

Deception Creek Spill (OERS – 12-0678) Sampling Plan

Approved for use on: 3/21-ongoing
Date

By: [Signature] 3/21/12
Environmental Unit Leader

1.0. Introduction

Several different sampling efforts are now occurring in parallel, including daily surface water samples, soil samples in support of the excavation, groundwater samples, and domestic well water samples. The sampling effort is intended to identify extent and magnitude of contamination, and to help determine if public water supplies are affected. Product and source area soil samples have already been collected.

Six monitoring wells, including two source area monitoring wells, will be installed before the emergency response phase of the incident ends. As the emergency response phase of the incident ends, the monitoring phase will begin. The objective of the monitoring phase will be to determine the full nature and extent of the contamination, to determine if public water supplies have been impacted, and to provide information about the attenuation of the residual contamination in soil and groundwater. This information will allow a future determination to be made supporting that the cleanup is complete.

This Sampling and Analysis Plan (SAP) is divided into three sections. Section 1 is introductory, Section 2 details the sampling necessary during the emergency response phase, and Section 3 details the sampling necessary as the site transitions to the monitoring phase. Therefore, refer to Section 2 during the emergency response phase. Once the Unified Command has determined that the emergency response phase is complete, refer to Section 3 for the ongoing monitoring phase sampling.

1.1. Objective

This SAP will describe the overall sampling and analysis effort, and will guide the collection, handling, analysis, and QA/QC of samples collected during and after the incident response.

1.2. Media Affected

Soil, Surface Water, Groundwater, and Air. Air sampling is not addressed in this work plan as it is an occupational health issue.

1.3. Background

On 3/12/12 at approximately 0900, a Cascade Petroleum Tanker truck went off the west side of the eastbound lane of Hwy 58. The trailer lost 2500 gallons of diesel and 3100 gallons of gasoline to the roadside soil and adjacent wetland area. The wetland area is approximately ¼ mile in length and about

100 to 200 feet wide and is located along the west side of the Hwy road prism. The wetland is fed by a small creek located about 30 feet west of the main crash site, and by a small ponded area on the east side of the highway. Drainage from the wetland, including a ponded area, runs through a culvert under Hwy 58 towards the northeast. The culvert drains into a nameless creek which empties into the Middle Fork Willamette River about 300 feet downstream of the culvert.

An area of about 40 feet wide, ranging up to about 60 feet wide, by about 100 feet long, along the west side of the highway, has surface soil contamination to an unknown depth. Contamination likely migrated through the shallow soil and is pooled on top of the groundwater and is slowly migrating horizontally through at least part of the highway road prism and adjacent soils underlying the wetland area.

During initial response efforts in the vicinity of the crash site and downwind approximately 1/3rd of a mile, strong gasoline odors varied between heavy and light depending on wind conditions. In the immediate vicinity of the pooled product locations and the crash site itself, gasoline odors were very strong and remain elevated. The EPA START contractor collected time-weighted average air monitoring for total VOCs using a PID along with one-time benzene- specific analyses for the first two days of the response. Total VOCs results ranged from 10 to 50 ppm in open air.

2.0 Emergency Phase

2.1. Soil Sampling

Impacted soil will be excavated to the maximum extent possible. Limiting factors may be highway engineering issues, subsurface utilities, including numerous phone lines, encountering groundwater, protection of sensitive habitat or vegetation, and archaeological concerns.

The site geologist will be providing soil sampling assessment to guide the excavation. The site geologist will consider the various limiting factors and confer with the Environmental Unit, which will rely on the expertise of the ODOT engineer, landowner, or other personnel as needed, with the understanding that the primary objective of the response is to quickly excavate contaminated soil.

At the conclusion of the emergency phase, the Unified Command will use SCAT (Shoreline Cleanup Assessment Team) transect information and field evidence to determine locations for near surface (0" to 6" bgs) soil sampling in the wetlands and pond areas in order to determine the full nature and extent of any residual contamination.

2.1.A. Soil Sampling Safety

The site health and safety plan will be adhered to during surface water sampling activities. Sample collector will wear appropriate safety equipment at all times while collecting soil samples.

2.1.B. Soil Sample Screening and Clearance

The Environmental Unit will observe excavation activities and screen excavation soils with the purpose of determining when excavation activities in an area are complete. The soils will be screened using field indicators, including visual, olfactory, and sheen. Excavation soils will also be screened using a PID.

The Operations Unit will not place backfill until authorized to do so by an agency representative of the Environmental Unit.

The Environmental Unit will review field indicators and lab data and will make a determination on when to backfill the source area pit based on PID sampling results from the sampling grid detailed below. The Unified Command may decide to keep the pit open for aeration beyond the Emergency Phase in order to enhance source removal. The Unified Command will then give clearance to backfill the pit.

2.1.C. Soil Sample Locations and Analytes

Soil samples will be collected at a rate of about one sample for every 400 square feet of excavation, or on about a 20-foot grid as established by the Environmental Unit geologist. PID readings, along with olfactory and visual evidence will be used to locate preferred sampling locations. After an area has been excavated, the sampler will survey with a PID and flag those areas whose PID headspace readings exceed 50 ppm. PID headspace readings will be determined by placing soil samples in plastic bags for 10 minutes and then gently mixing the soil in the bag and obtaining a PID reading. Soil samples from clean areas will be collected as confirmation samples on the same 20 foot grid.

Samples will be collected from 0" to 6" in depth.

All samples representing soil left in place will be analyzed for TPH-G and TPH-D, RBDM VOCs (EPA 8260B), and PAHs (EPA 8270 (SIM))+(Tentatively Identified Compounds)TICs.

Samples will be packed in ice and shipped via lab courier to Nielsen Labs for 24 hour turnaround analysis, except that PAHs will be on a 10 to 14 day TAT. Turn around time will be revisited by the Environmental Unit as the spill cleanup progresses.

2.1.D. Soil Sample Names

Coordinates will be derived from the X, Y, Z coordinate system referenced from the origin point previously established near the wreck site on the center line of Hwy 58 adjacent to the subsurface utility marker approximately 20 feet west of the fog line. These coordinates will be used to cross reference the collected samples; samples will be named using consecutive numbers (i.e. 201, 202).

All sample depths will be referenced vertically to the road surface.

The X direction is to the west of the centerline, the Y direction is to the north of the origin, and the Z direction will be vertical below the highway surface. All sample names will be cross-referenced to the XYZ coordinates off the origin point, so that a sample collected 25 feet west of the highway center line, 30 feet north of the origin, and 5 feet below the surface of the road would be referenced as (25,30,5).

2.1.E. Soil Sampling Beneath Highway 58

119 X
99X
DX
50 X

The remaining soil with elevated concentrations under the highway, located at the 80N area, needs to be characterized. Six borings are anticipated to be advanced beneath Highway 58, in this area. Borings are expected to be advanced with a sonic rig. One boring will be located centrally in the east-bound travel lane, on the 90N grid line. A second boring will be located 20 feet north, on the 110N grid line. A third boring will be advanced 20 feet south of the first, on the 70N grid line. A fourth boring will be located 20 feet south of the 70N boring at the 50N location. Two more borings will be located immediately east of the contaminated soil in the west bound lane spaced 20 feet apart. If field evidence of contamination is found in any of the outlying borings, additional borings may be required, as determined by the Environmental Unit.

Two soil samples will be collected and may be analyzed from each boring, to be determined by the field geologist using visual, olfactory, and PID analysis, in order to determine the extent of impacted area. Soil samples will be initially analyzed for TPH-G and TPH-D. Selected samples will be further analyzed for RBDM VOCs and PAHs. Enough soil volume will be collected during sample collection to do additional constituent analysis if need be. Two groundwater samples may be collected for RBDM VOCs analysis from soil borings in the area of contamination based on visual and PID analysis of soil samples.

2.2. Surface Water Sampling

Surface water sampling will be performed in order to determine the nature and extent of contamination in the wetland/marsh area just downstream of the wreck site, in the pond below the wetland, the unnamed creek leading to the Middle Fork Willamette River, and in the Middle Fork Willamette River. Refer to the attached table for detail on analytes for each sampling point, sampling frequency, and analytical turnaround time required. Sampling points and/or analytes may be added or deleted by the Environmental Unit as the emergency phase progresses.

2.2.A. Surface Water Sampling Safety

Site health and safety plan will be adhered to during surface water sampling activities. Sample collector will wear a PFD at all times while collecting surface water samples along the Middle Fork Willamette River. Sampler will not conduct on or near-water work without a buddy. Shoreline sample locations have been selected that will allow the sampler to safely collect water samples. Use caution when filling VOAs since some of the sample vials contain a small amount of HCl as a preservative.

- Sample Volume – a minimum of two unpreserved ambers, two unpreserved VOAs, and a two HCl-preserved VOAs will be filled for each sample location.
- Duplicates – 10% of the total samples will be duplicate samples collected from either Creek 1, Creek 2, or Creek 3 as needed to average 10% duplicates for the group of sampling events.
- Trip Blanks - laboratory supplied trip blanks will accompany the samples at all times and on the return to the laboratory.

2.2.B. Surface Water Sample Collection Method

Fill the meniscus on the VOAs by filling with the caps. Avoid collecting samples from foamy areas as it causes problems with forming a good meniscus on VOAs. Be careful not to drop the caps in the water. If a sheen or product is present, fully submerge the VOA and then fill it and secure the cap under water. Sheen adhering to outside of bottle should be wiped off before placing in cooler for storage. Samples will be placed immediately on ice under chain of custody procedure.

2.2.C. Surface Water Sampling Frequency

Refer to attached table.

2.2.D. Surface Water Sample Analytes, Names and Locations

All samples will be analyzed for TPH-G, TPH-D, RBDM VOCs (EPA 8260B), and PAHs (EPA 8270 (SIM))+TICs. Samples will be packed in ice and shipped via lab courier to Nielsen Labs.

Sampling points and locations from the above table will be used in each sampling event, and the samples will be designated "Creek 1", "Creek 2", etc., as detailed on the above table. The collection date will be appended to each sample name (i.e. Creek-1/3/19). Locations on the sample sheet will be as described on the above table, and located using a hand-held GPS. If a point is added in between two established points, the new site will be identified with a fraction of a unit. For example if a sample site is added between CREEK-1 and CREEK-2, the new site will be identified as CREEK 1.5.

All samples referencing this datum will be corrected to the power pole datum when the site is surveyed.

2.3. Domestic Well/Water Supply Well Sampling

Domestic Wells to be Sampled:

②

①

⑦

④

③

| Address | Contact and Phone Number | Well Location |
|---|--|--|
| Sample at 46434 Hines Way Westridge Domestic Water District (77013 Westridge Avenue) | 541-782-1882 | Sample at 46434 Hines Way |
| 77102 Westridge Avenue | Phil Margvandt 541-335-1137 | Sample from Kitchen Sink |
| 46433 Hines Way | Dan and Emily Howard 541-912-6447 | Collected from spigot next to well house |
| Deception Creek Mobile Park | Ann Moritz 541-782-3555 | Collect Sample from Laundry Room in center of park |
| 46374-46374 Hwy 58 (maroon well house) | Tenant (Owner=Charles Walls) 541-782-5538 | Sample from spigot on outside of house |

| Address | Contact and Phone Number | Well Location |
|-------------------|---|---------------------------------------|
| ⑥ 46428 Hines Way | Wayln Davidson (Emily's cousin) 541-782-2296 cell: 541-912-0335 | Spigot on the well house |
| ⑤ 46426 Hines Way | Gary Harringer 541-782-5719 | Collected from a tap within the house |
| No Address | Kelly Taylor-Miner 541-782-1882 | No sample – well not in use |
| School | TBA | TBA |

2.3.B. Domestic Well/Water Supply Well Sample Collection Method

Fill the meniscus on the VOAs by filling with the caps. Avoid collecting samples from foamy areas as it causes problems with forming a good meniscus on VOAs. Samples will be placed immediately on ice under chain of custody procedure.

2.3.C. Domestic Well/Water Supply Well Sampling Frequency

Wells will be sampled once on a timely basis with 24 hour turnaround time on the first sampling event. Wells will be sampled again in approximately one week's time with a 5-day turnaround. If the analytical results indicate that there have been no impacts from the incident, then no further monitoring will be required unless sentry monitoring wells indicate migration of contaminants toward well/s.

2.3.D. Domestic Well/Water Supply Well Analytes, Names & Locations

All samples will be analyzed for TPH-G, TPH-D, RBDM VOCs (EPA 8260B), and PAHs (EPA 8270 (SIM))+TICs. Samples will be packed in ice and shipped via lab courier to Nielsen Labs. Samples will be identified by street address and resident name, e.g., 210 Lawrence Avenue, Arnold Schkinewamp.

2.4. Monitoring Well Sampling

Six monitoring wells will be installed as the emergency phase nears an end. Monitoring wells are expected to be located and screened as shown in the following table (see attached map for proposed locations).

*per Bryn
3/23/12
via phone
w/
T. Sprecher*

| MW Name | Approximate Location | Approximate Screened Depths | Purpose |
|---------|---|--|---|
| MW-1s | Release Location, Source Area, shallow screen | 5-15'; Shallow Aquifer <i>if 10' of silt, screen 5' of silt & 5' of fill above silt</i> | ID impact in shallow aquifer at source <i>(top of silt & above silt)</i> |
| MW-1d | Release Location, Source Area, SGA zone | Sand Pack to begin at 2 to 3 feet below top of gravel aquifer; 10 | ID impact in deeper aquifer at source <i>(Sand & gravel)</i> |

*drill MW-1d first at the release site,
then will know ~ silt thickness here*

| | | feet of screen to be set | |
|------|---|---|---|
| MW-2 | Stone Court near end of cul-de-sac | 5-15'; Shallow Aquifer | Establish groundwater gradient <i>in S&G aquifer</i> |
| MW-3 | South side of Westridge Road | 5-15'; Shallow Aquifer | ID potential impact in shallow <i>S&G</i> aquifer before it reaches residences |
| MW-4 | NE of release site, east of Pond area | 5-15'; Shallow Aquifer | ID potential impact between pond area and Willamette River <i>in S&G aquifer</i> |
| MW-5 | NNE of release site; between surface water sample locations Creek-2 and BG-Will | 5-15'; Shallow Aquifer <i>all in S&G same as MW-1d</i> | ID potential impact between unnamed creek and Willamette River <i>in S&G aquifer</i> |

The shallow screen should be set to straddle the anticipated seasonal high levels for groundwater. Monitoring wells will be constructed in accordance with Oregon Water Resource Department standards. Monitoring wells are anticipated to be drilled using a sonic drill rig.

Before the source area pit is backfilled, an access pad will be built from the highway to the source area with 3" jaw run to enable access to the source area for monitoring well installation and sampling.

Monitoring well locations will be surveyed and incorporated into the existing survey data. Monitoring well top of casings and staff gauges will be surveyed for elevation control to 0.01 vertical feet. If monitoring wells are installed before the emergency phase is complete, use the methodology detailed below for sampling.

2.4.B. Monitoring Well Sample Collection Method

Remove at least three well volumes of water from each monitoring well by bailing or with a peristaltic pump before sampling. Field parameters (temperature, pH, and conductivity) will be measured after each well volume is purged. Purging should continue until field parameters are stabilized within approximately 10 percent. With the bailer or peristaltic pump, fill the meniscus on the VOAs by filling with the caps. Samples will be placed immediately on ice under chain of custody procedure. LNAPL should be assessed in the source area well before purging begins. Monitoring well samples will use the monitoring well name, appended by the date sampled (i.e. MW-3/3/30/12).

2.4.C. Monitoring Well Sampling Frequency

Samples will be collected on a schedule to be determined by the Environmental Unit.

2.4.D. Monitoring Well Sample Analytes, Names, and Locations

All samples will be analyzed for **TPH-G, TPH-D, RBDM VOCs (EPA 8260B), and PAHs (EPA 8270 (SIM))+TICs**. Samples will be packed in ice and shipped via lab courier to Nielsen Labs.

3.0 Monitoring Phase Sampling

After the Unified Command has determined that the emergency phase of the incident response is complete, sampling operations will use the Section 3 of the SAP below for monitoring phase operations.

3.1. Domestic Well/Water Supply Well Sampling

3.1.A. Domestic Well/Water Supply Well Sampling

Please refer to the domestic well table, above.

3.1.B. Domestic Well/Water Supply Well Sample Collection Method

Fill the meniscus on the VOAs by filling with the caps. Avoid collecting samples from foamy areas as it causes problems with forming a good meniscus on VOAs. Samples will be placed immediately on ice under chain of custody procedure.

3.1.C. Domestic Well/Water Supply Well Sampling Frequency

Wells will be sampled on a schedule to be established by the Environmental Unit.

3.1.D. Domestic Well/Water Supply Well Analytes, Names & Locations

All samples will be analyzed for **TPH-G, TPH-D, RBDM VOCs (EPA 8260B)**. Samples will be packed in ice and shipped via lab courier to Nielsen Labs. Samples will be identified by street address and resident name, e.g., 210 Lawrence Avenue, Arnold Schkinewamp. Samples will have a five day analytical turnaround.

3.2. Monitoring Well Sampling

Six monitoring wells will be installed as the emergency phase nears an end. The locations of the monitoring wells will be determined by the Environmental Unit, but up to two of the wells will be located as near as possible to the original release center, one at shallow depth and one to sample the deeper groundwater. Before the source pit is backfilled, an access pad will be built from the highway to the source area with 3" jaw run to enable access to the source area monitoring well, and to allow monitoring well installation. Monitoring well locations will be surveyed in. If monitoring wells are installed before the emergency phase is complete, use the methodology detailed below for sampling.

3.2.A. Monitoring Well Sample Collection Method

Remove at least three well volumes of water from each monitoring well by bailing or with a peristaltic pump before sampling. Field parameters (temperature, pH, and conductivity) will be measured after each well volume is purged. Purging should continue until field parameters are stabilized within approximately 10 percent. With the bailer or peristaltic pump, fill the meniscus on the VOAs by filling with the caps. Samples will be placed immediately on ice under chain of custody procedure.

3.2.B. Monitoring Well Sampling Frequency

Samples will be collected every month.

3.2.C. Monitoring Well Sample Analytes, Names, and Locations

All samples will be analyzed for TPH-G, TPH-D, RBDM VOCs (EPA 8260B), and PAHs (EPA 8270 (SIM))+TICs. Samples will be packed in ice and shipped via lab courier to Nielsen Labs for a five day analytical turnaround.

Monitoring wells will be named during installation. Sample names will use the monitoring well name

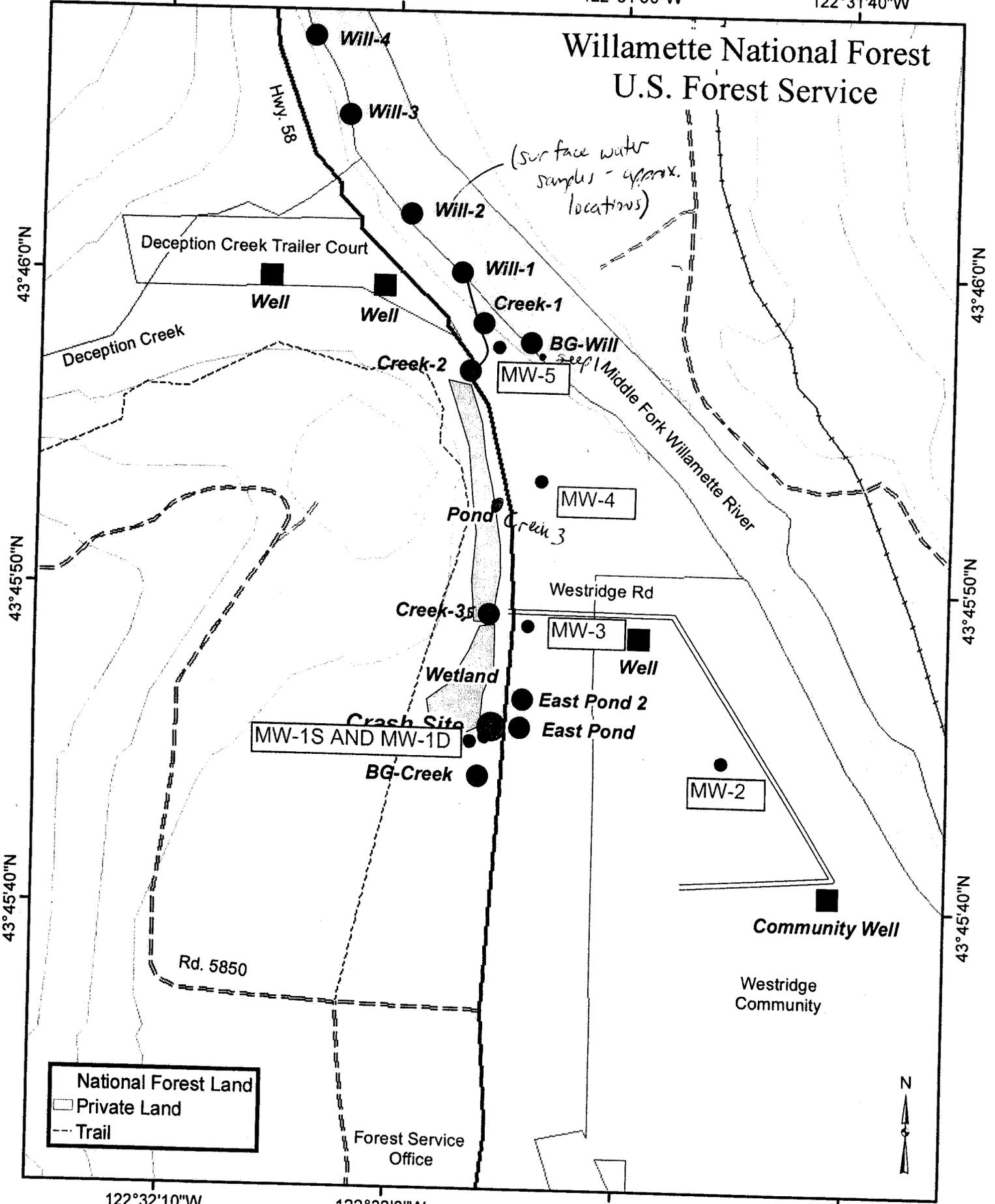
122°32'10"W

122°32'0"W

122°31'50"W

122°31'40"W

Willamette National Forest U.S. Forest Service



43°46'0"N

43°46'0"N

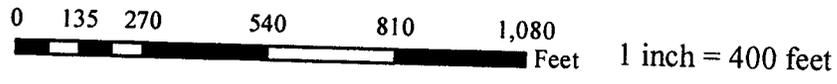
43°45'50"N

43°45'50"N

43°45'40"N

43°45'40"N

National Forest Land
 Private Land
 Trail



~ C. Ferland
March 2012

Sampling and Analytical Summary - Desolation Creek

| Media | Sample ID(s) | Analyte(s) | Sample Frequency | TAT | Notes |
|--------------------------|--------------------------|--------------------------|--|---------------------------------|---|
| Surface Water | Will -1 | RBDM VOC | Daily | 24 hr | daily through the 22nd, then discuss |
| | | TPH-Dx | Daily | 24 hr | |
| | | PAH | Daily | 14 day | |
| | | TPH-Gx | Daily | 24 hr | |
| Surface Water | Will-2 thru 4 | RBDM VOC | As Requested | | |
| Surface Water | CRK -2.5 / CRK-3 | RBDM VOC | Daily | 24-hour | daily through the 22nd, then discuss |
| | | PAH (DET) | Daily (DET) | 14 day (DET) 3/21/12 | |
| | | Dx | Daily | 24-hour | |
| | | Gx | Daily | 24-hour | |
| Surface Water | Crk-1 | RBDM VOC | Daily | 24-hour | daily through the 22nd, then discuss |
| Groundwater Supply | Marguardt | RBDM VOC | 3/20/2012 and 3/27/2012 | 5-day | |
| Groundwater Supply | All Other SGA wells | RBDM VOC | 3/27/2012 | 5-day | |
| Groundwater Supply | All Bedrock Wells | RBDM VOC | 3/27/2012 | 5-day | |
| Groundwater Monitoring | All six monitoring wells | RBDM VOC | Once @ Install and then monthly / total duration TBD | 5-day | Sampling frequency will be reduced to quarterly at some point |
| | | PAH | | | |
| | | TPH-Dx | | | |
| | | TPH-Gx | | | |
| Groundwater Monitoring | All six new wells | Water Level Measurements | Monthly | | |
| Surface Water Elevations | Staff Gauges | Water Level Measurements | Monthly | | |

Note: Additional surface water points have been sampled prior to March 21, 2012, but may be sampled moving forward.

SGA = sand and gravel aquifer

Note: this table was modified

on 3/22/12 in a discussion

between Bryan Thoms & Terry Sprecher

a typed version will be forwarded within a day or so

Effective Date 3/21/12

Sampling and Analytical Summary - Deception Creek

Updated 3/25/2012 by Terry A Sprecher, RG, to reflect a conversation between Bryn Thoms & Terry on March 23, 2012

Final Table as of 3/22/12:

| Media | Sample ID(s) | Analyte(s) | Sample Frequency | TAT | Notes |
|--------------------------|--------------------------|--------------------------|--|---------|---|
| Surface Water | Will -1 | RBDM VOC | Daily | 24 hr | daily through the 22nd, then discuss |
| | | TPH-Dx | Daily | 24 hr | |
| | | PAH | Daily | 14 day | |
| | | TPH-Gx | Daily | 24 hr | |
| Surface Water | Will-2 thru 4 | RBDM VOC | As Requested | | |
| Surface Water | CRK -2.5 / CRK-3 | RBDM VOC | Daily | 24-hour | daily through the 22nd, then discuss |
| | | Dx | Daily | 24-hour | |
| | | Gx | Daily | 24-hour | |
| Surface Water | CRK-1 | RBDM VOC | Daily | 24-hour | daily through the 22nd, then discuss |
| Groundwater Supply | Margardt | RBDM VOC | 3/20/2012 and 3/27/2012 | 5-day | |
| Groundwater Supply | All Other SGA wells | RBDM VOC | 3/27/2012 | 5-day | |
| Groundwater Supply | All Bedrock Wells | RBDM VOC | 3/27/2012 | 5-day | |
| Groundwater Monitoring | All six monitoring wells | RBDM VOC | Once @ Install and then monthly / total duration TBD | 5-day | Sampling frequency will be reduced to quarterly at some point |
| | | PAH | | | |
| | | TPH-Dx | | | |
| | | TPH-Gx | | | |
| Groundwater Monitoring | All six new wells | Water Level Measurements | Monthly | | |
| Surface Water Elevations | Staff Gauges | Water Level Measurements | Monthly | | |

Note: Additional surface water points have been sampled prior to March 21, 2012, but may be sampled moving forward.

SGA = sand and gravel aquifer

Surface Water Samples on Friday, March 23, 2012

| Media | Sample ID(s) | Analyte(s) | Sample Frequency | TAT | Notes |
|---------------|--------------------------------|------------|------------------|----------------------------|-------|
| Surface Water | Will -1 | RBDM VOC | 3/23/2012 | by 9 am on Monday, 3/26/12 | |
| | | TPH-Dx | 3/23/2012 | 5 day | |
| | | PAH | 3/23/2012 | 14 day | |
| | | TPH-Gx | 3/23/2012 | 5 day | |
| Surface Water | CRK-1, CRK -2.5, CRK-3, Seep-2 | RBDM VOC | 3/23/2012 | by 9 am on Monday, 3/26/12 | |

Surface Water Samples on Saturday March 24, 2012

| Media | Sample ID(s) | Analyte(s) | Sample Frequency | TAT | Notes |
|---------------|--------------------------------|------------|------------------|--------|--|
| Surface Water | Will -1 | RBDM VOC | 3/24/2012 | 5 day | |
| | | TPH-Dx | 3/24/2012 | 5 day | |
| | | PAH | 3/24/2012 | 14 day | |
| | | TPH-Gx | 3/24/2012 | 5 day | |
| Surface Water | CRK-1, CRK -2.5, CRK-3, Seep-2 | RBDM VOC | 3/24/2012 | 5 day | if Seep 2 is underwater, do not sample |

Surface Water Samples - Weekly Event beginning on Tuesday, March 27, 2012

| Media | Sample ID(s) | Analyte(s) | Sample Frequency | TAT | Notes |
|---------------|---------------------------|------------|------------------|--------|--|
| Surface Water | Will -1 | RBDM VOC | weekly | 14 day | |
| | | TPH-Dx | weekly | 14 day | |
| | | PAH | weekly | 14 day | |
| | | TPH-Gx | weekly | 14 day | |
| Surface Water | CRK -2.5, CRK-3.5, Seep-2 | RBDM VOC | weekly | 14 day | if Seep-2 is underwater, do not sample |

Note: Sampling frequency will be reduced to quarterly at some point

Note: Duplicate samples will be collected and analyzed on approximately 10% of the samples