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | | |
| | | | Total Bottles | 3 | |

**General Sampling Comments** Began purging at 13:13. Water level for each parameter reading (feet below top of casing): 17.38.
Equipment: VANC Turbidity Meter #1, VANC WL Meter #1, VANC Small P-Pump #2, VANC YSI #1.

Signature _____

# Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | City of Washougal | **Sample Location** | MW05 |
| **Project #** | 1114.01.02 | **Sampler** | ENH |
| **Project Name** | 32nd Street - Schmid Property | **Sampling Date** | 10/21/2016 |
| **Sampling Event** | October 2016 | **Sample Name** | MW05-102116 |
| **Sub Area** | | **Sample Depth** | 14 |
| **FSDS QA:** | BEH 10/24/16 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/21/2016 | 8:51 | 18.77 | | 7.46 | | 11.31 | 1.84 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| Purge Method | Time | Purge Vol (gal) | Flowrate l/min | pH | Temp (C) | E Cond (uS/cm) | DO (mg/L) | ORP | Turbidity |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 10:18:00 AM | 0.1 | 0.14 | 6.21 | 14.64 | 155 | 4.21 | 252.2 | 2.44 |
| | 10:22:00 AM | 0.2 | 0.14 | 6.27 | 14.68 | 160 | 3.43 | 243.2 | 2.16 |
| | 10:26:00 AM | 0.3 | 0.12 | 6.27 | 14.7 | 162 | 3.39 | 242.4 | 2.29 |
| | 10:30:00 AM | 0.4 | 0.12 | 6.28 | 14.7 | 161 | 3.34 | 242.1 | 1.36 |
| | | | | | | | | | |
| | | | | | | | | | |
| Final Field Parameters | 10:34:00 AM | 0.5 | 0.12 | 6.29 | 14.74 | 164 | 3.18 | 241.6 | 1.47 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

**Water Quality Observations:** Clear and colorless.

### Sample Information

| Sampling Method | Sample Type | Sampling Time | Container Code/Preservative | # | Filtered |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 10:34:00 AM | VOA-Glass | | |
| | | | Amber Glass | 2 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | | |
| | | | Total Bottles | 3 | |

**General Sampling Comments**

Began purging at 10:14. Water level for each parameter reading (feet below top of casing): 7.47.
Equipment: VANC Turbidity Meter #1, VANC WL Meter #1, VANC Small P-Pump #2, VANC YSI #1.

Signature _____

# Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | City of Washougal | **Sample Location** | MW06 |
| **Project #** | 1114.01.02 | **Sampler** | ENH |
| **Project Name** | 32nd Street - Schmid Property | **Sampling Date** | 10/21/2016 |
| **Sampling Event** | October 2016 | **Sample Name** | MW06-102116 |
| **Sub Area** | | **Sample Depth** | 13 |
| **FSDS QA:** | BEH 10/24/16 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/21/2016 | 8:56 | 17.95 | | 5.48 | | 12.47 | 2.03 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 10:58:00 AM | 0.1 | 0.18 | 6.34 | 13.58 | 141 | 4.97 | 259.9 | 1.33 |
| | 11:02:00 AM | 0.2 | 0.13 | 6 | 13.62 | 142 | 6.82 | 263.4 | 1.71 |
| | 11:06:00 AM | 0.3 | 0.13 | 6.31 | 13.58 | 142 | 6.81 | 251.8 | 1.43 |
| | 11:10:00 AM | 0.4 | 0.13 | 6.4 | 13.58 | 142 | 6.75 | 249.2 | 0.7 |
| | 11:14:00 AM | 0.5 | 0.13 | 6.46 | 13.56 | 140 | 6.57 | 247.6 | 1.01 |
| | | | | | | | | | |
| Final Field Parameters | 11:18:00 AM | 0.6 | 0.13 | 6.46 | 13.6 | 141 | 6.55 | 247.9 | 1.05 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

### Water Quality Observations:

Clear and colorless.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 11:18:00 AM | VOA-Glass | | |
| | | | Amber Glass | 2 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | | |
| | | | Total Bottles | 3 | |

### General Sampling Comments

Began purging at 10:53. Water level for each parameter reading (feet below top of casing): 5.05.
Equipment: VANC Turbidity Meter #1, VANC WL Meter #1, VANC Small P-Pump #2, VANC YSI #1.

Signature _____

# Maul Foster & Alongi, Inc.

400 E. Mill Plain Blvd, Suite 400, Vancouver, WA 98660 (360) 694-2691 Fax. (360) 906-1958

## Water Field Sampling Data Sheet

| | | | |
|---|---|---|---|
| **Client Name** | City of Washougal | **Sample Location** | MW07 |
| **Project #** | 1114.01.02 | **Sampler** | ENH |
| **Project Name** | 32nd Street - Schmid Property | **Sampling Date** | 10/21/2016 |
| **Sampling Event** | October 2016 | **Sample Name** | MW07-102116 |
| **Sub Area** | | **Sample Depth** | 14 |
| **FSDS QA:** | BEH 10/24/16 | **Easting** | **Northing** | **TOC** |

### Hydrology/Level Measurements

| | | | | | (Product Thickness) | (Water Column) | (Gallons/ft x Water Column) |
|---|---|---|---|---|---|---|---|
| **Date** | **Time** | **DT-Bottom** | **DT-Product** | **DT-Water** | **DTP-DTW** | **DTB-DTW** | **Pore Volume** |
| 10/21/2016 | 9:00 | 19.29 | | 7.86 | | 11.43 | 1.86 |

(0.75" = 0.023 gal/ft) (1" = 0.041 gal/ft) (1.5" = 0.092 gal/ft) (2" = 0.163 gal/ft) (3" = 0.367 gal/ft) (4" = 0.653 gal/ft) (6" = 1.469 gal/ft) (8" = 2.611 gal/ft)

### Water Quality Data

| **Purge Method** | **Time** | **Purge Vol (gal)** | **Flowrate l/min** | **pH** | **Temp (C)** | **E Cond (uS/cm)** | **DO (mg/L)** | **ORP** | **Turbidity** |
|---|---|---|---|---|---|---|---|---|---|
| (2) Peristaltic Pump | 9:26:00 AM | 0.1 | 0.18 | 6.19 | 14.4 | 181 | 5.55 | 235.5 | 2.82 |
| | 9:30:00 AM | 0.2 | 0.12 | 6.21 | 14.43 | 184 | 5.25 | 234.6 | 2.99 |
| | 9:34:00 AM | 0.3 | 0.12 | 6.21 | 14.57 | 185 | 5.12 | 237 | 2.2 |
| | 9:38:00 AM | 0.4 | 0.12 | 6.22 | 14.63 | 170 | 5.08 | 237.9 | 2.71 |
| | 9:42:00 AM | 0.5 | 0.12 | 6.23 | 14.62 | 171 | 5 | 240.1 | 2.59 |
| | | | | | | | | | |
| Final Field Parameters | 9:46:00 AM | 0.6 | 0.12 | 6.24 | 14.63 | 168 | 4.93 | 241.8 | 2.39 |

Methods: (1) Submersible Pump (2) Peristaltic Pump (3) Disposable Bailer (4) Vacuum Pump (5) Dedicated Bailer (6) Inertia Pump (7) Other (specify)

**Water Quality Observations:** Clear and colorless.

### Sample Information

| **Sampling Method** | **Sample Type** | **Sampling Time** | **Container Code/Preservative** | **#** | **Filtered** |
|---|---|---|---|---|---|
| (2) Peristaltic Pump | Groundwater | 9:46:00 AM | VOA-Glass | | |
| | | | Amber Glass | 1 | No |
| | | | White Poly | | |
| | | | Yellow Poly | | |
| | | | Green Poly | | |
| | | | Red Total Poly | 1 | No |
| | | | Red Dissolved Poly | | |
| | | | Total Bottles | 2 | |

**General Sampling Comments** Began purging at 9:20. Water level for each parameter reading (feet below top of casing): 7.96.
Equipment: VANC Turbidity Meter #1, VANC WL Meter #1, VANC Small P-Pump #2, VANC YSI #1.

Signature _____

# ATTACHMENT B

## LABORATORY ANALYTICAL RESULTS

# Specialty Analytical

11711 SE Capps Road, Ste B
Clackamas, Oregon 97015
TEL: 503-607-1331 FAX: 503-607-1336
Website: www.specialtyanalytical.com


November 07, 2016

Alan Hughes
Maul Foster & Alongi
400 E. Mill Plain Blvd.
Suite 400
Vancouver, WA 98660

TEL: (360) 694-2691
FAX: (360) 906-1958

RE: Schmid 32nd Street / 1114.01.02

Dear Alan Hughes: Order No.: 1610241

Specialty Analytical received 6 sample(s) on 10/24/2016 for the analyses presented in the following report.

There were no problems with the analysis and all data for associated QC met EPA or laboratory specifications, except where noted in the Case Narrative, or as qualified with flags. Results apply only to the samples analyzed. Without approval of the laboratory, the reproduction of this report is only permitted in its entirety.

If you have any questions regarding these tests, please feel free to call.

Sincerely,

Marty French
Lab Director

# Specialty Analytical

**Date Reported:** 07-Nov-16

**CLIENT:** Maul Foster & Alongi
**Project:** Schmid 32nd Street / 1114.01.02

**Lab Order:** 1610241

**Lab ID:** 1610241-001 **Collection Date:** 10/21/2016 9:46:00 AM
**Client Sample ID:** MW07-102116 **Matrix:** WATER

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **NWTPH-DX - RBC** | | **NWTPH-DX** | | | | Analyst: **BW** |
| Diesel | ND | 0.0814 | | mg/L | 1 | 10/26/2016 10:27:15 PM |
| Lube Oil | 0.448 | 0.203 | | mg/L | 1 | 10/26/2016 10:27:15 PM |
| Surr: o-Terphenyl | 96.5 | 50-150 | | %REC | 1 | 10/26/2016 10:27:15 PM |
| **ICP/MS METALS-TOTAL RECOVERABLE** | | **SW6020A** | | | | Analyst: **jw** |
| Arsenic | 0.270 | 0.100 | | µg/L | 1 | 10/25/2016 11:30:12 AM |

**Lab ID:** 1610241-002 **Collection Date:** 10/21/2016 10:34:00 AM
**Client Sample ID:** MW05-102116 **Matrix:** WATER

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **NWTPH-DX - RBC** | | **NWTPH-DX** | | | | Analyst: **BW** |
| Diesel | 0.0865 | 0.0783 | | mg/L | 1 | 10/26/2016 10:49:15 PM |
| Lube Oil | 0.364 | 0.196 | | mg/L | 1 | 10/26/2016 10:49:15 PM |
| Surr: o-Terphenyl | 97.6 | 50-150 | | %REC | 1 | 10/26/2016 10:49:15 PM |
| **ICP/MS METALS-TOTAL RECOVERABLE** | | **SW6020A** | | | | Analyst: **jw** |
| Arsenic | 0.181 | 0.100 | | µg/L | 1 | 10/25/2016 11:33:35 AM |

**Lab ID:** 1610241-003 **Collection Date:** 10/21/2016 11:18:00 AM
**Client Sample ID:** MW06-102116 **Matrix:** WATER

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **NWTPH-DX - RBC** | | **NWTPH-DX** | | | | Analyst: **BW** |
| Diesel | ND | 0.0785 | | mg/L | 1 | 10/26/2016 11:11:15 PM |
| Lube Oil | ND | 0.196 | | mg/L | 1 | 10/26/2016 11:11:15 PM |
| Surr: o-Terphenyl | 95.9 | 50-150 | | %REC | 1 | 10/26/2016 11:11:15 PM |
| **ICP/MS METALS-TOTAL RECOVERABLE** | | **SW6020A** | | | | Analyst: **jw** |
| Arsenic | 0.315 | 0.100 | | µg/L | 1 | 10/25/2016 11:36:57 AM |

# Specialty Analytical

**Date Reported:** 07-Nov-16

**CLIENT:** Maul Foster & Alongi
**Project:** Schmid 32nd Street / 1114.01.02

**Lab Order:** 1610241

**Lab ID:** 1610241-004 **Collection Date:** 10/21/2016 12:14:00 PM
**Client Sample ID:** MW03-102116 **Matrix:** WATER

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **NWTPH-DX - RBC** | | **NWTPH-DX** | | | | Analyst: **BW** |
| Diesel | 0.0866 | 0.0798 | | mg/L | 1 | 10/26/2016 11:33:15 PM |
| Lube Oil | 0.249 | 0.200 | | mg/L | 1 | 10/26/2016 11:33:15 PM |
| Surr: o-Terphenyl | 92.5 | 50-150 | | %REC | 1 | 10/26/2016 11:33:15 PM |
| **ICP/MS METALS-TOTAL RECOVERABLE** | | **SW6020A** | | | | Analyst: **jw** |
| Arsenic | 0.153 | 0.100 | | µg/L | 1 | 10/25/2016 11:43:42 AM |

**Lab ID:** 1610241-005 **Collection Date:** 10/21/2016 12:14:00 PM
**Client Sample ID:** MWDUP-102116 **Matrix:** WATER

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **NWTPH-DX - RBC** | | **NWTPH-DX** | | | | Analyst: **BW** |
| Diesel | 0.0851 | 0.0804 | | mg/L | 1 | 10/26/2016 11:55:15 PM |
| Lube Oil | 0.226 | 0.201 | | mg/L | 1 | 10/26/2016 11:55:15 PM |
| Surr: o-Terphenyl | 96.2 | 50-150 | | %REC | 1 | 10/26/2016 11:55:15 PM |
| **ICP/MS METALS-TOTAL RECOVERABLE** | | **SW6020A** | | | | Analyst: **jw** |
| Arsenic | 0.183 | 0.100 | | µg/L | 1 | 10/25/2016 11:53:50 AM |

**Lab ID:** 1610241-006 **Collection Date:** 10/21/2016 1:39:00 PM
**Client Sample ID:** MW04-102116 **Matrix:** WATER

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **NWTPH-DX WITH SILICA CLEAN-UP** | | **NWTPH-DX/SIL** | | | | Analyst: **BW** |
| Diesel | 0.123 | 0.0792 | | mg/L | 1 | 11/4/2016 8:45:32 PM |
| Lube Oil | ND | 0.198 | | mg/L | 1 | 11/4/2016 8:45:32 PM |
| Surr: o-Terphenyl | 111 | 50-150 | | %REC | 1 | 11/4/2016 8:45:32 PM |
| **NWTPH-DX - RBC** | | **NWTPH-DX** | | | | Analyst: **BW** |
| Diesel | 0.823 | 0.0792 | A1 | mg/L | 1 | 10/27/2016 12:27:15 AM |
| Lube Oil | 0.711 | 0.198 | | mg/L | 1 | 10/27/2016 12:27:15 AM |
| Surr: o-Terphenyl | 112 | 50-150 | | %REC | 1 | 10/27/2016 12:27:15 AM |
| **ICP/MS METALS-TOTAL RECOVERABLE** | | **SW6020A** | | | | Analyst: **jw** |
| Arsenic | 2.54 | 0.100 | | µg/L | 1 | 10/25/2016 11:57:12 AM |

# QC SUMMARY REPORT

WO#: **1610241**

## Specialty Analytical

***07-Nov-16***

**Client:** Maul Foster & Alongi

**Project:** Schmid 32nd Street / 1114.01.02 **TestCode:** **6020_W**

| Sample ID: **ICV** | SampType: **ICV** | TestCode: **6020_W** | Units: **µg/L** | Prep Date: | RunNo: **27149** |
|---|---|---|---|---|---|
| Client ID: **ICV** | Batch ID: **12173** | TestNo: **SW6020A** | **SW3010A** | Analysis Date: **10/25/2016** | SeqNo: **366475** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 51.1 | 0.100 | 50.00 | 0 | 102 | 90 | 110 | | | | |

| Sample ID: **CCV** | SampType: **CCV** | TestCode: **6020_W** | Units: **µg/L** | Prep Date: | RunNo: **27149** |
|---|---|---|---|---|---|
| Client ID: **CCV** | Batch ID: **12173** | TestNo: **SW6020A** | **SW3010A** | Analysis Date: **10/25/2016** | SeqNo: **366476** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 49.2 | 0.100 | 50.00 | 0 | 98.3 | 90 | 110 | | | | |

| Sample ID: **MB-12173** | SampType: **MBLK** | TestCode: **6020_W** | Units: **µg/L** | Prep Date: **10/24/2016** | RunNo: **27149** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **12173** | TestNo: **SW6020A** | **SW3010A** | Analysis Date: **10/25/2016** | SeqNo: **366477** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | ND | 0.100 | | | | | | | | | |

| Sample ID: **LCS-12173** | SampType: **LCS** | TestCode: **6020_W** | Units: **µg/L** | Prep Date: **10/24/2016** | RunNo: **27149** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **12173** | TestNo: **SW6020A** | **SW3010A** | Analysis Date: **10/25/2016** | SeqNo: **366478** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 50.0 | 0.100 | 50.00 | 0 | 100 | 80 | 120 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | H | Holding times for preparation or analysis exceeded | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits | S | Spike Recovery outside accepted reco |

# QC SUMMARY REPORT

WO#: **1610241**

*07-Nov-16*

## Specialty Analytical

**Client:** Maul Foster & Alongi

**Project:** Schmid 32nd Street / 1114.01.02 **TestCode:** **6020_W**

Sample ID: **A1610229-001ADUP** SampType: **DUP** TestCode: **6020_W** Units: **µg/L** Prep Date: **10/25/2016** RunNo: **27149**
Client ID: **ZZZZZZ** Batch ID: **12173** TestNo: **SW6020A** **SW3010A** Analysis Date: **10/25/2016** SeqNo: **366495**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 0.542 | 0.100 | | | | | | 0.5543 | 2.25 | 20 | |

Sample ID: **A1610229-001AMS** SampType: **MS** TestCode: **6020_W** Units: **µg/L** Prep Date: **10/25/2016** RunNo: **27149**
Client ID: **ZZZZZZ** Batch ID: **12173** TestNo: **SW6020A** **SW3010A** Analysis Date: **10/25/2016** SeqNo: **366496**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 47.6 | 0.100 | 50.00 | 0.5543 | 94.0 | 70 | 130 | | | | |

Sample ID: **A1610229-001AMSD** SampType: **MSD** TestCode: **6020_W** Units: **µg/L** Prep Date: **10/25/2016** RunNo: **27149**
Client ID: **ZZZZZZ** Batch ID: **12173** TestNo: **SW6020A** **SW3010A** Analysis Date: **10/25/2016** SeqNo: **366497**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 48.7 | 0.100 | 50.00 | 0.5543 | 96.4 | 70 | 130 | 47.55 | 2.46 | 20 | |

Sample ID: **CCV** SampType: **CCV** TestCode: **6020_W** Units: **µg/L** Prep Date: RunNo: **27149**
Client ID: **CCV** Batch ID: **12173** TestNo: **SW6020A** **SW3010A** Analysis Date: **10/25/2016** SeqNo: **366499**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Arsenic | 48.2 | 0.100 | 50.00 | 0 | 96.4 | 90 | 110 | | | | |

**Qualifiers:**
B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
O RSD is greater than RSDlimit
R RPD outside accepted recovery limits
S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: **1610241**

*07-Nov-16*

## Specialty Analytical

**Client:** Maul Foster & Alongi

**Project:** Schmid 32nd Street / 1114.01.02 **TestCode:** **DXLLSIL_W**

Sample ID: **CCV** SampType: **CCV** TestCode: **DXLLSIL_W** Units: **mg/L** Prep Date: RunNo: **27311**

Client ID: **CCV** Batch ID: **12231** TestNo: **NWTPH-Dx/Si SW3510C** Analysis Date: **11/4/2016** SeqNo: **368767**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel | 6.05 | 0.0800 | 6.000 | 0 | 101 | 85 | 115 | | | | |
| Lube Oil | 3.02 | 0.200 | 3.000 | 0 | 101 | 85 | 115 | | | | |

Sample ID: **MB-12231** SampType: **MBLK** TestCode: **DXLLSIL_W** Units: **mg/L** Prep Date: **10/24/2016** RunNo: **27311**

Client ID: **PBW** Batch ID: **12231** TestNo: **NWTPH-Dx/Si SW3510C** Analysis Date: **11/4/2016** SeqNo: **368768**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel | ND | 0.0800 | | | | | | | | | |
| Lube Oil | ND | 0.200 | | | | | | | | | |
| Surr: o-Terphenyl | 0.272 | | 0.2000 | | 136 | 50 | 150 | | | | |

Sample ID: **LCS-12231** SampType: **LCS** TestCode: **DXLLSIL_W** Units: **mg/L** Prep Date: **10/24/2016** RunNo: **27311**

Client ID: **LCSW** Batch ID: **12231** TestNo: **NWTPH-Dx/Si SW3510C** Analysis Date: **11/4/2016** SeqNo: **368769**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel | 1.20 | 0.0800 | 1.000 | 0 | 120 | 60.7 | 121 | | | | |
| Lube Oil | 1.02 | 0.200 | 1.000 | 0 | 102 | 64 | 126 | | | | |

Sample ID: **CCV** SampType: **CCV** TestCode: **DXLLSIL_W** Units: **mg/L** Prep Date: RunNo: **27311**

Client ID: **CCV** Batch ID: **12231** TestNo: **NWTPH-Dx/Si SW3510C** Analysis Date: **11/5/2016** SeqNo: **368772**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Qualifiers:**

- B Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- O RSD is greater than RSDlimit
- R RPD outside accepted recovery limits
- S Spike Recovery outside accepted reco

# QC SUMMARY REPORT

WO#: **1610241**

*07-Nov-16*

## Specialty Analytical

**Client:** Maul Foster & Alongi

**Project:** Schmid 32nd Street / 1114.01.02 **TestCode:** **DXLLSIL_W**

Sample ID: **CCV** SampType: **CCV** TestCode: **DXLLSIL_W** Units: **mg/L** Prep Date: RunNo: **27311**

Client ID: **CCV** Batch ID: **12231** TestNo: **NWTPH-Dx/Si SW3510C** Analysis Date: **11/5/2016** SeqNo: **368772**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel | 8.29 | 0.0800 | 8.000 | 0 | 104 | 85 | 115 | | | | |
| Lube Oil | 3.83 | 0.200 | 4.000 | 0 | 95.7 | 85 | 115 | | | | |

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | H | Holding times for preparation or analysis exceeded | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits | S | Spike Recovery outside accepted reco |

# QC SUMMARY REPORT

WO#: **1610241**

## Specialty Analytical

***07-Nov-16***

**Client:** Maul Foster & Alongi

**Project:** Schmid 32nd Street / 1114.01.02 **TestCode:** **NWTPHDXLL_W**

| Sample ID: **MB-12166** | SampType: **MBLK** | TestCode: **NWTPHDXLL** | Units: **mg/L** | Prep Date: **10/24/2016** | RunNo: **27183** |
|---|---|---|---|---|---|
| Client ID: **PBW** | Batch ID: **12166** | TestNo: **NWTPH-Dx** | **SW3510B** | Analysis Date: **10/26/2016** | SeqNo: **367025** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel | ND | 0.0800 | | | | | | | | | |
| Lube Oil | ND | 0.200 | | | | | | | | | |
| Surr: o-Terphenyl | 0.193 | | 0.2000 | | 96.3 | 50 | 150 | | | | |

| Sample ID: **LCS-12166** | SampType: **LCS** | TestCode: **NWTPHDXLL** | Units: **mg/L** | Prep Date: **10/24/2016** | RunNo: **27183** |
|---|---|---|---|---|---|
| Client ID: **LCSW** | Batch ID: **12166** | TestNo: **NWTPH-Dx** | **SW3510B** | Analysis Date: **10/26/2016** | SeqNo: **367026** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel | 1.01 | 0.0800 | 1.000 | 0 | 101 | 60.7 | 121 | | | | |
| Lube Oil | 1.01 | 0.200 | 1.000 | 0 | 101 | 64 | 126 | | | | |

| Sample ID: **LCSD-12166** | SampType: **LCSD** | TestCode: **NWTPHDXLL** | Units: **mg/L** | Prep Date: **10/24/2016** | RunNo: **27183** |
|---|---|---|---|---|---|
| Client ID: **LCSS02** | Batch ID: **12166** | TestNo: **NWTPH-Dx** | **SW3510B** | Analysis Date: **10/26/2016** | SeqNo: **367027** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel | 1.10 | 0.0800 | 1.000 | 0 | 110 | 60.7 | 121 | 1.014 | 8.39 | 20 | |
| Lube Oil | 1.18 | 0.200 | 1.000 | 0 | 118 | 64 | 126 | 1.012 | 15.5 | 20 | |

| Sample ID: **CCV** | SampType: **CCV** | TestCode: **NWTPHDXLL** | Units: **mg/L** | Prep Date: | RunNo: **27183** |
|---|---|---|---|---|---|
| Client ID: **CCV** | Batch ID: **12166** | TestNo: **NWTPH-Dx** | **SW3510B** | Analysis Date: **10/27/2016** | SeqNo: **367038** |

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

**Qualifiers:**

| | | | | | |
|---|---|---|---|---|---|
| B | Analyte detected in the associated Method Blank | H | Holding times for preparation or analysis exceeded | ND | Not Detected at the Reporting Limit |
| O | RSD is greater than RSDlimit | R | RPD outside accepted recovery limits | S | Spike Recovery outside accepted reco |

# QC SUMMARY REPORT

WO#: **1610241**

## Specialty Analytical

***07-Nov-16***

**Client:** Maul Foster & Alongi

**Project:** Schmid 32nd Street / 1114.01.02 **TestCode:** **NWTPHDXLL_W**

Sample ID: **CCV** SampType: **CCV** TestCode: **NWTPHDXLL** Units: **mg/L** Prep Date: RunNo: **27183**

Client ID: **CCV** Batch ID: **12166** TestNo: **NWTPH-Dx** **SW3510B** Analysis Date: **10/27/2016** SeqNo: **367038**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel | 5.72 | 0.0800 | 6.000 | 0 | 95.4 | 85 | 115 | | | | |
| Lube Oil | 2.87 | 0.200 | 3.000 | 0 | 95.7 | 85 | 115 | | | | |

Sample ID: **CCV** SampType: **CCV** TestCode: **NWTPHDXLL** Units: **mg/L** Prep Date: RunNo: **27183**

Client ID: **CCV** Batch ID: **12166** TestNo: **NWTPH-Dx** **SW3510B** Analysis Date: **10/26/2016** SeqNo: **367039**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Diesel | 7.57 | 0.0800 | 8.000 | 0 | 94.7 | 85 | 115 | | | | |
| Lube Oil | 3.64 | 0.200 | 4.000 | 0 | 91.0 | 85 | 115 | | | | |

**Qualifiers:**

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

ND Not Detected at the Reporting Limit

O RSD is greater than RSDlimit

R RPD outside accepted recovery limits

S Spike Recovery outside accepted reco

# KEY TO FLAGS

Rev. May 12, 2010

| | |
|---|---|
| A | This sample contains a Gasoline Range Organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards |
| A1 | This sample contains a Diesel Range Organic not identified as a specific hydrocarbon product. The result was quantified against diesel calibration standards. |
| A2 | This sample contains a Lube Oil Range Organic not identified as a specific hydrocarbon product. The result was quantified against a lube oil calibration standard. |
| A3 | The result was determined to be Non-Detect based on hydrocarbon pattern recognition. The product was carry-over from another hydrocarbon type. |
| A4 | The product appears to be aged or degraded diesel. |
| B | The blank exhibited a positive result great than the reporting limit for this compound. |
| CN | See Case Narrative. |
| D | Result is based from a dilution. |
| E | Result exceeds the calibration range for this compound. The result should be considered as estimate. |
| F | The positive result for this hydrocarbon is due to single component contamination. The product does not match any hydrocarbon in the fuels library. |
| G | Result may be biased high due to biogenic interferences. Clean up is recommended. |
| H | Sample was analyzed outside recommended holding time. |
| HT | At clients request, samples was analyzed outside of recommended holding time. |
| J | The result for this analyte is between the MDL and the PQL and should be considered as estimated concentration. |
| K | Diesel result is biased high due to amount of Oil contained in the sample. |
| L | Diesel result is biased high due to amount of Gasoline contained in the sample. |
| M | Oil result is biased high due to amount of Diesel contained in the sample. |
| MC | Sample concentration is greater than 4x the spiked value, the spiked value is considered insignificant. |
| MI | Result is outside control limits due to matrix interference. |
| MSA | Value determined by Method of Standard Addition. |
| O | Laboratory Control Standard (LCS) exceeded laboratory control limits, but meets CCV criteria. Data meets EPA requirements. |
| Q | Detection levels elevated due to sample matrix. |
| R | RPD control limits were exceeded. |
| RF | Duplicate failed due to result being at or near the method-reporting limit. |
| RP | Matrix spike values exceed established QC limits; post digestion spike is in control. |
| S | Recovery is outside control limits. |
| SC | Closing CCV or LCS exceeded high recovery control limits, but associated samples are non-detect. Data meets EPA requirements. |
| * | The result for this parameter was greater that the maximum contaminant level of the TCLP regulatory limit. |

# CHAIN OF CUSTODY RECORD



**Specialty Analytical**
11711 SE Capps Road
Clackamas, OR 97015
Phone: 503-607-1331
Fax: 503-607-1336

Contact Person/Project Manager: Alan Hughes
Company: Maul Foster & Alongi
Address: 400 E Mill Plain Blvd #400
Vancouver, WA 98660
Phone: _____ Fax: _____
Project No. 1114.01.02 Project Name: Schmid 32nd St
Project Site Location OR: _____ WA: X Other: _____
Invoice To: MFA P.O. No.: _____

Collected By:
Signature: Emily Hess
Printed: Emily Hess

Signature: _____
Printed: _____

Turn Around Time
☒ Normal 5-7 Business Days
☐ Rush _____
Specify
**Rush Analyses Must Be Scheduled With The Lab In Advance**

| Date | Time | Sample I.D. | Matrix | No. of Containers | Analyses: NWTPH-DX | Analyses: Arsenic-ICP/MS 6020 | Analyses: DX-Silica | Comments | Lab I.D. |
|---|---|---|---|---|---|---|---|---|---|
| 102116 | 946 | MW07-102116 | W | 2 | X | X | | ⊗Add 11/1/16 | |
| | 1034 | MW05-102116 | " | 3 | X | X | | | |
| | 1118 | MW06-102116 | " | 3 | X | X | | | |
| | 1214 | MW03-102116 | " | 3 | X | X | | | |
| | 1214 | MWDUP-102116 | " | 3 | X | X | | | |
| | 1339 | MW04-102116 | " | 3 | X | X | ⊗ | hold samples for potential | |
| | | | | | | | | NWTPH-Dx w/Silica gel cleanup | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

For Laboratory Use
Lab Job No. 1610241
Shipped Via: Specialty
Air Bill No. _____
Temperature On Receipt 4 °C
Specialty Analytical Containers? Y / N
Specialty Analytical Trip Blanks? Y / N

| Relinquished By | Date | Time | Received By | Relinquished By | Date | Time |
|---|---|---|---|---|---|---|
| Emily Hess | 10/21/16 | 15:33 | Al SA | Al SA | 10/24/16 | 1310 |
| Company: MFA | | | Company: | Company: | | |

Unless Reclaimed, Samples Will Be Disposed of 60 Days After Receipt.
Samples held beyond 60 days subject to storage fee(s)

Received For Lab By: Nikki Bupper
Date: 10/24/16 Time: 1310

# ATTACHMENT C

## DATA VALIDATION MEMORANDUM

# DATA QUALITY ASSURANCE/QUALITY CONTROL REVIEW

PROJECT NO. 1114.01.02 | DECEMBER 12, 2016 | CITY OF WASHOUGAL

This report reviews the analytical results for groundwater samples collected by the Maul Foster & Alongi, Inc. (MFA) project team at the Schmid 32nd Street property on behalf of City of Washougal. The samples were collected on October 21, 2016.

Specialty Analytical, Inc. (SA) performed the analyses. SA report 1610241 was reviewed. The analyses performed and samples analyzed are listed below.

| Analysis | Reference |
|---|---|
| Diesel and Lube Oil | NWTPH-Dx |
| Diesel and Lube Oil with Silica Gel Cleanup | NWTPH-Dx/SIL |
| Arsenic, Total | USEPA SW6020A |

NWTPH = Northwest Total Petroleum Hydrocarbons.
USEPA = U.S. Environmental Protection Agency.

| Samples Analyzed |
|---|
| **Report 1610241** |
| MW07-102116 |
| MW05-102116 |
| MW06-102116 |
| MW03-102116 |
| MWDUP-102116 |
| MW04-102116 |

## DATA QUALIFICATIONS

Analytical results were evaluated according to applicable sections of USEPA procedures (USEPA, 2016a,b) and appropriate laboratory and method-specific guidelines (SA, 2015; USEPA, 1986).

Data validation procedures were modified, as appropriate, to accommodate quality-control requirements for methods not specifically addressed by the functional guidelines (i.e., NWTPH-Dx).

Historically, NWTPH-Dx results for sample location MW04 have been affected by diesel- and oil-range organics not identified as a specific hydrocarbon product and likely the result of biogenic interferences. Silica-gel cleanup procedures and reanalysis (NWTPH-Dx/SIL) were requested for the sample from this location (MW04-102116) to eliminate biogenic interferences. Both NWTPH-Dx/SIL and the original NWTPH-Dx results were reported by the laboratory; however, only the NWTPH-Dx/SIL results are reported in the analytical results table.

The data are considered acceptable for their intended use, with the appropriate data qualifiers assigned.

## HOLDING TIMES, PRESERVATION, AND SAMPLE STORAGE

### Holding Times

Extractions and analyses were performed within the recommended holding time criteria.

### Preservation and Sample Storage

The samples were preserved and stored appropriately.

## BLANKS

### Method Blanks

Laboratory method blank analyses were performed at the required frequencies. For purposes of data qualification, the method blanks were associated with all samples prepared in the analytical batch. Method blanks were non-detect for all analytes.

### Trip Blanks

Trip blanks were not required for this sampling event.

### Equipment Rinsate Blanks

Equipment rinsate blanks were not required for this sampling event, as all samples were collected using dedicated, single-use equipment.

## SURROGATE RECOVERY RESULTS

The samples were spiked with surrogate compounds to evaluate laboratory performance on individual samples.

All surrogate recoveries were within acceptance limits.

## MATRIX SPIKE/MATRIX SPIKE DUPLICATE RESULTS

Matrix spike/matrix spike duplicate (MS/MSD) results are used to evaluate laboratory precision and accuracy. All MS/MSD samples were extracted and analyzed at the required frequency. All recoveries were within acceptance limits for percent recovery and relative percent differences (RPDs).

## LABORATORY DUPLICATE RESULTS

Duplicate results are used to evaluate laboratory precision. All duplicate samples were extracted and analyzed at the required frequency. All RPDs were within acceptance limits.

## LABORATORY CONTROL SAMPLE/LABORATORY CONTROL SAMPLE DUPLICATE RESULTS

A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) is spiked with target analytes to provide information on laboratory precision and accuracy. The LCS/LCSD samples were extracted and analyzed at the required frequency. All LCS/LCSD recoveries were within acceptance limits for percent recovery.

## FIELD DUPLICATE RESULTS

Field duplicate samples measure both field and laboratory precision. One field duplicate was submitted for analysis (MW03-102116/MWDUP-102116). MFA uses acceptance criteria of 100 percent RPD for results that are less than five times the method reporting limit (MRL), or 50 percent RPD for results that are greater than five times the MRL. Non-detect data are not used in the evaluation of field duplicate results. All analytes were within the acceptance criteria.

## CONTINUING CALIBRATION VERIFICATION RESULTS

Continuing calibration verification (CCV) results are used to demonstrate instrument precision and accuracy through the end of the sample batch. All CCVs were within acceptance limits for percent recovery.

## REPORTING LIMITS

SA used routine reporting limits for non-detect results, except for samples requiring dilutions because of high analyte concentrations and/or matrix interferences.

## DATA PACKAGE

The data packages were reviewed for transcription errors, omissions, and anomalies.

Results from both NWTPH-Dx and NWTPH-Dx/SIL were reported for sample MW04-102116 because of interferences with the NWTPH-Dx method. No action was necessary.

No other issues were found.

# REFERENCES

SA. 2015. Quality assurance manual. Specialty Analytical, Inc., Clackamas, Oregon.

USEPA. 1986. Test methods for evaluating solid waste: physical/chemical methods. EPA-530/SW-846. Update V. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response. September (revision 1, July 2014).

USEPA. 2016a. USEPA contract laboratory program, national functional guidelines for inorganic Superfund methods data review. EPA 540-R-2016-001. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. August.

USEPA. 2016b. USEPA contract laboratory program, national functional guidelines for Superfund organic methods data review. EPA 540-R-2016-002. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology Innovation. August.