

3M Company St. Paul, Minnesota

Remedial Investigation Report

[Soil Supplemental Fluorochemical Data Assessment – Addendum 1]

Oakdale Site Oakdale, Minnesota

June 2007



07P-0710-3

Exhibit 2163 State of Minnesota v. 3M Co., Court File No. 27-CV-10-28862

3M_MN04969186

REMEDIAL INVESTIGATION REPORT

[SOIL SUPPLEMENTAL FLUOROCHEMICAL DATA ASSESSMENT – ADDENDUM 1]

OAKDALE SITE

JUNE 2007

Prepared for

3M Company

Prepared by

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W.O. No. 02181.202.005

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EXECUTIVE SUMMARY

Since 1980, the 3M Company (3M) has worked with the Minnesota Pollution Control Agency (MPCA) in the investigation and remediation of the former Oakdale disposal site in Oakdale, Minnesota (Site). The Site consists of three former waste disposal areas, identified as the Abresch, Brockman, and Eberle areas, that had received wastes from the 3M St. Paul area sites, the 3M Cottage Grove, Minnesota facility, and other companies/entities from the 1940s to 1960. Investigations and follow-up actions have been previously completed for the Brockman and Eberle areas. The subject of this report is the Abresch area which will be referred to as the Site.

In the early 1980s, 3M conducted an investigation to characterize the presence of volatile organic compounds (VOCs) in various environmental media and to develop an understanding of Site hydrogeology. In July 1983, 3M entered into a Consent Order with the MPCA and the United States Environmental Protection Agency (USEPA) to perform remedial actions at the site. Subsequently, 3M removed waste materials and impacted soils from the Site and, in 1985, installed a groundwater recovery system to remove shallow groundwater impacted by VOCs and other constituents at, and adjacent to, suspected source areas. 3M has operated the groundwater recovery system continuously since 1985 to contain the shallow groundwater impacted by the VOCs. 3M conducts routine groundwater monitoring to track remediation progress. There are currently seven pumping wells and a monitoring well network. Since the start of the remediation program at the Site, several 5-year reviews have been conducted with the MPCA and USEPA. The groundwater recovery system is effectively capturing shallow groundwater to the south of Highway 5.

More recently, 3M has been working with the MPCA to examine the presence and extent of fluorochemicals (FCs) at the Site. 3M conducted an initial screening level sampling of the Site in 2004 and FCs were detected in the discharge from the groundwater recovery system. Subsequently, 3M directed WESTON to conduct the enhanced sampling activities at the Site. The results of the assessment were presented in the *Groundwater Data Assessment Report Fluorochemical Investigation* (Groundwater Data Assessment

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Report), which was submitted to the MPCA in July 2005. MPCA approved the Groundwater Data Assessment Report and had additional requests for investigative work. In October 2005, WESTON prepared the *Supplemental Fluorochemical (FC) Investigation Work Plan for the Oakdale Site* (Supplemental FC Work Plan), which incorporated the recommendations presented in the Groundwater Data Assessment Report and those requested by MPCA. From November 2005 through March 2006, 3M implemented the supplemental FC assessment program at the Site in accordance with the MPCA-approved Supplemental FC Work Plan and further MPCA requests. The results of the program were presented in the *Supplemental Fluorochemical (FC) Data Assessment Report*, which was submitted to the MPCA in September 2006.

The plan for further Site characterization was presented in *Addendum 1 to the Supplemental Fluorochemical (FC) Investigation Work Plan*, which was submitted to MPCA in November 2006. The purpose of this further site characterization was to refine the understanding of site hydrogeology and the groundwater recovery system on the site-wide shallow groundwater and surface water and to collect additional soil data in the Abresch area north of Minnesota State Highway 5 (Highway 5) to evaluate potential interim remedial measures (IRMs) for this area.

The Assessment of the Effectiveness of the Existing Groundwater Recovery System report was submitted to the MPCA in April 2007. This Remedial Investigation Report [Soil Supplemental Data Assessment – Addendum 1] provides a description of the additional soil characterization activities and a summary of analytical results for the area north of Highway 5. Soil boring sampling locations are shown in Figure ES.

3M has entered into a Settlement Agreement and Consent Order (Consent Order) for the purpose of providing remedial investigations and response actions to address FCs at the Site. The Consent Order became effective on May 22, 2007. It requires that 3M conduct a Remedial Investigation/Feasibility Study (RI/FS) with respect to release or threatened release of FCs at and from the Site. In the Consent Order, MPCA acknowledges that 3M has already completed a significant amount of work at the Site and that the following documents are in partial satisfaction of the RI/FS requirements:



- *Groundwater Data Assessment Report Fluorochemical Investigation* (July 2005)
- Supplemental Fluorochemical Data Assessment Report (September 2006)
- Assessment of the Effectiveness of the Existing Groundwater Recovery System (April 2007)

It is further stated in the Consent Order that by June 15, 2007, 3M shall submit a RI report which summarizes the above MPCA-approved investigations, and shall include an FS workplan to address possible response actions. Accordingly, pending MPCA approval, this document is the Remedial Investigation Report, and together with the three documents listed above, constitutes the RI program for the Site. The FS Work Plan will is being submitted concurrently with the RI Report as a separate document.

The following is a summary of key observations from the remedial investigation activities conducted in accordance with *Addendum 1 to the Supplemental Fluorochemical Investigation (FC) Work Plan*:

- FCs levels in soil samples from borings ASB31 through ASB43 confirmed concentrations that were consistent with the 2005 FC data from soil borings GP01 through GP08 (see Figure ES for locations).
- Generally lower FC concentrations were observed for surface soil samples collected. These results are expected since clean fill was brought in and graded during the 1983-1984 remediation at the Site. The range of FC concentrations for five key compounds detected in surface soils north of Highway 5 are as follows: perfluorooctane sulfonate (PFOS) 24.6 to 1,460 ppb, perfluorooctanoic acid (PFOA) 0.8 to19.0 ppb, perfluorohexane sulfonate (PFHS) ND (not detected) to 9.4 ppb, perfluorobutanoic acid (PFBA) ND to 12.5 ppb, and perfluorobutane sulfonate (PFBS) ND to 2.8 ppb. No surface samples for VOCs were collected based on the low OVM readings taken at the Site.
- The range of FC concentrations for the December 2006 sampling, for all soil depths, are as follows: PFOS 20.6 to 108,000 ppb, PFOA 0.8 to 18,500 ppb, PFHS ND to 5,585 ppb, PFBA ND to 1,600 ppb, and PFBS ND to 224 ppb.
- The FCs with the greatest levels detected were PFOS and PFOA. Concentrations of these two compounds ranged from 0.8 to 108,000 ppb. PFBA, PFBS and PFHS were detected at concentrations ranging from ND to 5,585 ppb. The remaining seven compounds ranged from ND to 1,230 ppb.

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- The data generated from samples collected in December 2006 is consistent with that from samples collected in November/December 2005. Taken in combination, this data provides good delineation of FC concentrations in the study area, i.e., the area where soil borings were installed.
- The combined 2005 and 2006 soil data indicates significantly lower concentrations at all depths for samples collected on the western, northern and eastern edges of the study area.
- The highest concentrations for PFOS, PFOA and PFBA were observed in the 3.5 to 9 feet below ground surface (ft bgs) depth range within the study area.
- Soil samples collected from borings ASB31, ASB32, and ASB40 for VOC analysis indicate the presence of VOCs, such as benzene, toluene, ethylbenzene, and xylenes (BTEX), 1,2,4-trimethylbenzene (1,2,4-TMB), 1,3,5-TMB, isopropylbenzene, n-propylbenzene, and p-isopropyltoluene and other VOCs such as 1,1,2-trichloroethane (1,1,2-TCA), 1,2-dichloroethane (1,2-DCA), methyl acetone, isobutyl ketone (MIBK), methyl ethyl ketone (MEK), tetrachloroethylene (PCE), and trichloroethylene (TCE). The VOC compounds observed are consistent with those detected in routine monitoring of the groundwater recovery system that has been in continuous operation at the Site since 1985 to contain and remove such compounds. The groundwater pumped from this system is discharged to the Metropolitan Council of Environmental Services (MCES) sanitary sewer system for treatment.
- According to the Washington County topographic survey, the bottom elevation of the ditches along the north side of Highway 5 is between 1002 and 1004 feet AMSL. Hydrographs for wells W22 and W26 depicting groundwater elevations from 1985 to 2006, indicate that the highest groundwater elevations are lower than the bottom elevation of the ditches. These findings indicate that groundwater from the site is not entering the ditches along the north side of Highway 5.

In accordance with the requirements of the Consent Order Section VI and Exhibit C, Section III.E.3, the development and screening of response action alternatives for the Site soil and groundwater will be based on the List of Possible Technology Types, as endorsed by the MPCA Commissioner in his approval of the RI Report and FS Work Plan, and any other technology types identified by 3M or the MPCA Commissioner prior to the approval of the RI Report.

Possible general response actions have been identified for the Site based on the information and data provided in the RI. In accordance with MPCA and EPA guidance on conducting feasibility studies, the general response actions, response technology type,

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and associated process options have been subjected to an initial screening process on the basis of technical implementability. The general response action/technology types and process options that have been retained as the List of Possible Technology Types are as follows:

LIST OF POSSIBLE TECHNOLOGY TYPES

<u>Soil</u>

- Removal Excavation
- Treatment Thermal – Incineration
- Disposal Landfill
 - New landfill
 - Existing landfill
- Containment Cap
 - Soil/clay cap
 - Engineered multilayer cap
- Institutional and Site Controls Access restrictions
 - Deed restrictions
 - Fencing
- No action

Groundwater

- Collection Groundwater recovery/Subsurface drain
 - Recovery wells
 - Interceptor trench
- Treatment Physical
 - Activated carbon
 - Ion exchange resin
 - Reverse osmosis
 - Air stripping
- Discharge Off-site
 - Off-site POTW
- Containment Cap/Vertical barriers
 - Soil/clay cap
 - Engineered multilayer cap
 - Slurry wall
 - Sheet piling

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- Treatment Off-site - Off-site POTW
- Institutional and Site Controls
 - Deed restrictions
 - Fencing
 - Alternate water supply
 - Monitoring
- No action

Upon approval of the RI Report and FS Work Plan by MPCA, these technology types and associated process options will be assembled into response action alternatives for screening and further evaluation. The FS Work Plan, which provides a description of the response alternative development, screening, and evaluation process, is being submitted concurrently with this RI Report.

1. INTRODUCTION

1.1 BACKGROUND AND SITE ASSESSMENT HISTORY

Since 1980, the 3M Company (3M) has worked with the Minnesota Pollution Control Agency (MPCA) in the investigation and remediation of the former Oakdale disposal site in Oakdale, Minnesota (Site). The Site consists of three former waste disposal areas, identified as the Abresch, Brockman, and Eberle areas, that had received wastes from the 3M St. Paul area sites, the 3M Cottage Grove, Minnesota facility, and other companies/entities from the 1940s to 1960. Investigations and follow-up actions have been previously completed for the Brockman and Eberle areas. The subject of this report is the Abresch area which will be referred to as the Site.

In the early 1980s, 3M conducted an investigation to characterize the presence of volatile organic compounds (VOCs) in various environmental media and to develop an understanding of Site hydrogeology. In July 1983, 3M entered into a Consent Order with the MPCA and the United States Environmental Protection Agency (USEPA) to perform remedial actions at the Site. Subsequently, 3M removed waste materials and impacted soils from the Site and, in 1985, installed a groundwater recovery system to remove shallow groundwater impacted by VOCs and other constituents at, and adjacent to, suspected source areas. 3M has operated the groundwater recovery system continuously since 1985 to contain the shallow groundwater impacted by the VOCs. 3M conducts routine groundwater monitoring to track remediation progress. There are currently seven pumping wells and a monitoring well network. Since the start of the remediation program at the Site, several 5-year reviews have been conducted with the MPCA and USEPA. The groundwater recovery system is effectively capturing shallow groundwater to the south of Highway 5.

More recently, 3M has been working with the MPCA to assess the presence and extent of fluorochemicals (FCs) at the Site. 3M conducted an initial screening level sampling of the Site in 2004 and FCs were detected in the discharge from the groundwater recovery system. Subsequently, the MPCA requested that 3M prepare an enhanced sampling plan

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to further assess occurrence of FCs in the Site groundwater. 3M submitted an enhanced sampling plan, prepared by Weston Solutions, Inc. (WESTON_(b)) in February 2005. In March 2005, after receiving MPCA approval, 3M began implementing the enhanced sampling activities at the Site.

The results of the assessment were presented in the *Groundwater Data Assessment Report Fluorochemical Investigation* (Groundwater Data Assessment Report) (WESTON, July 2005), which was submitted to the MPCA in July 2005. Based upon the findings presented in the report, 3M recommended that additional assessment activities be conducted at the site. In a letter to 3M dated 7 September 2005, the MPCA approved the Groundwater Data Assessment Report and had additional requests for assessment work. Accordingly, WESTON prepared the *Supplemental Fluorochemical (FC) Investigation Work Plan for the Oakdale Site* (Supplemental FC Work Plan) (WESTON, October 2005), which incorporated the recommendations presented in the Groundwater Data Assessment Report and those requested by MPCA in the 7 September 2005 correspondence to 3M. The Supplemental FC Work Plan was submitted to the MPCA on 7 October 2005 and approved by the MPCA on 31 October 2005 with requests for additional assessment activities.

From November 2005 through March 2006, 3M implemented the supplemental FC assessment program at the Site in accordance with the MPCA-approved Supplemental FC Work Plan and the subsequent request for additional activities by the MPCA. The results of the program were summarized in the *Supplemental Fluorochemical (FC) Data Assessment Report* (WESTON, September 2006), which was submitted to the MPCA in September 2006.

Addendum 1 to the Supplemental Fluorochemical (FC) Investigation Work Plan (WESTON, November 2006) was submitted to the MPCA in November 2006 and subsequently approved by the MPCA. Under Addendum 1, additional field work was performed by WESTON at the Site in December 2006. The objectives of the additional field work were to:

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- Refine the understanding of the site hydrogeology and evaluate the effectiveness of the existing groundwater extraction wells, and
- Collect additional soil samples from the area north of Highway 5 for FC analysis and evaluate possible response actions for this area.

In discussions with the MPCA, it was agreed that two reports would be prepared. The first report would address the effectiveness of the groundwater recovery system. Accordingly, the *Assessment of the Effectiveness of the Existing Groundwater Recovery System* report was submitted to the MPCA on 9 April 2007 (WESTON, April 2007). The second report would present the findings of the remaining Addendum 1 assessment activities along with possible response actions for the Site. Accordingly, this Remedial Investigation Report [*Soil Supplemental FC Data Assessment – Addendum 1*] constitutes the second submittal, which has been prepared to address the remainder of the Addendum 1 assessment activities.

3M has entered into a Settlement Agreement and Consent Order (Consent Order) for the purpose of providing remedial investigations and response actions to address FCs at the Site. The Consent Order became effective on May 22, 2007. It requires that 3M conduct a Remedial Investigation/Feasibility Study (RI/FS) with respect to release or threatened release of FCs at and from the Site. In the Consent Order, MPCA acknowledges that 3M has already completed a significant amount of work at the Site and that the following documents are in partial satisfaction of the RI/FS requirements:

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It is further stated in the Consent Order that by June 15, 2007, 3M shall submit a RI report which summarizes the above MPCA approved investigations, and shall include a FS workplan to address possible response actions. Accordingly, pending MPCA approval, this document is the Remedial Investigation Report, and together with the three

documents listed above, constitutes the entire RI program for the Site. The FS Work Plan is being submitted concurrently with the RI report as a separate document.

1.2 **REPORT ORGANIZATION**

This Remedial Investigation Report is organized into the following sections:

- Section 1 Introduction. This section contains the Site background and assessment history.
- Section 2 Site Setting. This section contains a description of the Site location and geology.
- Section 3 Summary of Field Activities. This section contains a description of the soil sampling activities that were conducted in the area north of Highway 5 in December 2006 and the well abandonment activities on the adjacent Menards retail property.
- Section 4 Results of the Assessment. This section contains an explanation of the data reduction process, a summary of the soil sampling analytical results from the December 2006 soil sampling event, and a discussion of the topography of the area north of Highway 5 with respect to historic groundwater elevation data from monitoring wells W22 and W26.
- Section 5 Summary of Observations. Section 5 contains a summary of key observations from the RI activities conducted in accordance with *Addendum 1 to the Supplemental Fluorochemical (FC) Investigation Work Plan.*
- Section 6 Development and Screening of Response Action Alternatives. This section contains a summary of the initial technology evaluation that was performed to prepare the List of Possible Technology Types to address FCs in soil and groundwater at the Site. It also contains an abbreviated discussion on the FS Work Plan (submitted concurrently with this report), which provides a detailed explanation of the FS process that will be followed so that a response action alternative or alternatives can be selected and implemented at the site.

Tables and figures are provided at the end of the report for ease of review.

2. SITE SETTING

2.1 SITE LOCATION AND DESCRIPTION

The focus of this report is the area north of Minnesota State Highway 5 (Highway 5) at the Abresch area, which is shown in Figure 1. The Abresch area is approximately 55 acres and most of it is owned by 3M. The Thomas Griffith landscaping business is located on the southeast corner of the area, and Highway 5 and associated right-of-way passes through the northern part of the area. The Site is currently undeveloped and generally inaccessible due to wetlands and low-lying drainage areas along with fencing that restricts access to portions of the site property. As shown in Figure 1, the site straddles Highway 5. It is bounded to the north by upper 35th Street; to the east by Hadley Avenue and commercial businesses; to the south by a railroad right-of-way; and to the west by Granada Avenue and commercial property.

The ground surface elevation north of Highway 5 is elevated relative to the neighboring properties. Two small ponds are present in northeast and northwest corners of the property, and a small drainage ditch is present that originates at the pond in the northwest corner of the site, and extends in a southerly direction under Highway 5. This drainage ditch was dry in December 2006 and was observed to contain flowing water during wet seasons and/or following storm events.

2.2 SITE GEOLOGY

Geologic data collected during previous site investigations (Barr, 1982, 1984) indicate that the Site is immediately underlain by a complex system of unconsolidated sediments. An upper (shallow) alluvium composed predominantly of silty sand with interbeds of sandy clay till is encountered in the shallow subsurface, and a lower alluvium composed of clean sand to silty sand. The upper and lower alluvium (basal) sands are separated across most of the Site by a prominent till bed approximately 20 feet in thickness. Borings constructed in the western part of the site indicate a gap in the till allowing contact between the upper and lower sand sequences. The estimated lateral extent of this

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gap in the till is reflected by hatch marks shown in Figure 2. The alluvium and glacial till sequences are approximately 65 to 90 feet thick at the Site. Figure 3 presents a north-south cross section through the Site, and the cross section orientation is shown in Figure 2.

The Site is located over the eastern portion of the Twin City Basin, and as a result, the underlying sedimentary bedrock formations dip, generally, to the west. The uppermost subcropping bedrock unit in the vicinity of the Site is the Decorah Shale, which is described as a greenish-gray or olive-gray, fissile, fossiliferous shale. This unit is discontinuous beneath the Site and is no more than 6 to 8 feet thick. Soil boring logs indicate that the Decorah Shale does not extend under the southern half of the area (Figure 2).

The unit underlying the Decorah Shale is the Platteville Limestone. This unit is described as a medium- to very fine-grained dolomite or dolomitic limestone and is approximately 20 to 35 thick in the area of the Site. The Platteville likely subcrops in areas where the Decorah shale is believed to be absent. The Platteville is characterized by fractures and solution channels.

The Platteville Limestone is underlain by the Glenwood Shale, which is described as a green-gray or olive gray, fissile, fossiliferous shale containing scattered limestone beds. The Glenwood acts as a confining unit in the area restricting the vertical movement of groundwater from the Platteville Limestone to the underlying bedrock aquifers. It has a sharp non-erosional contact with the overlying Platteville Limestone, while its lower boundary grades into the underlying St. Peter Sandstone. The reported thickness of the Glenwood Shale is 3 to 6 feet in the area of the Site.

Underlying the Glenwood Shale is the St. Peter Sandstone. This unit is described a light yellow or white, well-sorted, quartzose sandstone. It is an aquifer of importance in the Twin Cities area and is intercepted by industrial, commercial and residential wells in the Twin Cities area. The St. Peter Sandstone is estimated to be between 150 and 165 feet thick in the vicinity of the Site.

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The Prairie du Chien Group underlies the St. Peter Sandstone and is predominantly comprised of fine-to medium-grained dolomite and sandy dolomite with some interbedded quartzose sandstone. The Group is 125 to 135 feet thick in the vicinity of the Site. Groundwater flow in the Prairie du Chien Group is controlled by fractures, joints, and solution channels.

The Prairie du Chien Group is underlain by the Jordan Sandstone, which is described as a coarse- to medium-grained quartzose sandstone. Since no aquitard separates the Prairie du Chien and the Jordan sandstone, they are often considered to be one hydrologic unit, although the rate of groundwater movement through the two units can be significantly different. Together, the two units form the primary bedrock aquifer in the Twin Cities area and are used as the source of water by most of the suburban communities that rely on groundwater. Most new municipal and industrial wells constructed for potable water supply purposes are required to be cased through the Praire du Chien Group. The Jordan Sandstone is approximately 80 to 85 thick in the vicinity of the Site.

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3. SUMMARY OF FIELD ACTIVITIES

3.1 SOIL SAMPLING

Soil sampling activities were conducted in accordance with the Supplemental FC Work Plan and Addendum 1. Field procedures were consistent with MPCA site characterization and sampling guidance and standard operating procedures (SOPs) previously established under the FC assessment program.

On 4 December and 5 December 2006, WESTON constructed thirteen soil borings at the Site north of Highway 5 using Geoprobe_® drilling technology. The soil boring locations for this sampling event (ASB31 to ASB43) and the previous soil sampling event (GP01 to GP08), which was performed in November and December 2005, are presented in Figure 4.

At each boring location, soil samples were collected continuously to a depth of 15 feet below ground surface (ft bgs) for descriptive logging and to vertically evaluate soil conditions. The soil was described by an experienced geologist noting color, texture, moisture content, and any staining, debris, or odors. Aliquots of soil were also screened for total organic vapors using an organic vapor meter (OVM). OVM readings were recorded onto the boring logs. A copy of the boring logs is provided in Appendix A.

Soil samples also were collected for laboratory analyses. In accordance with the Work Plan and Addendum 1, discrete soil samples were collected from the borings at the 0 - 0.5, 1.5 - 2.0, 3.5 - 4, and 5.5 - 6 ft bgs depth intervals. Since a shallow discrete sample from 0-0.5 ft bgs had been collected from previous borings GP04, GP05, and GP08, a sample was not collected from this interval at borings ASB39, ASB41, and ASB43, which were constructed at or near the same locations as GP04, GP05 and GP08, respectively. An additional discrete soil sample was collected from each boring within the 5 - 10 ft bgs interval. The depth selected for this sample was based on OVM measurements and visual soil observations at each location.

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The soil samples were submitted to Exygen Research Laboratory of State College, Pennsylvania for FC analysis. Twelve FC parameters were analyzed under Good Laboratory Practices (GLP) Protocol P0002561 that has been established for analyses of all the samples collected as part of the FC assessment programs being conducted at 3M's Minnesota sites. WESTON collected additional samples as part of the investigation quality assurance and quality control (QA/QC) program. These included duplicate samples, equipment rinsate blanks, and trip blanks. A summary of the collected soil and QA/QC samples is presented in Table 1.

Three soil samples also were collected for VOC analysis. The samples were collected at separate boring locations based on significant OVM screening data for the site. The borings selected for VOC sampling included ASB31 (7-8 ft bgs), ASB32 (5-6 ft bgs), and ASB40 (8-9 ft bgs). The samples were submitted to Severn Trent Laboratories (STL) of University Park, Illinois for VOC analysis.

3.2 WELL ABANDONMENT

Three nested wells (RW39, RW40, and PL43) were constructed in the southeastern corner of the Menards retail property for the 2006 assessment activities. Menards has constructed a new store facility on the property and requested that the wells be abandoned and removed upon completion of sampling. The wells have been sampled twice for FCs and the analytical results are summarized in Table 2. As indicated in the table, the FCs were not detected or detected at low concentrations (e.g., the maximum detected FC concentration was 0.0511 ppb PFBS).

In accordance with the MPCA-approved Addendum 1 to the Supplemental Fluorochemical (FC) Investigation Work Plan and with the State of Minnesota Water Well Code, wells RW39, RW40, and PL43 were abandoned on December 13, 2006 by American Engineering Testing, Inc., a Minnesota-licensed driller. A copy of the well sealing records is provided in Appendix B.

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4. RESULTS OF THE ASSESSMENT

4.1 SUMMARY OF THE ANALYTICAL DATA REDUCTION PROCESS

Analytical data for FCs have been reported in Interim Reports from Exygen Research Laboratory. In instances where quality control (QC) data on spike or surrogate spike recoveries associated with a sample were outside an assessed accuracy of \pm 30%, QC data were reviewed and the accuracy assessed on a sample by sample basis. For data outside an assessed accuracy of \pm 60%, or where the endogenous concentrations of the analyte in a medium were over three times greater than the highest spike concentration, the data are not reported (NR) because they do not meet data quality objectives. Other data reported with non-numerical values include results that are assigned ND (not detected) because the analyte was not detected at, or above, the Limit of Quantitation (LOQ).

In addition to each primary sample analysis, a duplicate sample analysis was performed. Re-extraction and reanalysis were performed to provide quantitative results or confirm initial analytical results of selected samples. The primary and duplicate results were reduced to a single value in order to simplify reporting. The data reduction process consisted of calculating the average concentration (arithmetic mean) for sets comprised of numeric values. In instances with mixed numeric values and non-numeric values (ND), the numeric values were carried through to represent the media concentrations. It should be noted that this data reduction convention is conservative and may result in overestimation of actual concentrations.

4.2 SOIL SAMPLING ANALYTICAL RESULTS

The FC and VOC analytical results for the soil samples collected north of Highway 5 in December 2006 are summarized in Tables 3 and 4, respectively. Table 5 presents a summary of the OVM readings recorded in the field. A copy of the soil analytical data packages is provided in Appendix C. It should be noted per the agreement with the MPCA, that the FC analytical data packages in Appendix C have been provided without

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their appendices due to their large size and to facilitate paper reduction. The data packages including appendices are on file with WESTON and can be provided upon request.

To facilitate a comparison of the data and to be consistent with data presentation in the 2006 Supplemental Data Assessment Report, the FC analytical summarized in Table 3 includes: perfluorobutane sulfonate (PFBS), perfluorohexane sulfonate (PFHS), perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Since perfluorobutanoic acid (PFBA) is a recent compound of interest, it also is included. A complete data summary table including all 12 FC compounds is provided in Appendix B.

Generally lower concentrations are observed for surface soil samples (0 - 0.5 ft bgs) collected. These results are expected since clean fill was brought in and graded during the 1983-1984 remediation at the Site. The range of FC concentrations for five key compounds detected in surface soils north of Highway 5 are as follows: PFOS - 24.6 to 1,460 ppb, PFOA- 0.8 to19.0 ppb, PFHS - ND (not detected) to 9.4 ppb, PFBA - ND to 12.5 ppb, and PFBS - ND to 2.8 ppb. No surface samples for VOCs were collected based on the low OVM readings taken at the Site and summarized in Table 5.

The range of FC concentrations for the December 2006 sampling, for all soil depths, are as follows: PFOS - 20.6 to 108,000 ppb, PFOA - 0.8 to 18,500 ppb, PFHS - ND to 5,585 ppb, PFBA - ND to 1,600 ppb, and PFBS - ND to 224 ppb.

The FCs with the greatest levels detected in soils were PFOS and PFOA. Concentrations of these two compounds ranged from 0.8 to 108,000 ppb. PFBA, PFBS, and PFHS were detected at concentrations ranging from ND to 5,585 ppb. The remaining seven compounds ranged from ND to 1,230 ppb.

To be consistent with data presentation in the 2006 Supplemental Data Assessment Report, Figure 5 depicts the PFOA and PFOS soil concentrations. Since PFBA is a recent compound of interest, it is also included.

As shown in Table 4, several VOCs were detected in the soil samples. The primary VOCs detected were: benzene, toluene, ethylbenzene, and xylenes (BTEXs), as well as,

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1,2,4-trimethylbenzene (TMB), 1,3,5-TMB, isopropylbenzene, n-propylbenzene and pisopropyltoluene. Other VOCs detected in the soil samples include: 1,1,2tricholoroethane (TCA), 1,2-dichloroethane (DCA), 4-methyl-2-pentanone (MIBK), acetone, methyl ethyl ketone (MEK), tetrachoroethene (PCE), and trichloroethene (TCE). The VOC compounds observed are consistent with those detected in routine monitoring of the groundwater recovery system that has been in continuous operation at the Site since 1985 to contain and remove such compounds. The groundwater pumped from this system is discharged to the Metropolitan Council of Environmental Services (MCES) sanitary sewer system for treatment.

4.3 TOPOGRAPHIC SURVEY MAP

Topographic survey data for the study area was obtained from the Washington County Survey and Land Management Division. The topography was available at 2 ft contour intervals to aid in establishing ground surface elevations north and south of State Highway 5, and for various surface water and drainage features in the study area. These include the drainage ditches along State Highway 5 and surface elevations for other ditches and wetlands in the area. The topographic survey map, as well as the site monitor and groundwater recovery well network, is shown in Figure 6. An enlarged topographic survey map of the area north of Highway 5 is shown in Figure 7.

A comparison was made between the elevation of drainage ditches along the north side of Highway 5 and historical groundwater elevations observed in monitor wells north of Highway 5 to assess whether groundwater could be discharging to these ditches. As shown in the topographic contours in Figure 7, the lowest elevation of the drainage ditches on the north side of Highway 5 is between 1002 and 1004 feet above mean sea level (ft AMSL). This drainage ditch is between monitor well W26 and Highway 5. A hydrograph depicting historical groundwater elevation data from 1985 through to 2006 for monitor wells W22 and W26 is presented in Figure 8. As shown in Figure 8, the groundwater elevation data for monitor wells W22 and W26 are lower than the estimated elevation of the lowest lying on-site drainage ditch to the north of Highway 5. The actual groundwater elevation beneath the drainage ditch would be lower than the elevation for

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monitor well W26 since groundwater elevations decline to the south. To further illustrate this point, cross section A-A' in Figure 9 shows with respect to the ditch, the highest, lowest and average water level elevations recorded at groundwater monitoring well W26 during the period extending from 1985 to 2006. The location of cross section A-A' is shown in Figure 7. As shown in Figure 9, the highest elevation recorded at W26 occurred on October 7, 1985 and the lowest occurred on November 5, 2001. Both of these elevations were below the bottom of the ditch. During the time period extending from 1985 to 2006, groundwater levels at W26 have fluctuated between the two extremes and have averaged 999 feet above mean sea level, well below the bottom of the ditch. These findings indicate that groundwater is not entering the ditches along the north side of Highway 5.

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5. SUMMARY OF OBSERVATIONS

The following is a summary of key observations from the RI activities conducted in accordance with *Addendum 1 to the Supplemental Fluorochemical Investigation (FC) Work Plan*:

- FCs levels in soil samples from borings ASB31 through ASB43 confirmed concentrations that were consistent with the 2005 FC data from soil borings GP01 through GP08.
- Generally lower FC concentrations were observed for surface soil samples collected. These results are expected since clean fill was brought in and graded during the 1983-1984 remediation at the Site. The range of FC concentrations for five key compounds detected in surface soils north of Highway 5 are as follows: PFOS 24.6 to 1,460 ppb, PFOA- 0.8 to19.0 ppb, PFHS ND (not detected) to 9.4 ppb, PFBA ND to 12.5 ppb, and PFBS ND to 2.8 ppb. No surface samples for VOCs were collected based on the low OVM readings taken at the Site.
- The range of FC concentrations for the December 2006 sampling, for all soil depths, are as follows: PFOS 20.6 to 108,000 ppb, PFOA 0.8 to 18,500 ppb, PFHS ND to 5,585 ppb, PFBA ND to 1,600 ppb, and PFBS ND to 224 ppb.
- The FCs with the greatest levels detected in soils were PFOS and PFOA. Concentrations of these two compounds ranged from 0.8 to 108,000 ppb. PFBA, PFBS, and PFHS were detected at concentrations ranging from ND to 5,585 ppb. The remaining seven compounds ranged from ND to 1,230 ppb.
- The data generated from samples collected in December 2006 is consistent with that from samples collected in November/December 2005. Taken in combination, this data provides good delineation of FC concentrations in the study area, i.e., the area where soil borings were installed.
- The combined 2005 and 2006 soil data indicates significantly lower concentrations at all depths for samples collected on the western, northern and eastern edges of the study area.
- The highest concentrations for PFOS, PFOA and PFBA were observed in the 3.5 to 9 ft bgs depth range within the study area.
- Soil samples collected from borings ASB31, ASB32, and ASB40 for VOC analysis indicate the presence of VOCs, such as BTEX, 1,2,4-TMB, 1,3,5-TMB, isopropylbenzene, n-propylbenzene, and p-isopropyltoluene and other VOCs such

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- as 1,1,2-TCA, 1,2-DCA, MIBK, acetone, MEK, PCE, and TCE. The VOC compounds observed are consistent with those detected in routine monitoring of the groundwater recovery system that has been in continuous operation at the Site since 1985 to contain and remove such compounds. The groundwater pumped from this system is discharged to the MCES sanitary sewer system for treatment.
- According to the Washington County topographic survey, the bottom elevation of the ditches along the north side of Highway 5 is between 1002 and 1004 feet AMSL. Hydrographs for wells W22 and W26 depicting groundwater elevations from 1985 to 2006, indicate that the highest groundwater elevations are lower than the bottom elevation of the ditches. These findings indicate that groundwater from the site is not entering the ditches along the north side of Highway 5.

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6. DEVELOPMENT AND SCREENING OF RESPONSE ACTION ALTERNATIVES

In accordance with the requirements of the Consent Order Section VI and Exhibit C, Section III.E.3, the development and screening of response action alternatives for the Site soil and groundwater will be based on the List of Possible Technology Types, as endorsed by the MPCA Commissioner in his approval of the RI Report and FS Work Plan, and any other technology types identified by 3M or the MPCA Commissioner prior to the approval of the RI Report. The following section provides the List of Possible Technology Types for the Site and a description of the process that was used to develop this list.

The FS Work Plan, which is being submitted concurrently with this report, includes a description of how this list will be used to develop response action alternatives, which will be screened for further evaluation. The FS Work Plan also provides an explanation of the screening process and further evaluation of the retained response action alternatives, as well as, a recommendation for implementation of the selected response action alternative and associated conceptual design.

6.1 LIST OF POSSIBLE TECHNOLOGY TYPES

It is important to note that soil and groundwater at the Site are being considered as separate operable units. As such, a technology evaluation is provided for each media so that media-specific technologies can be combined into response action alternatives for each media.

General response actions have been identified for the Site based on the information and data provided in this RI. The general response actions, response technology type, and associated process options are presented in Table 6 for soil and Table 7 for groundwater along with a brief description of the process option and a screening comment. In their guidance, EPA states "During this screening step, process options and entire technology types are eliminated from further consideration on the basis of technical implementability", (EPA,1988). The general response action/technology types and

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process options that have been retained as the List of Possible Technology Types from this initial screening are summarized below:

LIST OF POSSIBLE TECHNOLOGY TYPES

<u>Soil</u>

- Removal Excavation
- Treatment Thermal - Incineration
- Disposal Landfill
 - New landfill
 - Existing landfill
- Containment Cap
 - Soil/clay cap
 - Engineered multilayer cap
- Institutional and Site Controls Access restrictions
 - Deed restrictions
 - Fencing
- No action

Groundwater

- Collection Groundwater recovery/Subsurface drain
 - Recovery wells
 - Interceptor trench
- Treatment Physical
 - Activated carbon
 - Ion exchange resin
 - Reverse osmosis
 - Air stripping
- Discharge Off-site
 - Off-site POTW
- Containment Cap/Vertical barriers
 - Soil/clay cap
 - Engineered multilayer cap
 - Slurry wall
 - Sheet piling
- Treatment Off-site
 - Off-site POTW

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- Institutional and Site Controls
 - Deed restrictions
 - Fencing
 - Alternate water supply
 - Monitoring
- No action

Upon approval of the RI Report and FS Work Plan by MPCA, these technology types and associated process options will be assembled into response action alternatives for screening and further evaluation. The FS Work Plan, which provides a description of the technology screening and response alternative development, screening and evaluation process, is being submitted concurrently with this RI Report.

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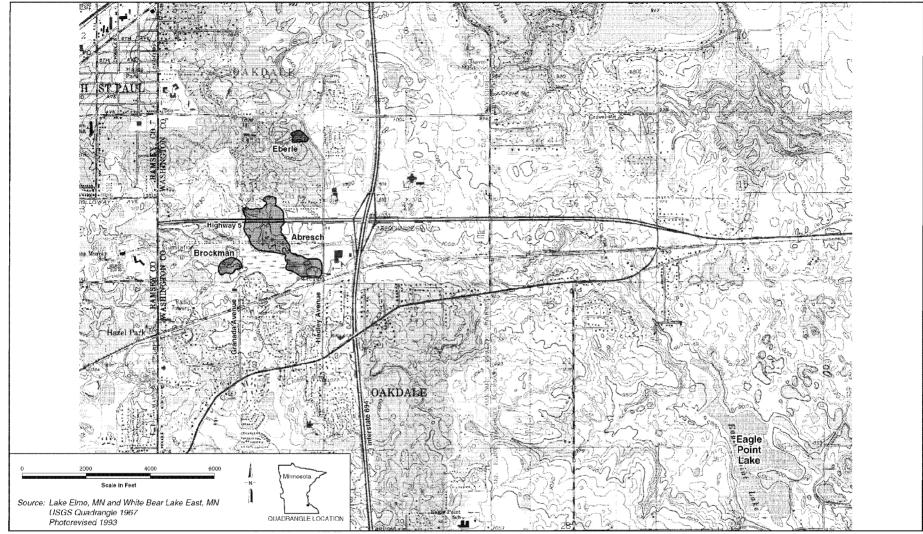


FIGURES

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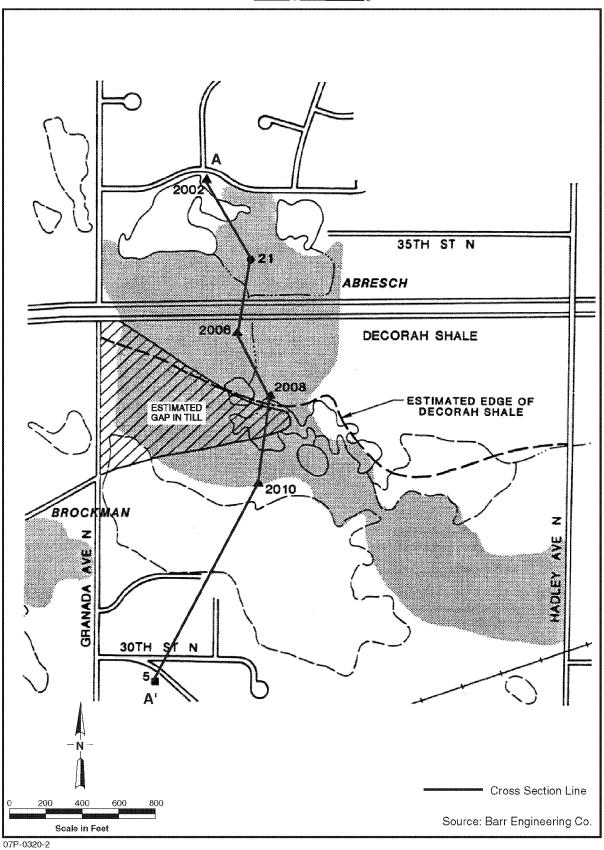
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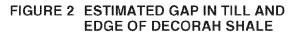


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FIGURE 1 SITE LOCATION MAP OAKDALE SITE, MN

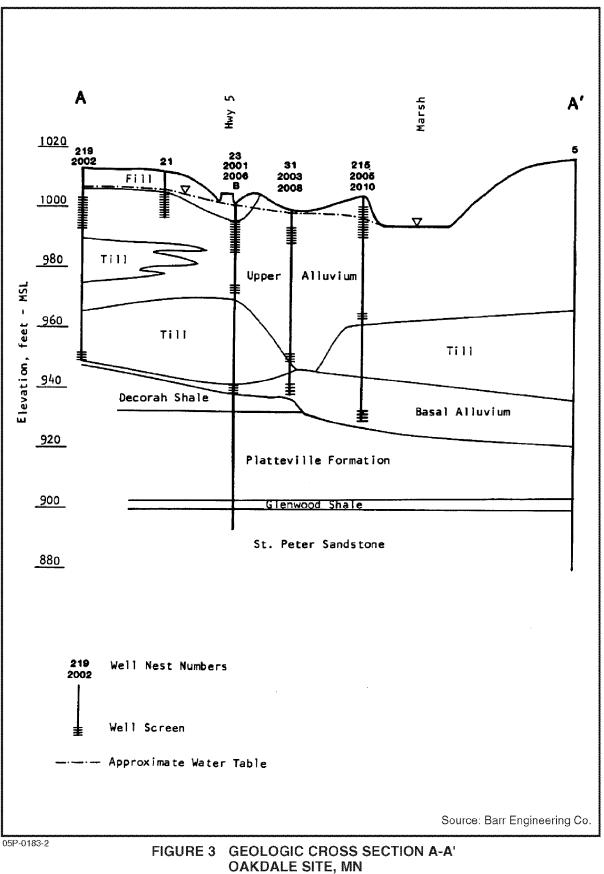




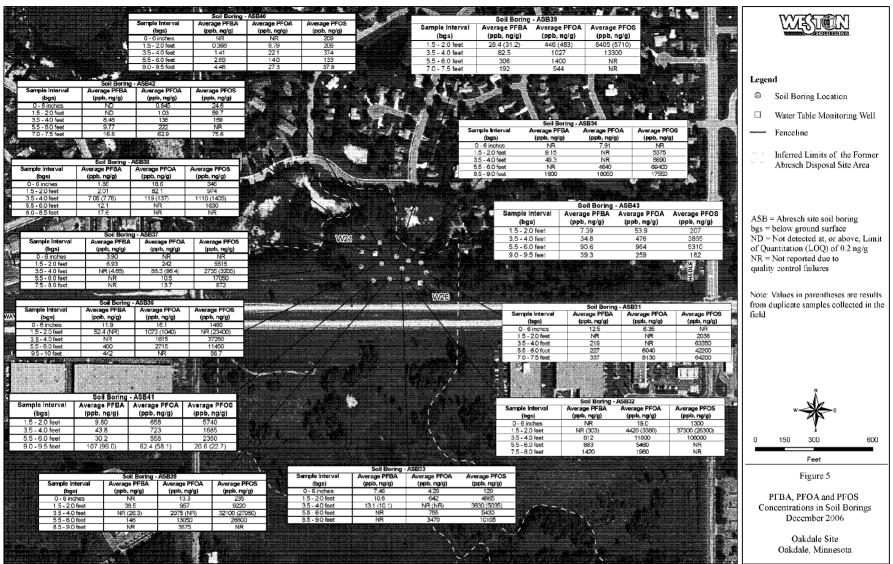


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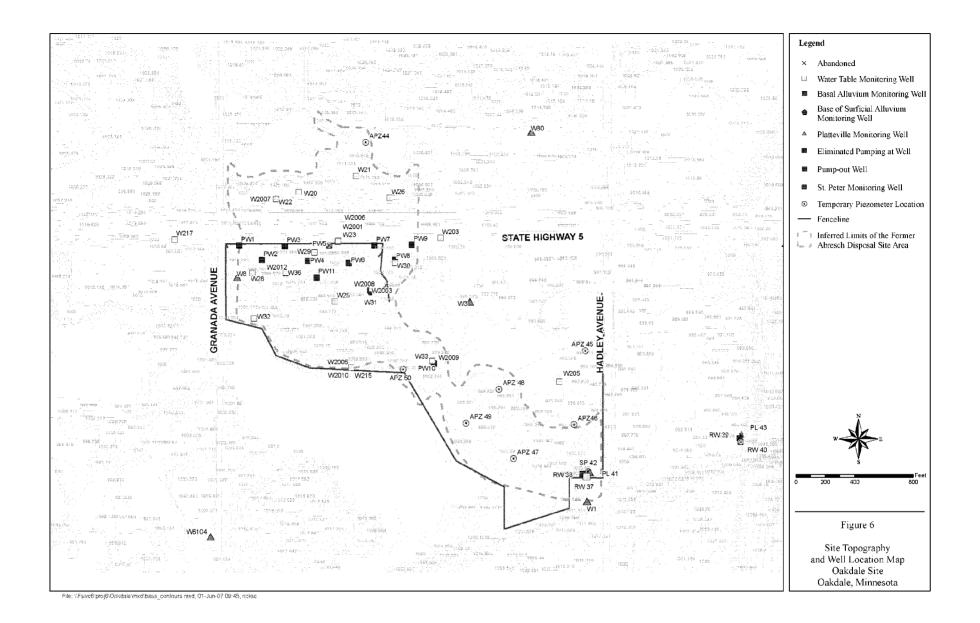


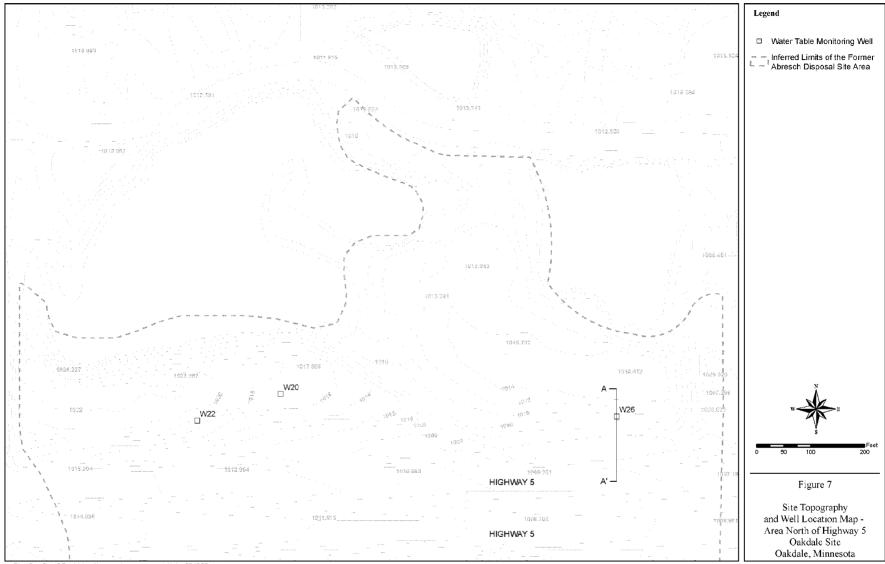




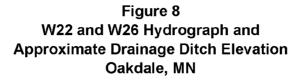


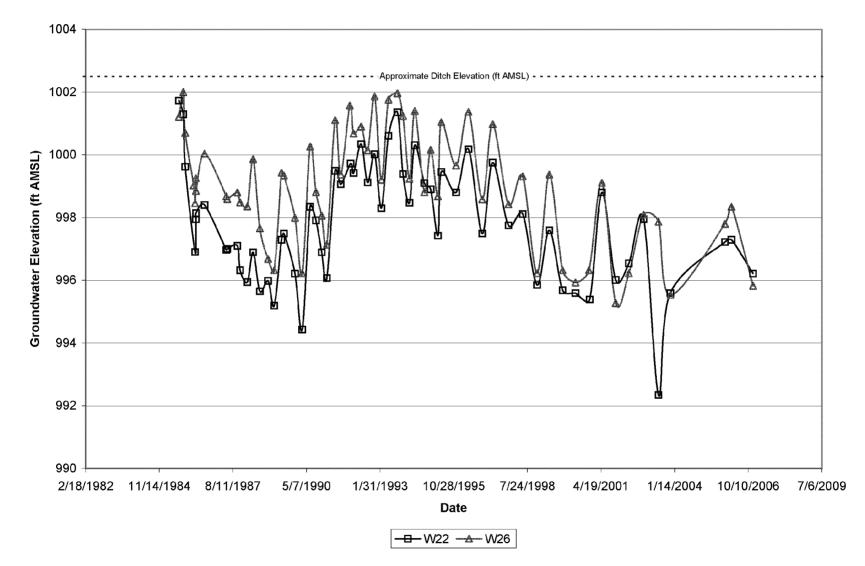
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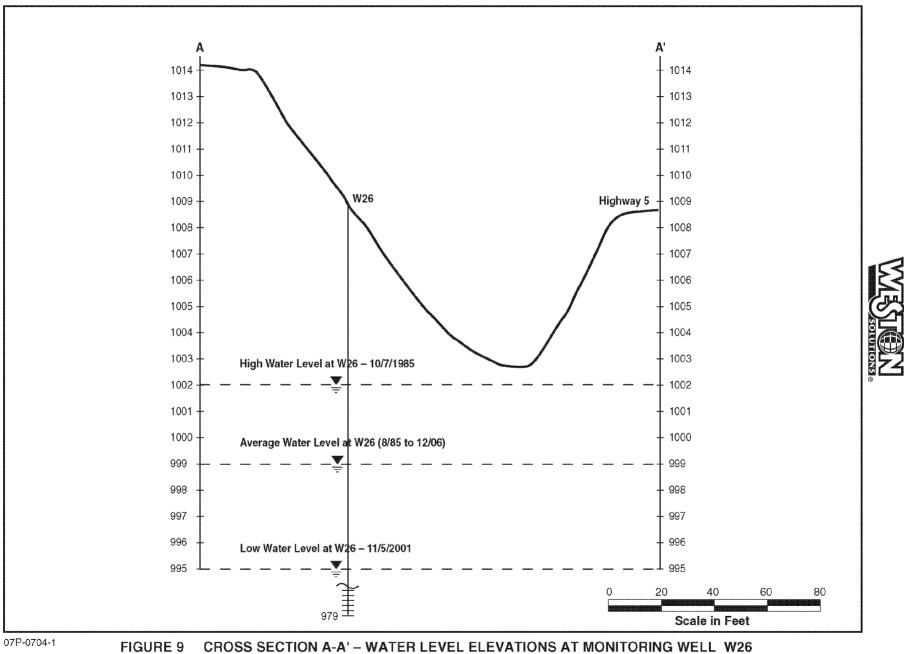


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TABLES

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Table 1 Summary of Soil and QA/QC Samples - December 2006 Area North of Highway 5 Oakdale, MN

						Sample	Parameter /	
Soil	Commite ID	Sample	Sample Interval	Date	FCs	NOCA	Dunlianta	Equipment
Boring	Sample ID	Matrix	(ft bgs)	Sampled	FUS	VOCs	Duplicate	Rinsate
	OKMN-SB-ASB31-0-0	Soil	0-0.5	4-Dec-06	x			
	OKMN-SB-ASB31-0-15	Soil	1.5 - 2.0	4-Dec-06	x			
ASB31	OKMN-SB-ASB31-0-35	Soil	3.5 - 4.0	4-Dec-00 4-Dec-06	x			
	OKMN-SB-ASB31-0-55	Soil	5.5 - 6.0	4-Dec-06	x			
	OKMN-SB-ASB31-0-70	Soil	7.0 - 7.5	4-Dec-06	x			
	OKMN-SB-ASB31-0-61204	Soil	7.5 - 8.0	4-Dec-06	^	x		
	OKMN-SB-ASB32-0-0	Soil	0-0.5	4-Dec-06	x	<u>^</u>		
	OKMN-SB-ASB32-0-15	Soil	1.5 - 2.0	4-Dec-06	x			
	OKMN-SB-ASB32-DB-15	Soil	1.5 - 2.0	4-Dec-06	x		x	
	OKMN-SB-ASB32-0-35	Soil	3.5 - 4.0	4-Dec-06	x		Â	
ASB32	OKMN-SB-ASB32-0-55	Soil	5.5 - 6.0	4-Dec-06	x			
	OKMN-SB-ASB32-0-61204	Soil	5.5 - 6.0	4-Dec-06	~	x		
	OKMN-SB-ASB32-0-75	Soil	7.5 - 8.0	4-Dec-06	x	~		
	OKMN-SB-ASB32-RB-61204	Water		4-Dec-06	x			x
	OKMN-SB-ASB33-0-0	Soil	0-0.5	4-Dec-06	x			~
	OKMN-SB-ASB33-0-15	Soil	1.5 - 2.0	4-Dec-06	x			
	OKMN-SB-ASB33-0-35	Soil	3.5 - 4.0	4-Dec-06	x			
ASB33	OKMN-SB-ASB33-DB-35	Soil	3.5 - 4.0	4-Dec-06	x		x	
	OKMN-SB-ASB33-0-55	Soil	5.5 - 6.0	4-Dec-06	x			
	OKMN-SB-ASB33-0-85	Soil	8.5 - 9.0	4-Dec-06	x			
	OKMN-SB-ASB34-0-0	Soil	0-0.5	4-Dec-06	x			
	OKMN-SB-ASB34-0-15	Soil	1.5 - 2.0	4-Dec-06	x			
ASB34	OKMN-SB-ASB34-0-35	Soil	3.5 - 4.0	4-Dec-06	x			
	OKMN-SB-ASB34-0-55	Soil	5.5 - 6.0	4-Dec-06	x			
	OKMN-SB-ASB34-0-85	Soil	8.5 - 9.0	4-Dec-06	x			
	OKMN-SB-ASB35-0-0	Soil	0-0.5	4-Dec-06	x			
	OKMN-SB-ASB35-0-15	Soil	1.5 - 2.0	4-Dec-06	х			
ACD25	OKMN-SB-ASB35-0-35	Soil	3.5 - 4.0	4-Dec-06	х			
ASB35	OKMN-SB-ASB35-DB-35	Soil	3.5 - 4.0	4-Dec-06	х		X	
	OKMN-SB-ASB35-0-55	Soil	5.5 - 6.0	4-Dec-06	x			
	OKMN-SB-ASB35-0-85	Soil	8.5 - 9.0	4-Dec-06	х			
	OKMN-SB-ASB36-0-0	Soil	0-0.5	4-Dec-06	х			
	OKMN-SB-ASB36-0-15	Soil	1.5 - 2.0	4-Dec-06	х			
	OKMN-SB-ASB36-DB-15	Soil	1.5 - 2.0	4-Dec-06	х		x	
ASB36	OKMN-SB-ASB36-0-35	Soil	3.5 - 4.0	4-Dec-06	х			
	OKMN-SB-ASB36-0-55	Soil	5.5 - 6.0	4-Dec-06	х			
	OKMN-SB-ASB36-0-95	Soil	9.5 - 10.0	4-Dec-06	х			
	OKMN-SB-ASB36-RB-61204	Water		4-Dec-06	Х			x
	OKMN-SB-ASB37-0-0	Soil	0-0.5	4-Dec-06	X			
	OKMN-SB-ASB37-0-15	Soil	1.5 - 2.0	4-Dec-06	x			
ASB37	OKMN-SB-ASB37-0-35	Soil	3.5 - 4.0	4-Dec-06	х			
A0007	OKMN-SB-ASB37-DB-35	Soil	3.5 - 4.0	4-Dec-06	x		x	
	OKMN-SB-ASB37-0-55	Soil	5.5 - 6.0	4-Dec-06	х			
	OKMN-SB-ASB37-0-75	Soil	7.0 - 7.5	4-Dec-06	X			

ft bgs = feet below ground surface.

Samples include QA/QC samples consisting of duplicate samples (DB), equipment rinsate samples (RB), and laboratory-prepared trip blanks.

SoilsRept_Tables.xlsTable1



Table 1 Summary of Soil and QA/QC Samples - December 2006 (continued)Area North of Highway 5Oakdale, MN

Soil						Sample	Parameter /	Туре
Boring	Sample ID	Matrix	(ft bgs)	Sampled	FCs	VOĊs	Duplicate	Rinsate
	OKMN-SB-ASB38-0-0	Soil	0-0.5	4-Dec-06	x			
	OKMN-SB-ASB38-0-15	Soil	1.5 - 2.0	4-Dec-06	х			
ASB38	OKMN-SB-ASB38-0-35	Soil	3.5 - 4.0	4-Dec-06	x			
	OKMN-SB-ASB38-DB-35	Soil	3.5 - 4.0	4-Dec-06	х		x	
	OKMN-SB-ASB38-0-55	Soil	5.5 - 6.0	4-Dec-06	х			
	OKMN-SB-ASB38-0-80	Soil	8.0 - 8.5	4-Dec-06	х			
	OKMN-SB-ASB39-0-15	Soil	1.5 - 2.0	5-Dec-06	х			
	OKMN-SB-ASB39-DB-15	Soil	1.5 - 2.0	5-Dec-06	x		x	
ASB39	OKMN-SB-ASB39-0-35	Soil	3.5 - 4.0	5-Dec-06	х			
	OKMN-SB-ASB39-0-55	Soil	5.5 - 6.0	5-Dec-06	х			
	OKMN-SB-ASB39-0-70	Soil	7.0 - 7.5	5-Dec-06	x			
	OKMN-SB-ASB40-0-0	Soil	0-0.5	5-Dec-06	x			
	OKMN-SB-ASB40-0-15	Soil	1.5 - 2.0	5-Dec-06	x			
ASB40	OKMN-SB-ASB40-0-35	Soil	3.5 - 4.0	5-Dec-06	х			
A5B40	OKMN-SB-ASB40-0-55	Soil	5.5 - 6.0	5-Dec-06	х			
	OKMN-SB-ASB40-0-61205	Soil	8.5 - 9.0	5-Dec-06		x		
	OKMN-SB-ASB40-0-90	Soil	9.0 - 9.5	5-Dec-06	x			
	OKMN-SB-ASB41-0-15	Soil	1.5 - 2.0	5-Dec-06	х			
	OKMN-SB-ASB41-0-35	Soil	3.5 - 4.0	5-Dec-06	х			
ASB41	OKMN-SB-ASB41-0-55	Soil	5.5 - 6.0	5-Dec-06	x			
	OKMN-SB-ASB41-0-90	Soil	9.0 - 9.5	5-Dec-06	х			
	OKMN-SB-ASB41-DB-90	Soil	9.0 - 9.5	5-Dec-06	x		x	
	OKMN-SB-ASB42-0-0	Soil	0-0.5	5-Dec-06	х			
	OKMN-SB-ASB42-0-15	Soil	1.5 - 2.0	5-Dec-06	х			
ASB42	OKMN-SB-ASB42-0-35	Soil	3.5 - 4.0	5-Dec-06	x			
ASD4Z	OKMN-SB-ASB42-0-55	Soil	5.5 - 6.0	5-Dec-06	х			
	OKMN-SB-ASB42-0-70	Soil	7.0 - 7.5	5-Dec-06	x			
	OKMN-SB-ASB42-RB-61204	Water		5-Dec-06	х			x
	OKMN-SB-ASB43-0-15	Soil	1.5 - 2.0	4-Dec-06	х			
ASB43	OKMN-SB-ASB43-0-35	Soil	3.5 - 4.0	4-Dec-06	х			
A3D43	OKMN-SB-ASB43-0-55	Soil	5.5 - 6.0	4-Dec-06	х			
	OKMN-SB-ASB43-0-90	Soil	9.0 - 9.5	4-Dec-06	x			
	OKMN-SB-TRIP1-0-61204	Water		4-Dec-06	x			
TRIP 1	OKMN-SB-TRIP1-LS-61204	Water		4-Dec-06	x			
	OKMN-SB-TRIP1-HS-61204	Water		4-Dec-06	х			
	OKMN-SB-TRIP2-0-61204	Water		4-Dec-06	x			
TRIP 2	OKMN-SB-TRIP2-LS-61204	Water		4-Dec-06	x			
	OKMN-SB-TRIP2-HS-61204	Water		4-Dec-06	х			

ft bgs = feet below ground surface.

Samples include QA/QC samples consisting of duplicate samples (DB), equipment rinsate samples (RB),

and laboratory-prepared trip blanks.

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Table 2 Summary of FC Concentrations Detected in Groundwater Samplesfrom Menards Retail Property WellsOakdale, MN

Sample Location	Sample Date	Average PFBS (ppb, ng/mL)	Average PFHS (ppb, ng/mL)	Average PFOS (ppb, ng/mL)	Average PFOA (ppb, ng/mL)
RW39	02-Mar-06	0.0511	ND	ND	ND
NVV39	19-Sep-06	ND*	ND^	ND°	0.0330
RW40	02-Mar-06	ND	ND	ND	0.0366
1.140	19-Sep-06	ND*	ND^	ND°	0.0292
PL43	02-Mar-06	ND	ND	ND	ND
FL43	19-Sep-06	ND*	ND^	ND°	ND

DB = Field Duplicate

ND = Not detected at or above 0.0250 ng/mL

ND* = Not detected at or above 0.0254 ng/mL

ND[^] = Not detected at or above 0.0253 ng/mL

ND° = Not detected at or above 0.0393 ng/mL

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Table 3 Summary of FC Concentrations Detected in Soil Samples - December 2006 Area North of Highway 5 Oakdale, MN

Sample ID Sample Location (fb bgs) (rppL, ng/g) Dry Weight (rppL, ng/g) Dry Weight <th></th>	
Sample ID Location Interval (rbpb, ng/g) (ppb, ng/g)	rage* PFOA
OKMN-SB-ASB31-0-000 0 0.5 IZ.5 NR Dry Weight Dry Weight <thd< th=""><th>pb, ng/g)</th></thd<>	pb, ng/g)
OKMN-SB-ASB31-0-0015 I.5 - 2.0 NR 6.39 NR 2033 OKMN-SB-ASB31-0-0075 ASB31 3.5 - 4.0 219 40.2 581 63350 OKMN-SB-ASB31-0-0075 7.0 - 6.0 337 36.7 NR 64200 OKMN-SB-ASB32-0-0015 1.5 - 2.0 NR (303) 675 (86.2) 935 (1174) 37300 (28300) 442 OKMN-SB-ASB32-0-0055 ASB2 3.5 - 4.0 812 84.7 7 9.35 1800 (28300) 442 OKMN-SB-ASB32-0-0055 ASB2 3.5 - 4.0 812 84.7 1800 (242) 1800 (242) 1800 (242) 1800 (242) 1800 (242) 1800 (242) 1800 (242) 1800 (242) 1800 (242) 1800 (242) 1830 (242) 1830 (242) 1830 (242) 1830 (242) 1830 (263) NR 17.3 188 (5430 (253)) NR 1800 (263) 18.5 - 2.0 9.15 NR 1800 (263) 18.5 - 2.0 9.15 NR 1800 (263) 17.5 - 2.0 9.15 NR 2.0 5375 0.0 0.0 - 0.5 N	y Weight
OKMN-SB-ASB31-0-0035 ASB31 3.5 + 0. 219 40.2 581 63350 OKMN-SB-ASB31-0-0070 7.0 - 8.0 337 36.7 NR 64200 OKMN-SB-ASB32-0-0000 0 - 0.5 NR 2.77 9.35 1300 OKMN-SB-ASB32-0-0035 ASB22 3.5 + 0. 812 84.7 NR 108000 442 OKMN-SB-ASB32-0-0055 5.5 - 6.0 883 96.1 1180 NR 108000 442 OKMN-SB-ASB32-0-0075 7.5 - 8.0 883 96.1 1180 NR 108000 65.7 5.5 - 6.0 883 96.1 1180 NR 0KMN-SB-ASB33-0-0005 5.5 - 6.0 883 96.1 1180 NR 0KMN-SB-ASB33-0-0005 5.5 - 6.0 NR NR 10650 NR NR 1080 NR 186 5.30 NS 4.0 3.5 + 4.0 NR NR 1880 1035 NR NR 180 10105 NR NR 188.5 5.40 NR 185.9	6.35
OKMN-SB-ASB31-0-0055 5.5.6.0 227 19.4 1232 42200 OKMN-SB-ASB31-0-0070 7.0.8.0 337 36.7 NR 64200 OKMN-SB-ASB32-0-0005 1.5.2.0 NR 037 9.35 1300 442 OKMN-SB-ASB32-0-0055 ASB32 5.4.0 812 84.7 NR 108000 42 OKMN-SB-ASB32-0-0055 5.5.6.0 883 96.1 1180 NR OKMN-SB-ASB32-0-0055 5.5.6.0 883 96.1 1180 NR OKMN-SB-ASB32-0-0055 5.5.6.0 NR 1.7.3 188 5430 OKMN-SB-ASB33-0-0055 5.5.6.0 NR 17.3 188 5430 OKMN-SB-ASB33-0-0055 5.5.6.0 NR 17.3 188 5430 OKMN-SB-ASB34-0-0055 5.5.6.0 NR 1180 10105 0 OKMN-SB-ASB34-0-0055 5.5.6.0 NR 22.0 5375 0 OKMN-SB-ASB34-0-0055 5.5.6.0 NR 25.3 1035	NR
OKMN-SB-ASB31-0-0070 7.0-8.0 337 36.7 NR 64200 OKMN-SB-ASB32-0-0015 ASB32 0-0.5 NR 2.77 9.35 1300 OKMN-SB-ASB32-0-0015 ASB32 3.5 + 4.0 812 84.7 NR 108000 OKMN-SB-ASB32-0-0055 5.5 + 6.0 883 96.1 1180 NR OKMN-SB-ASB32-0-0075 7.5 + 8.0 1420 NR 204 NR OKMN-SB-ASB33-0-0055 ASB33 3.5 + 4.0 13.1 (10.1) 3.78 (NR) NR 4665 OKMN-SB-ASB33-0005 ASD3 3.5 + 4.0 13.1 (10.1) 3.78 (NR) NR 1665 NR OKMN-SB-ASB33-0005 8.5 + 9.0 NR NR 17.3 188 543.0 OKMN-SB-ASB34-00015 ASD4 1.5 + 2.0 9.15 NR 22.0 5375 OKMN-SB-ASB34-00055 ASD4 3.5 + 4.0 49.3 8.65 142 8690 0 OKMN-SB-ASB35-00055 ASD4 0.49.3 8.65 142	NR
OKMN-SB-ASB32-0-0000 0-0.5 NR 2.77 9.35 1300 OKMN-SB-ASB32-0-0015 1.5-2.0 NR (303) 67.5 (86.2) 935 (1174) 37300 (28300) 442 OKMN-SB-ASB32-0-0055 5.5 6.0 883 96.1 NR 108000 442 OKMN-SB-ASB32-0005 7.5 8.0 1420 NR 204 NR OKMN-SB-ASB33-00005 1.5 - 2.0 10.8 5.70 NR 4665 OKMN-SB-ASB33-00035 ASB33 3.5 4.0 13.1 (10.1) 3.78 (NR) NR (160.7) 3630 (5035) N OKMN-SB-ASB33-00055 8.5 9.0 NR NR 1180 10105 N N 115 - 2.0 9.15 NR 2.0 5.75 NR 4665 N N N 116 - 0.1 3.78 (NR) NR (1180 10105 N N N 116 - 0.1 1.5 - 2.0 9.15 NR 2.0 5.37 5 N N N N 0.455 NR 0.575 N N 2.0 </td <td>6040</td>	6040
OKMM-SB-ASB32-0-0015 15 : 2.0 NR (303) 67 5 (66.2) 935 (1174) 37300 (28300) 442 OKMN-SB-ASB32-0-0055 ASB32 3.5 : 4.0 812 84.7 NR 108000 442 OKMM-SB-ASB32-0-0055 7.5 : 8.0 1420 NR 204 NR OKMM-SB-ASB33-0-0056 7.5 : 8.0 1420 NR 0.61 1180 NR OKMM-SB-ASB33-0-0055 ASB33 3.5 : 4.0 13.1 (10.1) 3.78 (NR) NR (50.7) 3630 (5035) N OKMM-SB-ASB33-0-0055 S.5 : 6.0 NR NR 1180 10105 NR OKMM-SB-ASB34-0-0015 A.5 : 4.0 49.3 8.65 142 8690 0 OKMM-SB-ASB34-0-0055 ASB43 3.5 : 4.0 49.3 8.65 1152.0 9.15 NR 22.0 5375 0 OKMM-SB-ASB34-0-0055 ASB43 3.5 : 4.0 49.3 8.65 142 8690 0 0 0.5 NR 22.0 5375.6 0 NR <	9130
OKMN-SB-ASB32-00035 ASB32 3.5 - 4.0 812 84.7 NR 108000 OKMN-SB-ASB32-00055 5.5 - 6.0 883 96.1 1180 NR OKMN-SB-ASB33-00000 0 - 0.5 7.46 NR 204 NR OKMN-SB-ASB33-00005 1.5 - 2.0 10.8 5.70 NR 4865 OKMN-SB-ASB33-00035 ASB33 3.5 - 4.0 13.1 (10.1) 3.76 (NR) NR (50.7) 3630 (5035) N OKMN-SB-ASB33-00035 AS.5 - 6.0 NR NR 1180 10105 OKMN-SB-ASB34-00005 6.5 - 6.0 NR NR 2.0 5375 OKMN-SB-ASB34-0005 ASB4 3.5 - 4.0 49.3 8.65 142 8690 OKMN-SB-ASB34-0005 ASD4 3.5 - 4.0 NR 2.2 5375 S65 142 8690 S6400 S6400 S645 142 555 S6400	19.0
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OKMN-SB-ASB33-0-0055 5.5 - 6.0 NR 17.3 188 5430 OKMN-SB-ASB33-0-0085 8.5 - 9.0 NR NR NR 1180 10105 OKMN-SB-ASB33-0-0000 0 - 0.5 NR NR NR 22.0 5375 OKMN-SB-ASB34-0-0035 ASB34 3.5 - 4.0 49.3 8.65 142 8690 OKMN-SB-ASB34-0-0055 5.5 - 6.0 NR 26.3 1035 69400 OKMN-SB-ASB34-0-0055 8.5 - 9.0 1600 224 5585 17550 OKMN-SB-ASB35-0-0015 1.5 - 2.0 38.5 12.9 NR 9220 OKMN-SB-ASB35-0-0015 1.5 - 2.0 38.5 12.9 NR 9220 OKMN-SB-ASB35-00055 5.5 - 6.0 146 53.8 445 26600 OKMN-SB-ASB35-00055 5.5 - 6.0 146 53.8 445 26600 OKMN-SB-ASB36-00030 ASB36 3.5 - 4.0 NR 24.6 NR 37250 OKMN-SB-ASB36-00055 5.5 - 6.0 400 <td>642</td>	642
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OKMN-SB-ASB34-0-0015 1.5 - 2.0 9.15 NR 22.0 5375 OKMN-SB-ASB34-0-0055 ASB34 3.5 - 4.0 49.3 8.65 142 8690 OKMN-SB-ASB34-0-0055 5.5 - 6.0 NR 26.3 1035 669400 OKMN-SB-ASB35-0-0055 8.5 - 9.0 1600 224 5585 17550 OKMN-SB-ASB35-0-0035 ASB35 3.5 - 4.0 NR 0.570 NR 9220 OKMN-SB-ASB35-0-0035 ASB35 3.5 - 4.0 NR (26.3) 22.8 (20.2) NR (115) 32100 (27950) 29 OKMN-SB-ASB35-0-0085 8.5 - 9.0 NR 98.3 83.3 NR OKMN-SB-ASB36-0-0000 0 - 0.5 11.9 0.434 2.38 1460 OKMN-SB-ASB36-0-0005 5.5 - 6.0 NR 24.6 NR 37250 OKMN-SB-ASB36-0-0005 5.5 - 6.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0005 5.5 - 6.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0005	3470
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OKMN-SB-ASB34-0-0055 5.5 - 6.0 NR 26.3 1035 69400 OKMN-SB-ASB35-0-0005 8.5 - 9.0 1600 224 5585 17550 1555 OKMN-SB-ASB35-0-0015 1.5 - 2.0 38.5 12.9 NR 9220 0 OKMN-SB-ASB35-0-0055 ASB35 3.5 - 4.0 NR (26.3) 22.8 (20.2) NR (115) 32100 (27950) 29 OKMN-SB-ASB35-0-0035 ASB35 3.5 - 4.0 NR (26.3) 22.8 (20.2) NR (115) 32100 (27950) 29 OKMN-SB-ASB35-0-0035 8.5 - 9.0 NR 98.3 83.3 NR 1600 23600 107 OKMN-SB-ASB36-0-0035 0 - 0.5 11.9 0.434 2.38 1460 107 OKMN-SB-ASB36-0-0035 ASB36 3.5 - 4.0 NR 21.4 NR 11450 OKMN-SB-ASB37-0-0035 ASB37 3.5 - 4.0 NR 142 17.0 11.8 88.7 OKMN-SB-ASB37-0-0035 ASB37 3.5 - 4.0 NR 1.90 3.06 17.5<	NR
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OKMN-SB-ASB35-0-0000 OKMN-SB-ASB35-0-0015 OKMN-SB-ASB35-0-0055 0 0 0 0 0 0 0 0 0 NR 235 0 NR 9220 NR 9220 0 NR 9220 0	4640
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OKMN-SB-ASB35-0-0035 ASB35 3.5 - 4.0 NR (26.3) 22.8 (20.2) NR (115) 32100 (27950) 29 OKMN-SB-ASB35-0-0085 8.5 - 9.0 NR 98.3 83.3 NR 26600 7 OKMN-SB-ASB36-0-0085 8.5 - 9.0 NR 98.3 83.3 NR 7 OKMN-SB-ASB36-0-0015 1.5 - 2.0 52.4 (NR) 7.37 (9.42) 62.7 (68.0) NR (23400) 107 OKMN-SB-ASB36-0-0055 5.5 - 6.0 400 22.4 NR 11450 107 OKMN-SB-ASB36-0-0055 5.5 - 6.0 400 22.4 NR 11450 107 OKMN-SB-ASB36-0-0055 9.5 - 10 442 17.0 11.8 88.7 1460 OKMN-SB-ASB37-0-0015 1.5 - 2.0 6.93 2.53 16.4 5515 55 55 6.0 NR 1.90 8.08 17050 16 175 16 16 175 16 16 175 16 16 175 16 16 16 175	13.3
OKMN-SB-ASB35-0-0055 5.5 - 6.0 146 53.8 445 26600 OKMN-SB-ASB35-0-0085 8.5 - 9.0 NR 98.3 83.3 NR OKMN-SB-ASB36-0-0000 0 - 0.5 11.9 0.434 2.38 1460 OKMN-SB-ASB36-0-0015 1.5 - 2.0 52.4 (NR) 7.37 (9.42) 62.7 (68.0) NR (23400) 107 OKMN-SB-ASB36-0-0055 5.5 - 6.0 400 22.4 NR 11450 0 OKMN-SB-ASB37-0-0005 9.5 - 10 442 17.0 11.8 88.7 OKMN-SB-ASB37-0-0015 1.5 - 2.0 6.93 2.53 16.4 5515 OKMN-SB-ASB37-0-0015 1.5 - 2.0 6.93 2.53 16.4 5515 OKMN-SB-ASB37-0-0015 1.5 - 2.0 0.93 2.53 16.4 5515 OKMN-SB-ASB37-0-0015 1.5 - 2.0 0.93 2.53 16.4 5515 OKMN-SB-ASB37-0-0075 7.5 - 8.0 NR 1.90 8.08 17050 OKMN-SB-ASB38-0-0015 1.5 - 2.0 2.01	957 75 (ND)
OKMN-SB-ASB35-0-0085 8.5 - 9.0 NR 98.3 83.3 NR OKMN-SB-ASB36-0-0000 0 - 0.5 11.9 0.434 2.38 1460 0.0000 OKMN-SB-ASB36-0-0015 1.5 - 2.0 52.4 (NR) 7.37 (9.42) 62.7 (68.0) NR (23400) 107 OKMN-SB-ASB36-0-0055 5.5 - 6.0 400 22.4 NR 11450 OKMN-SB-ASB36-0-0095 9.5 - 10 442 17.0 11.8 88.7 OKMN-SB-ASB37-0-0000 0 - 0.5 3.90 0.599 2.37 NR OKMN-SB-ASB37-0-0015 1.5 - 2.0 6.93 2.53 16.4 5515 OKMN-SB-ASB37-0-0035 ASB37 3.5 - 4.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0035 ASB37 3.5 - 4.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0035 ASB37 3.5 - 4.0 NR 0.900 (1.14) 7.68 (10.6) 2755 (3205) 88 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 NR 0.178 0.664 </td <td>975 (NR)</td>	975 (NR)
OKMN-SB-ASB36-0-0000 OKMN-SB-ASB36-0-0015 OKMN-SB-ASB36-0-0030 OKMN-SB-ASB36-0-0055 0 - 0.5 1.5 - 2.0 52.4 (NR) 11.9 7.37 (9.42) 7.37 (9.42) 0.2.7 (68.0) 62.7 (68.0) NR (23400) NR (23400) 107 OKMN-SB-ASB36-0-0055 3.5 - 4.0 5.5 - 6.0 NR 24.6 42 NR 37250 OKMN-SB-ASB36-0-0055 9.5 - 10 442 17.0 11.8 88.7 OKMN-SB-ASB37-0-0005 9.5 - 10 442 17.0 11.8 88.7 OKMN-SB-ASB37-0-0005 1.5 - 2.0 6.93 2.53 16.4 5515 OKMN-SB-ASB37-0-0005 1.5 - 2.0 0.93 2.53 16.4 5515 OKMN-SB-ASB37-0-0055 5.5 - 6.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0055 7.5 - 8.0 NR 0.178 0.664 672 OKMN-SB-ASB38-0-0005 0 - 0.5 1.86 0.583 1.91 346 OKMN-SB-ASB38-0-0005 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0005 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-	13050
OKMN-SB-ASB36-0-0015 1.5 - 2.0 52.4 (NR) 7.37 (9.42) 62.7 (68.0) NR (23400) 107 OKMN-SB-ASB36-0-0030 ASB36 3.5 - 4.0 NR 24.6 NR 37250 107 OKMN-SB-ASB36-0-0055 5.5 - 6.0 400 22.4 NR 11450 0 OKMN-SB-ASB36-0-0095 9.5 - 10 442 17.0 11.8 88.7 0 OKMN-SB-ASB37-0-0015 0 - 0.5 3.90 0.599 2.37 NR 0 OKMN-SB-ASB37-0-0035 ASB37 3.5 - 4.0 NR (4.66) 0.900 (1.14) 7.68 (10.6) 2755 (3205) 88 OKMN-SB-ASB37-0-0075 7.5 - 8.0 NR 1.90 8.08 17050 OKMN-SB-ASB38-0-0005 0 - 0.5 1.86 0.583 1.91 346 OKMN-SB-ASB38-0-0005 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0035	3875
OKMN-SB-ASB36-0-0030 ASB36 3.5 - 4.0 NR 24.6 NR 37250 OKMN-SB-ASB36-0-0055 5.5 - 6.0 400 22.4 NR 11450 OKMN-SB-ASB36-0-0095 9.5 - 10 442 17.0 11.8 88.7 OKMN-SB-ASB37-0-0000 0 - 0.5 3.90 0.599 2.37 NR OKMN-SB-ASB37-0-0015 1.5 - 2.0 6.93 2.53 16.4 551.5 OKMN-SB-ASB37-0-0055 5.5 - 6.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0055 5.5 - 6.0 NR 0.178 0.664 672 OKMN-SB-ASB37-0-0075 7.5 - 8.0 NR 0.178 0.664 672 OKMN-SB-ASB38-0-0015 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5	16.1
OKMN-SB-ASB36-0-0055 5.5 - 6.0 400 22.4 NR 11450 OKMN-SB-ASB36-0-0095 9.5 - 10 442 17.0 11.8 88.7 OKMN-SB-ASB37-0-0000 0 - 0.5 3.90 0.599 2.37 NR OKMN-SB-ASB37-0-0015 1.5 - 2.0 6.93 2.53 16.4 5515 OKMN-SB-ASB37-0-0035 ASB37 3.5 - 4.0 NR (4.66) 0.900 (1.14) 7.68 (10.6) 2755 (3205) 88 OKMN-SB-ASB37-0-0055 5.5 - 6.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0055 7.5 - 8.0 NR 0.178 0.664 672 OKMN-SB-ASB38-0-0000 0 - 0.5 1.86 0.583 1.91 346 OKMN-SB-ASB38-0-0015 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-SB-ASB38-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0035 <td>73 (1040)</td>	73 (1040)
OKMN-SB-ASB36-0-0095 9.5 - 10 442 17.0 11.8 88.7 OKMN-SB-ASB37-0-0000 0 - 0.5 3.90 0.599 2.37 NR OKMN-SB-ASB37-0-0015 1.5 - 2.0 6.93 2.53 16.4 5515 OKMN-SB-ASB37-0-0055 ASB37 3.5 - 4.0 NR (4.66) 0.900 (1.14) 7.68 (10.6) 2755 (3205) 88 OKMN-SB-ASB37-0-0055 5.5 - 6.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0075 7.5 - 8.0 NR 0.178 0.664 672 OKMN-SB-ASB38-0-0000 0 - 0.5 1.86 0.583 1.91 346 OKMN-SB-ASB38-0-0015 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-SB-ASB38-0-0015 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-SB-ASB39-0-0015 3.5 - 4.0 82.5 10.6 172 13300 OKMN-SB-ASB39-0-00055 ASB39 3.5 - 4.	1615 2715
OKMN-SB-ASB37-0-0000 OKMN-SB-ASB37-0-0015 OKMN-SB-ASB37-0-0035 0 - 0.5 ASB37 3.90 1.5 - 2.0 0.599 6.93 2.37 2.53 NR OKMN-SB-ASB37-0-0035 ASB37 3.5 - 4.0 NR (4.66) 0.900 (1.14) 7.68 (10.6) 2755 (3205) 88 OKMN-SB-ASB37-0-0055 5.5 - 6.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0075 7.5 - 8.0 NR 0.178 0.6664 672 OKMN-SB-ASB38-0-0005 0 - 0.5 1.86 0.583 1.91 346 OKMN-SB-ASB38-0-0015 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.2.5 10.6 1.72 13300 OKMN-SB-ASB39-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0005 ASB39 3.5 - 4.0 82.5 10.6 172 13300 OKMN	NR
OKMN-SB-ASB37-0-0015 OKMN-SB-ASB37-0-0035 1.5 - 2.0 ASB37 6.93 3.5 - 4.0 5.5 - 6.0 2.53 NR (4.66) 16.4 5515 2755 (3205) 88 OKMN-SB-ASB37-0-0055 5.5 - 6.0 NR (4.66) 0.900 (1.14) 7.68 (10.6) 2755 (3205) 88 OKMN-SB-ASB37-0-0055 7.5 - 8.0 NR 1.90 8.08 17050 OKMN-SB-ASB38-0-0005 7.5 - 8.0 NR 0.178 0.6664 672 OKMN-SB-ASB38-0-0005 0 - 0.5 1.86 0.583 1.91 346 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0035 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015 5.5 - 6.0 306 22.7 NR NR OKMN-SB-ASB39-0-0055 ASB39 5.5 - 6.0 306 22.7 NR NR OKMN-SB-ASB39-0-007	NR
OKMN-SB-ASB37-0-0035 ASB37 3.5 - 4.0 NR (4.66) 0.900 (1.14) 7.68 (10.6) 2755 (3205) 88 OKMN-SB-ASB37-0-0055 5.5 - 6.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0075 7.5 - 8.0 NR 0.178 0.664 672 OKMN-SB-ASB38-0-0005 7.5 - 8.0 NR 0.178 0.664 672 OKMN-SB-ASB38-0-0005 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0055 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-SB-ASB38-0-0005 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB38-0-0005 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0035 ASB39 5.5 - 6.0 306 22.7 NR NR OKMN-S	242
OKMN-SB-ASB37-0-0055 5.5 - 6.0 NR 1.90 8.08 17050 OKMN-SB-ASB37-0-0075 7.5 - 8.0 NR 0.178 0.664 672 OKMN-SB-ASB38-0-0000 0 - 0.5 1.86 0.583 1.91 346 OKMN-SB-ASB38-0-0015 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0055 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5 1630 15 OKMN-SB-ASB39-0-0005 8.0 - 8.5 17.6 1.76 NR NR 140 OKMN-SB-ASB39-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0075 3.5 - 4.0 8.25 10.6 172 13300 13300 OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR 0 OKMN-SB-ASB39-0-0070 0 - 0.5 NR 0.287 ND	3.3 (96.4)
OKMN-SB-ASB37-0-0075 7.5 - 8.0 NR 0.178 0.664 672 OKMN-SB-ASB38-0-0000 0 - 0.5 1.86 0.583 1.91 346 OKMN-SB-ASB38-0-0015 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0080 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0055 ASB39 3.5 - 4.0 82.5 10.6 172 13300 OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR 0 OKMN-SB-ASB	10.5
OKMN-SB-ASB38-0-0000 OKMN-SB-ASB38-0-0015 OKMN-SB-ASB38-0-0035 OKMN-SB-ASB38-0-0035 OKMN-SB-ASB38-0-0055 0 - 0.5 1.86 0.583 1.91 346 OKMN-SB-ASB38-0-0035 OKMN-SB-ASB38-0-0055 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0055 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0080 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0055 ASB39 3.5 - 4.0 82.5 10.6 172 13300 OKMN-SB-ASB39-0-0055 ASB39 5.5 - 6.0 306 22.7 NR NR OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR 0 OKMN-SB-ASB40-0-0000 0 - 0.5 NR 0.287 ND 209 0 OKMN-SB-ASB40-0-0015 1.5 - 2.0 0.368 0.504 0.865 206 206 0 <	13.7
OKMN-SB-ASB38-0-0015 1.5 - 2.0 2.01 0.798 6.04 974 OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 11 OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-SB-ASB38-0-0015 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0055 ASB39 5.5 - 6.0 306 22.7 NR NR OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR OKMN-SB-ASB39-0-0070 0-0.5 NR 0.287 ND 209 OKMN-SB-ASB40-0-0015 1.5 - 2.0 0.368 0.504 0.865 206	18.6
OKMN-SB-ASB38-0-0035 ASB38 3.5 - 4.0 7.05 (7.78) 2.01 (2.01) 8.88 (9.47) 1110 (1405) 111 OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-SB-ASB38-0-0080 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0035 ASB39 3.5 - 4.0 82.5 10.6 172 13300 OKMN-SB-ASB39-0-0055 OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR OKMN-SB-ASB39-0-0070 7.0 - 7.5 NR 0.287 ND 209 OKMN-SB-ASB40-0-0015 1.5 - 2.0 0.368 0.504 0.865 206	82.1
OKMN-SB-ASB38-0-0055 5.5 - 6.0 12.1 2.58 10.5 1630 OKMN-SB-ASB38-0-0080 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0035 ASB39 3.5 - 4.0 82.5 10.6 172 13300 44 OKMN-SB-ASB39-0-0055 OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR 0 OKMN-SB-ASB40-0-0000 0 - 0.5 NR 0.287 ND 209 0 OKMN-SB-ASB40-0-0015 1.5 - 2.0 0.368 0.504 0.865 206 206	19 (137)
OKMN-SB-ASB38-0-0080 8.0 - 8.5 17.6 1.76 NR NR OKMN-SB-ASB39-0-0015	NR
OKMN-SB-ASB39-0-0015 1.5 - 2.0 28.4 (31.2) 9.13 (11.5) 73.3 (88.5) 6405 (5710) 44 OKMN-SB-ASB39-0-0035 ASB39 3.5 - 4.0 82.5 10.6 172 13300 44 OKMN-SB-ASB39-0-0055 OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR OKMN-SB-ASB40-0-0000 0 - 0.5 NR 0.287 ND 209 0.366 206	NR
OKMN-SB-ASB39-0-0035 ASB39 3.5 - 4.0 82.5 10.6 172 13300 OKMN-SB-ASB39-0-0055 ASB39 5.5 - 6.0 306 22.7 NR NR OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR OKMN-SB-ASB40-0-0000 0 - 0.5 NR 0.287 ND 209 OKMN-SB-ASB40-0-0015 1.5 - 2.0 0.368 0.504 0.865 206	46 (483)
OKMN-SB-ASB39-0-0055 ASB39 5.5 - 6.0 306 22.7 NR NR OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR OKMN-SB-ASB40-0-0000 0 - 0.5 NR 0.287 ND 209 OKMN-SB-ASB40-0-0015 1.5 - 2.0 0.368 0.504 0.865 206	1027
OKMN-SB-ASB39-0-0070 7.0 - 7.5 192 13.5 208 NR OKMN-SB-ASB40-0-0000 0 - 0.5 NR 0.287 ND 209 OKMN-SB-ASB40-0-0015 1.5 - 2.0 0.368 0.504 0.865 206	1400
OKMN-SB-ASB40-0-0000 0 - 0.5 NR 0.287 ND 209 OKMN-SB-ASB40-0-0015 1.5 - 2.0 0.368 0.504 0.865 206	944
OKMN-SB-ASB40-0-0015 1.5 - 2.0 0.368 0.504 0.865 206	NR
	6.79
OKMN-SB-ASB40-0-0035 ASB40 3.5 - 4.0 1.41 0.496 2.26 374	22.1
OKMN-SB-ASB40-0-0055 5.5 - 6.0 2.69 0.536 1.01 133	14.0
OKMN-SB-ASB40-0-0090 9.0 - 9.5 4.46 0.513 0.777 37.9	27.3
OKMN-SB-ASB41-0-0015 1.5 - 2.0 9.80 6.99 73.6 5740	658
OKMN-SB-ASB41-0-0035 35-40 43.8 11.1 30.5 1685	723
OKMN-SB-ASB41-0-0055 ASB41 5.5 - 6.0 30.2 7.50 29.5 2350	558
	2.4 (58.1)
	0.845
OKMN-SB-ASB42-0-0015 1.5 - 2.0 ND 0.284 ND 59.7	1.03
OKMN-SB-ASB42-0-0035 ASB42 3.5 - 4.0 8.46 4.19 11.6 168.5	138
OKMN-SB-ASB42-0-0055 5.5 - 6.0 9.77 4.69 16.7 NR	222
OKMN-SB-ASB42-0-0070 7.0 - 7.5 16.8 4.14 5.16 75.6	62.9
OKMN-SB-ASB43-0-0015 1.5 - 2.0 7.39 4.28 14.1 207	53.9
OKMN-SB-ASB43-0-0035 35-40 34.8 6.63 103 3855	476
OKMN-SB-ASB43-0-0055 ASB43 5.5 - 6.0 90.6 15.7 193 5310	964
OKMN-SB-ASB43-0-0090 9.0 - 9.5 39.3 8.78 29.6 182	259

ND = Not detected at or above acceptable LOQ.

NR = Not reported due to quality control failures.

* Average values were calculated using the arithmetic mean of the primary and laboratory duplicate sample. In instances where either the primary or laboratory duplicate samples was designated "ND" the value is shown.

Note: Concentrations in parentheses are field duplicate results.

M:\ECON_530\FOLDERS.0-9\3M-OAKDALE\Dec_2006_Soil_Investigation\Table 3.xls

WADER

Table 4

Summary of Volatile Organic Compound (VOCs) Detected in Soil Samples - December 2006 Area North of Highway 5 Oakdale, MN

	4004	40000	
Demonster	ASB31	ASB32	ASB40
Parameter	7.5 - 8.0 ft bgs	5.5 - 6.0 ft bgs	8.5 - 9.0 ft bgs
	(µg/kg, ppb)	(µg/kg, ppb)	(µg/kg, ppb)
1,1,1,2-Tetrachloroethane	<920	<7900	<1800
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethane	<460 <460	<3900 <3900	<900 <900
1,1,2-Trichloroethane	3900	<3900	<900
1,1-Dichloroethane	<460	<3900	<900
1,1-Dichloroethene	<460	<3900	<900
1,1-Dichloropropene	<460	<3900	<900
1,2,3-Trichlorobenzene	<920	<7900	<1800
1,2,3-Trichloropropane	<920	<7900	<1800
1,2,4-Trimethylbenzene	12000	68000	61000
1,2-Dibromo-3-chloropropane	<920	<7900	<1800
1,2-Dibromoethane	<920	<7900	<1800
1,2-Dichloroethane	4000	<3900	<900
1,2-Dichloropropane	<460	<3900	<900
1,3,5-Trimethylbenzene	2800	15000	11000
1,3-Dichloropropane	<460	<3900	<900
2,2-Dichloropropane	<460	<3900	<900
2-Chlorotoluene	<460	<3900	<900
2-Hexanone	<920	<7900	<1800
4-Chlorotoluene	<460	<3900	<900
4-Methyl-2-pentanone	43000	70000	26000
Acetone	7900	<16000	12000
Benzene	1300	2900	1200
Bromobenzene Bromochloromethane	<920 <920	<7900 <7900	<1800 <1800
Bromodichloromethane	<920	<7900	<1800
Bromoform	<920	<7900	<1800
Bromomethane	<920	<7900	<1800
Carbon disulfide	<920	<7900	<1800
Carbon tetrachloride	<460	<3900	<900
Chlorobenzene	<460	<3900	<900
Chloroethane	<920	<7900	<1800
Chloroform	<460	<3900	<900
Chloromethane	<920	<7900	<1800
cis-1,2-Dichloroethene	<460	<3900	<900
cis-1,3-Dichloropropene	<460	<3900	<900
Dibromochloromethane	<920	<7900	<1800
Dibromomethane	<920	<7900	<1800
Dichlorodifluoromethane	<920	<7900	<1800
Ethylbenzene	54000	200000	56000
Isopropylbenzene	1300	<7900	<1800
m&p-Xylenes	120000	450000	120000
Methyl Ethyl Ketone	37000	<7900	<1800
Methylene chloride	<920	<7900	<1800
Methyl-tert-butyl-ether (MTBE)	<920	<7900	<1800
n-Butylbenzene	<460	<3900 <7900	<900
n-Propylbenzene	1300		3300 51000
o-Xylene p-lsopropyltoluene	50000 1000	170000 <7900	10000
sec-Butylbenzene	<460	<3900	6100
Styrene	<460	<3900	<900
tert-Butylbenzene	<460	<3900	<900
Tetrachloroethene	1200	<3900	1300
Toluene	210000	1100000	420000
trans-1,2-Dichloroethylene	<460	<3900	<900
trans-1,3-Dichloropropene	<460	<3900	<900
Trichloroethene	4100	13000	<450
Trichlorofluoromethane	<920	<7900	<1800
Vinyl Chloride	<230	<2000	<450
Percent Solids	89.0	92.1	82.5
ualka – micrograms por kilogram			

µg/kg = micrograms per kilogram ppb = parts per billior < = Result is not detected at or greater than the given reporting limit.

WESTEIN

Table 5 Summary of Organic Vapor Meter (OVM) Readings - December 2006 Area North of Highway 5 Oakdale, MN

				OVM Sc	reening	Data for	Soil (par	ts per mi	llion)				
Depth (ft bgs)	ASB31	ASB32	ASB33	ASB34	ASB35	ASB36	ASB37	ASB38	ASB39	ASB40	ASB41	ASB42	ASB43
0-1	1.9	3.3	3.3	3.3	4	11	3.3	11.2	3.3	1.9	3.3	3.2	1.9
2-3	435	946	333	599	743	613	33	45	152	1.9	792	40	171
4-5	1054	1241	872	1269	674	567	145	481	705	47	863	15	555
6-7	698	1339	984	1116	603	455	408	94	9	115	324	15	524
8-9	NS	NS	1146	877	892	529	NS	148	5	648	209	24	782
10-11	1213	1202	937	994	756	557	443	391	4.6	820	172	35	173
12-13	341	341	145	207	756	550	504	688	4.6	262	50	23	142
14-15	341	214	45	20	NS	334	226	156	4	66	20	11	50
DTW	NA	12	11.2	13.2	NA	14	12.5	13.2	12.7	8.2	13	10.5	13.2
BTD	15	15	15	15	15	15	15	15	15	15	15	15	15

ft bgs = feet below ground surface

DTW = depth to water (ft bgs)

BTD = boring total depth (ft bgs)

SoilsRept_Tables.xlsTable5



Table 6 Initial Screening of Technologies and Process Options - Soil Oakdale, MN

General Response Action	Remedial Technology Types	Process Options	Description	Screening Comments
Removal	Excavation	Excavation	Excavate impacted soil from the site	Retained for further screening
	Chemical treatment	Oxidation/reduction	Treat impacted soil with a chemical oxidation/reduction technology	Not feasible due to the lack of existing technologies proven to effectively treat/destroy FCs
Treatment	Physical	Solidification/ stabilization	Mixing of impacted soil with a stabilizing agent such as cement kiln dust (CKD) to prevent the leaching of constituents	Not feasible due to the fact that stabilization has not been proven to reduce leaching of FCs and this technology type would result in a significant volume increase
	Biological	Anaerobic/aerobic	Treat impacted soil with a biological technology to break down constituents using a microbial population	Not feasible as FCs are recalcitrant compounds and to date, there have been no microbial populations identified that can significantly affect the biodegradation of FCs
	Thermal	Incineration	Treat impacted soil by incineration to destroy constituents	Retained for further screening
Disposal	Landfill	New	Dispose impacted soil in a newly constructed/dedicated landfill	Retained for further screening
Disposai	Landin	Existing	Dispose impacted soil in an existing regulated landfill	Retained for further screening
Containment	Con	Soil/clay	Installation of soil/clay cover over impacted soil to prevent direct contact and/or reduce infiltration	Retained for further screening
Containment	Сар	Engineered cap	Installation of a multilayer engineered cap over impacted soil to prevent direct contact and reduce/eliminate infiltration to impacted soil	Retained for further screening
Institutional	Access restrictions	Deed restrictions	Deed for the Site property would include restrictions on soil disturbance	Retained for further screening
Site Controls	Access restrictions	Fencing	Install fence around site to limit acess to impacted soil	Retained for further screening
No Action	None	Not applicable	No action	Retained for a baseline comparison

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Table 7 Initial Screening of Technologies and Process Options - Groundwater

Oakdale, MN

General Response Action	Remedial Technology Types	Process Options	Description	Screening Comments
	Groundwater recovery	Groundwater recovery wells	Install wells for extraction of impacted groundwater	Retained for further screening
Collection	Subsurface drain	Interceptor trench	Install subsurface perforated pipe surrounded by porous media to collect impacted groundwater	Not feasible in areas where there is an ongoing groundwater pumping system operating at the site and this technology would interfere with its effective implementation. Will be considered for areas outside of pumping influence.
		Carbon adsorption	Adsorption of constituents onto activated carbon by passing impacted groundwater through vessels containing activated carbon	Retained for further screening
Treatment	Physical	Ion exchange resin	Adsorption of constituents onto ion exchange resin by passing impacted groundwater through vessels containing ionic resin	Retained for further screening
		Reverse osmosis	Separation process that uses pressure to force water through a membrane that retains the solute on one side and allows water molecules to pass to the other side.	Retained for further screening
		Air stripping	Mix large volumes of air with water in a packed column or tray stripper to promote transfer of constituents to air	Retained for further screening for removal of VOCs
Discharge	On-site	Local stream	Discharge extracted groundwater to a local stream	Not feasible as the existing groundwater extraction system is already set up to discharge to the POTW
	Off-site	POTW	Discharge extracted groundwater to the POTW	Retained for further screening

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Table 7 Initial Screening of Technologies and Process Options - Groundwater (continued)

Oakdale, MN

General Response Action	Remedial Technology Types	Process Options	Description	Screening Comments
		Soil/clay	Installation of soil/clay cover to reduce infiltration to groundwater	Retained for further screening
	Сар	Engineered cap	Installation of a multilayer engineered cap over impacted soil to reduce/eliminate infiltration to groundwater	Retained for further screening
Containment	Vertical barriers	Slurry wall	Trench around impacted groundwater is filled with a soil bentonite slurry to cut off horizontal groundwater flow and contain impacted groundwater	There is an ongoing groundwater pumping system operating at the site and this technology could interfere with its effective implementation. Also, the location of Highway 5 through the subject area would prevent installation of a continuous wall. However, this technology is being retained for further screening for limited application in areas not influenced by pumping.
	venicai darriers	Sheet piling	Sheets of steel are driven into bedrock around the impacted groundwater area to cut off horizontal groundwater flow and contain impacted groundwater	There is an ongoing groundwater pumping system operating at the site and this technology could interfere with its effective implementation. Also, the location of Highway 5 through the subject area would prevent installation of a continuous wall. However, this technology is being retained for further screening for limited application in areas not influenced by pumping.

M:\ECON_530\FOLDERS.0-9\3M-OAKDALE\Dec_2006_Soil_Investigation\T_6_TechnologyEvaluation.xls,Groundwater



Table 7 Initial Screening of Technologies and Process Options - Groundwater (continued) Oakdale, MN

General Response Action	Remedial Technology Types	Process Options	Description	Screening Comments
	Chemical	Oxidation/reduction	Treat impacted groundwater with a chemical oxidation/reduction technology	Not feasible due to the lack of existing technologies proven to effectively treat/destroy FCs
	Biological	Aerobic/anaerobic	Treat impacted groundwater with a biological technology to break down constituents using a microbial population	Not feasible as FCs are recalcitrant compounds and to date, there have been no microbial populations identified that can significantly affect the biodegradation of FCs
	Off-site	POTW	Extracted groundwater discharged to POTW for treatment	Retained for further screening
Treatment		Aeration	Sparging of air down wells into the groundwater to volatilize constituents from the groundwater	Not feasible since FCs do not have Henry's Law Constants in the range acceptable for this technology and do not readily transfer from the water to air phase
	In situ	Permeable treatment/reactive barriers	Downgradient trench filled with adsorptive or reactive media (e.g., activated carbon or zero valent iron) to remove constituents from the groundwater.	Not feasible as there is an ongoing groundwater pumping system operating at the site this technology would interfere with its effective implementation; this technology is of uncertain effectiveness and could require multiple replacement of trench materials over time as they are spent
		Chemical injection	Inject chemicals into the groundwater by means of wells to treat impacted groundwater	Not feasible due to the lack of existing technologies proven to effectively treat/destroy FCs and the reduced ability to control injectate flow in a heterogeneous subsurface geology

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Table 7 Initial Screening of Technologies and Process Options - Groundwater (continued) Oakdale, MN

General Response Action	Remedial Technology Types	Process Options	Description	Screening Comments
	Access restrictions	Deed restrictions	Deed for the Site property would include restrictions on installation of groundwater supply wells	Retained for further screening
Institutional Controls		lencing	Install fence around site to limit access to impacted groundwater/surface water ponds	Retained for further screening
	Alternate water supply	Bottled water/public water	Supply alternate water source	Retained for further screening
	Monitoring	Groundwater monitoring	Continue groundwater monitoring at wells	Retained for further screening
No Action	None	Not applicable	No action	Retained for a baseline comparison

POTW - Publicly-owned treatment works

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APPENDIX A SOIL BORING LOGS – AREA NORTH OF HIGHWAY 5

ASB31 through ASB43 (2006) GP01 through GP08 (2005)

N MORT

OKMN Site Assessment Investigation Oakdale, MN OVERBURDEN BORING LOG

													SITE ID: ASB31
CLIENT ;			Confidential	ontial									Page 1 of 1
SITE NAME:	15	U	Oakdale, MN	e, MN						بنر	ELEV (GND) ^b		1014.01
PROJECT NO.:	ö	lel.	18121	02181-202-005-0001	1000					 4	NORTHING		
Area Name:		•	Abresc	h Site - N	Abresch Site - N. of Hwy 5						EASTING:		464631.6899 Location Type: (X)
Drilling Contractor: Drilling Pontinnent:	ractor: ament:	•	Track Probe	Matrix Environmental Track Probe	apental	ŧ				đĮ	Depth to Water (ft bgs)		(X) Soil Boring () Other:
Logged By:		• •	Thu Walls	Ns.						Dept	t oue norme wepm (it bgs): Depth to Refusal (it bgs):		Completion Type: (
Site Description:	:00	12	n clean	sd area no	In cleared area north of Hwy 5.	ī				1201) 1201	Boring Diameter (inches):		(X) Abandoped by G (,) Other (Provide C
			учегу	ature	yot		Grain Size	e e e e e e e e e e e e e e e e e e e	ណ្ដូ ស្	MIA	սաո Bսյյ	bjeq	
	Sample Interval	e la la	୦୦୫ମ	ioM	ò				eute	0		urs.	
	(U bgs)		3		hunseleetus	ĕ	5	8		ars.			Littic Description
0-3	0									1.9		×	
	1	6										×	M DAVIES AND
	3		100		5YR 6/8	10	09	10 20	Stiff	435.0	<u>.</u>		Reddish yellow clayey f.g. to m.g. sand
3.5	6											×	
	4	16	95	Ъ Д	10R 4/1	in a second	<u> </u>	15 20		1054.0		*	Dark gray silty clayey sand, solvent odor
5-10	N.	6										×	12
	9	7								698.0			
	7	8										X	
-	8	6								NS			
,	0	10	50	Dry	5YR 6/8	10	50 1	10 30	Soft				Reddish yellow clayey sand, solvent odor
10-12	10	11								1213.0			******
		12	8	Mst	5YR 6/8		60 1	10 20	Soft				As above, litnestone obstruction at base, solvent odor
12-15		13								341.0			1444 Meter and 444 Meter and 1444 Meter and 1444 Meter and 444 Meter and 1444 Meter and 144
1 VII 46 171 IND 170401 110 100		14											ĸŔĸĸĿĨĸĸŀĸĸŀĸĸŀĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸĸ
		İ-	75	Mst	SY 6/1	0	15 2	20 65	Soft	341.0			Gray silv sandy clay, green staining at 14 fbgs Boring terminated
												**	at 15 feet.
f.g. n.g., c.g.: Fine, Medium-, and Coarse guin size	e. Medint	m-, and C	Coarse-gr	ain size	X: FC Sample		V: VOC	V: VOC Sample					

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OVERBURDEN BORING LOG^{akdale, MN}

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Murreel cr st cr Units Soft 3.3 X Y 5YR 4/6 10 75 10 15 Soft 3.3 X Y 5YR 4/6 10 75 10 15 Soft 3.3 X Y 5YR 4/2 10 55 15 20 Stiff 1241.0 X Y 5YR 4/2 10 55 15 20 Stiff 1241.0 X Y 10YR 2/1 0 60 30 10 Soft X Y Y Y 2.5Y 2.5/1 0 40 20 Soft 1202.0 X Y <td></td> <td></td> <td>Кесолеку</td> <td>Moisture</td> <td>Colot</td> <td>Ō</td> <td>ein S</td> <td>ize</td> <td>Strength</td> <td>WAO</td> <td>nmuloD</td> <td>paiqmae</td> <td></td>			Кесолеку	Moisture	Colot	Ō	ein S	ize	Strength	WAO	nmuloD	paiqmae		
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SY 4/2 0 40 5 55 Soft 214.0	*****	4												
	-		1	Wet	5Y 4/2	0			Soft	214.0		~	Diive gray f.g. sandy clay, wet at 12 fbgs	
	1											╝	Boring terminated at 15 fbgs.	



OKMN Site Assessment Investigation OVERBURDEN BORING LOGakdale, MN

													SITE ID ASB33	
CLIENT :			Confidential	ntiał		1.							Page 1 of 1	
SITE NAME:			Oakdale, MN	ı, MN							ELEV (GND) ^b		DATE:	4-Dec-2006
PROJECT NO.:	,	-1	12181-2	02181-202-005-0001	100					pin.	NORTHING:		92073.9564	
Area Name:		•	Abresch	Site - N.	Abresch Site - N. of Hwy 5						EASTING:		783 Location Type: (X	Well
Drilling Contractor:	sctor:	•	Matrix	Matrix Environmental	vental					Dep	Depth to Water (R bgs)	(Sž	(X) Soil Boring () Other:	
Driling Equipment: I see Ry:	ment:		Tim Wolle	robe a.						Total	Total Boring Depth (A bgs) Tests to Petroni (a bes)-	(88)	(X.) Overburden () Maadersin Wall) Bedrock n
		•1								Bortn	Boring Dianeter (Inches):		(X) Abandoned by G	Grout
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9.8-10.8	9.8	10.8	100	Mst	2.5Y 2.5/1		104	40 50) Soft				Black silty clay	
10.8-14.1	~	11								937.0				
		12												
		13								145.0				
	13 1	14.1	70	Wet	5Y 4/2	0	4	5 55	5 Soft	45.0			Olive gray f.g. sandy clay, wet at 11.2 fbgs	
14.1-15	14	15												
f.g. m.g. c.g.: Fitte, Medium, and Coarte-grain size	-, Medim	m, and	Coante-ga	tain size	X: FC Sample		V: VOC Sample	C Sampl	9					

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OKMN Site Assessment Investigation OVERBURDEN BORING LOG

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CLIENT:		~1	Confidential	ntial								Ĩ	Page 1 of 1
SFIE NAME:		0	Oakdale, MN	e, MN						1	ELEV (GND) ^b		
PROJECT NO.:	ő	10	2181-2	02181-202-005-0001	001					۲.,	NORTHING:		192114.0458
Area Name:			bresch	Abresch Site - N. of Hwy	. of Hwy 5						EASTING:		464541,479 Location Type: (X
Drilling Contractor:	ractor:	-	fatrix	Matrix Environmental	nental	1				đ	Depth to Water (ft bgs)	-	13.2 ((X) Soil Boring () Other:
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ł	m	4									~	\times	
	4	N)	75	Mst	5YR 3/2		60 15	5 20	Stiff	1269.0		<u> </u>	Dark reddish brown silty clayey sand, strong unknown odor
5-10	ŝ	ç										×	
	9		100	Mst	5YR 4/6	0	60 10) 20	Soft	1116.0			Yellowish red clayey sand, strong odor
	۲	~											-
	æ	6								877.0		×	
		10	70	Mst	2.5Y 2.5/1	0	5 80) 15	Soft				Black clayey silt, former grass horizon (grade) at 8.5 fbgs, strong
10-12	10	11								994.0		0	odor, roots accounting to the second se
	11	12	18	Mst	5YR 4/6	10	60 10) 20	Soft			~	Yellowish red clayey sand, strong odor
12-15		13				i				207.0			
		14											
	4	ri Vi	75	Wet	10YR 5/1	0	20 15	5 5	Soft	20.0			Gray silty sand, wet at 13.2 fbgs, green staining at 12.5, odor
												щ	Boring terminated at 15 fbgs
f.g. m.g., c.g.: Fine, Medium-, and Coarse-grain size	e, Mediu	m., and	Coarse-p	min size	X. FC Sample		V: VOC Sample	Sample					

02181-202-004-0001

NUMBER

OKMN Site Assessment Investigation OVERBURDEN BORING LOG

													SITE ID: ASB35
CLENT:		~1	Confidential	ential									Page 1 of 1
SITE NAME:		Ŷ	Oakdale, MN	e, MN		ŧ					ELEV (GND) ^b	1010.76	į
PROJECT NO.:	, . ,	1-1	12181-2	02181-202-005-0001	1000					F -1	NORTHING:	192021,0826	
Area Name:			Ahresel	h Site - N	Abresch Site - N. of Hwy 5						EASTING:	46443.6215	Location Type: (X)
Drink Contractor:	NCLUT:		Matrix	Matrix Environmental	nnental					Dep	Depth to Water (ft bgs)		(X) Soil Baring () Other:
Drumg Equipment: Logged By:	ment:	-1-1	LTack Probe Thm Walls	Trobe Ms						Total	Total Boring Depth (ft bgs) Depth to Refusal (ft bgs):	12	Completion Zone: (X) Overburden (Completion Type: () Monitoring Well
		1-	.							Boria	Boring Diameter (inches):		÷
sue Description:	191	7	n cleart	ed area n	in cleared area north of Hwy 5.								() Other (Provide Comments)
			DVOLY	sitte	iot	Ċ	Grain Stra	54	ц іби	W	pəjd uwn 6uµ		
	Sample Interval	<u> </u>	Reco	ioM	9 0 .				eute	10	Coli		
	(ft hgs)		(%		kansel	ğ	6	8		Unite			Lithic Description
0-1	•		100	D D	5YR 5/6	10	70 1	10 10	Soft	4.0	x	Xellowish red sand	
1-4	į			Dr.	10YR 2/1	0	60 2	20 10	Stiff		×	(Black silty sand, odor	odor
		en								743.0			
	e	4									×		
4-5	*	8	70	Mst	5YR 5/6	01	70 1	15 5	Soft	674.0		Yellowish red silty sand,	odor
5-8	w.	9	100	Mst	10YR 2/1	0	60 3	30 10	Soft		×	Black silty	numerous and of the second
	9	7								603.0			
1.2.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	7	×										120101010101010101010101010101010101010	
8-9	se i	•	95	Mst	Gley2 10G 4/1	0	60	5 35	Soft	892.0	×	Α	-
10-12	•	10		Mst		0	50 5	5 15	Soft			Dark greenish	Dark greenish gray sand with oily liquid and debris, strong odor
	10									756.0			
A 67.2 VALUE OF A 64.4 IN MAY OF A 64.4 VALUE OF A		12										1940) 2014 1941 1941 1941 1941 1941 1941 1941 1	
12-14		13	ę	Wet	Gley2 5BG 4/1	s		50 10	Soft	756.0		Dark greenish	gray silt, wet at 12 fbgs, odor
	13	14											יה השיק או אין
14-15		ŝ	8	Wet	Gley2 5BG 4/1	0	5 85	5 10	Soft	SN		Dark greenish gray silt, odo	Dark greening gray silt, odor
												Boring termin	
(g. m.g., c.g.) Fine, Medium-, and Coarse-grain size	Media	31-, and (Coance	ain size	X: FC Semple		VOC	V: VOC Sample					

6/4/2007

د. المحمد المحمد المحمد الم

WIN Stie Assessment Investor

OKMN Site Assessment Investigation OVERBURDEN BORING LOG Midale, MN

					-								SITE ID: ASB36
CLIENT		Cel	Confidential	tial									Page 1 of 1
SFIE NAME: PROJECT NO.	č	0a 021	Oakdale, MN 02181-202-00	Oakdale, MN 02181-202-005-0001	ų					ΞZ	ELEV (GND) ⁵ NORTHING:		1014.37 DATE: 4-Dec-2006 192098.4142
Area Name: Drilling Contractor: Drilling Equipment:	actor: ment:	: 1 위 키 리 i	Abresch Site Matrix Envir Track Probe	Abresch Site - N. of Hwy Matrix Environmental Track Probe	f Hwy S ntal					Dept Total B	EASTING: Depth to Water (It bgs) Total Boring Depth (It bgs)		464403.8252 Location Type: (X) (X) Soll Borthg. () 15 Completion Zone: (X)
Logged By: Site Description:	2004		I im Walls In cleared a	s area north	1 im Wells In cleared area north of Hwy 5.					Depth Barin	Depth to Refusal (ft bgs): Berling Diameter (inches):		3 Completion 17 pc: () Montioning Weil 3 (X) Abardoned by Grout () Other (Provide Comments)
	Sample	J	Весолегу	Molsture	Color	ō	Grain Size	<u>o</u>	Strength	MVO	nmuloð Boňng	bəlqma2	
	(ft bgs)	-	(%)		kunsel	ð	6 8	ō		Units		Ĩ	Lithic Description
0-3.5			 				[11.0		×	
	1 2				M E Y 1 F 4 F 4 F 7 F 7 F 7 F 7 F 4 F 7 F 7 F 7							×	
	2 3.5			D. D.	5YR 5/6	0	60 10	20	Soft	613.0			Yellowish red clayey sand with paper and plastic debris
3.5-10	3.5 4											×	
	4 5									\$67.0			
	9 5											×	
	6 7									455.0			
	7 8							`					
	8 6									529.0			
	9 10			Mst	5YR 5/6	10 6	60 10	20	Soft			×	Yellowish red clayey sand with black debris (coal ?), strong odor
10-15										557.0	i		
	11 12	5											
	12 13	~								\$50.0			
	13 14	ষ											
	14 15		100	Wet	10YR 3/1	0 80	80 10	10	Soft	334.0	<u></u>		V. dark gray f.g. to m.g. sand, wet at 13 fbgs, red stain at 12.8 fbgs
f.g. m.g. r.g.: Fine, Medium-, and Course-grain size	> Medium-	and Co.	ine-grai	a size	X: FC Sample	>	V: VOC Sample	all l					

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OKMN Site Assessment Investigation OVERBURDEN BORING LOG

Confidential Confidential Galdade, MN Oddade, MN Oddade, MN Oddade, MN Oddade, MN Marterial Site - N of Tity 5 Track Probe Track Probe <th></th> <th>STTE ID: ASB37</th>													STTE ID: ASB37						
Altric intercent in the contraction of	CLIENTI		Coe	fidentia															
OCUPATING: A life of the colspan="2">COUNTING: A life of the colspan="2" life of the colspa="2" life o	FIE NAME:		Oak	idale, M	N	ļ					ELEV (GND) ^b		DATE						
In Marchine States - North Hay 5. ExATTING: PARTING: PAR	ROJECT NO		021	81-202-(005-0001						NORTHING:	•							
Matrix Environmental Time Active Devicemental In cleared area north of Hay 5. Total Regin by the biological in cleared area north of Hay 5. Total Regin by the biological is the field area north of Hay 5. Total Regin by the biological is the field area north of Hay 5. Total Regin by the biological is the field area north of Hay 5. Total Regin by the biological is the field area north of Hay 5. Total Regin by the biological is the field area north of Hay 5. Total Regin by the biological is the field area north of Hay 5. Total Regin biological is the field area north of Hay 5. Total Regin biological is the field area north of Hay 5. Total Regin biological is the field area north of Hay 5. Total Regin biological is the field area north of Hay 5. Total Regin biological is the field area north of Hay 5. Total Regin biological is the field area north of Hay 5. Total Regin biological is the field area north of Hay 5. Total Regin biological is the field area north of Hay 5. 1	rea Name:		A P	esch Sit	e - N. of Hwy 5					i	EASTING:		8.4251 Location Type: (X) GeoProbe () Well						
Tim Walks Partial marks in the second of the second marks in the second mark in th	riting Contry	ICTOT:	Ē,	AUG AL	ironnental *						epth to Water (f) bg. 		(A) Sold Boring () Unter: Consisting Zones (Y) Overhanden ()						
In cleared arm north of Hwy 5. 3 In cleared arm north of Hwy 5. 3 The cleared arm north of Hwy 5. Go Go fination 3 The cleared arm north of Hwy 5. Go Go fination 3 <th 3"3<="" colspan="6" td=""><td>rung aququ egged By:</td><td>1101</td><td></td><td>Walls</td><td>R.</td><td></td><td></td><td></td><td></td><td>ĔĔ</td><td>at borring Lepua (a. f. pth to Refusal (ft bg:</td><td></td><td>Completion Type. () Monitoring Well</td></th>	<td>rung aququ egged By:</td> <td>1101</td> <td></td> <td>Walls</td> <td>R.</td> <td></td> <td></td> <td></td> <td></td> <td>ĔĔ</td> <td>at borring Lepua (a. f. pth to Refusal (ft bg:</td> <td></td> <td>Completion Type. () Monitoring Well</td>						rung aququ egged By:	1101		Walls	R.					ĔĔ	at borring Lepua (a. f. pth to Refusal (ft bg:		Completion Type. () Monitoring Well
In cleaned area north of Hey 3. Gold of effect with of Hey 3. Grain Size math of Hey 3. Grain Size math of Hey 3. Grain Size math of Hey 3. Strength of Boring math of Boring						1				Bo	ring Diameter (inche								
Sample Intriversion (irbiso) FP P GO Gain Size (irbiso) Size	te Descriptie.	ä	рс	leared at	ra north of Hwy 5.														
Intervation intervation $\overline{\mathcal{Z}}$ $\overline{\mathcal{Z}}$ $\overline{\mathcal{Z}}$ $\overline{\mathcal{Z}}$ $\overline{\mathcal{L}}$ <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Grain</td> <td>Size</td> <td>rtength </td> <td></td> <td></td> <td>peiqme</td> <td></td>							Grain	Size	rtength 			peiqme							
	****	Sample					di li	ŀ			3	\$							
		(Sgd.N)			Munsel				0	Ψ5	-	1	Lithic Description						
	0-2.5		1									×							
2.5 3 4 70 Dry $2.5YR 2.5/1$ 10 60 10 20 Soft 145.0 4 5 6 7 145.0 145.0 7 Reddish black claye 5 6 7 145.0 145.0 7 8 5 Mst $2.5YR 2.5/1$ 0 70 15 5 9 7 8 9 7 8 9 10 7 8 9 10 7 8 9 10 7 8 143.0 7 8 143.0 7 8 143.0 14 14 15 7 10 10 7 8 143.0 14 14 10	4-2 Stat 2014 1 1 4 4 4 4 4 5 5 5 7 1 1 4 4 4	- 5	he	· • • • • • • • • • • • • • • • • • • •		10						×	Yellowish red clayey sand						
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $										33.(0								
4 5 6 145.0 145.0 5 6 7 145.0 145.0 6 7 8 65 Mst 2.5YR 2.5/1 0 70 15 15 50ft X K 9 10 11 2.5YR 2.5/1 0 70 15 15 50ft X K 10 11 12 13 100 Wet 2.5YR 2.5/1 5 75 10 10 Soft 504.0 K <td></td> <td></td> <td></td> <td></td> <td>2.5YR 2</td> <td>10</td> <td></td> <td></td> <td></td> <td>دسور</td> <td>Î</td> <td>×</td> <td></td>					2.5YR 2	10				دسور	Î	×							
	4-8									145.	0								
												×							
7865Mst 2.5 YR $2.5/1$ 0701515SoftXReddish black silty clayey sand with8910121NSNS11 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>408.</td><td>0</td><td></td><td></td></td<>										408.	0								
8 9 10 NS NS 9 10 11 12 1 443.0 10 11 12 1 10 443.0 11 12 13 100 Wet 2.5YR 2.5/1 5 75 10 Soft 504.0 13 14 15 75 10 10 Soft 504.0 Reddish black sand, wet at 12.5 fbg. 13 14 15 75 10 10 Soft 226.0 Reddish black sand, wet at 12.5 fbg. 14 15 75 10 10 Soft 236.0 Reddish black sand, odor					2.5YR 2	0	2			مىر.			Reddish black silty clayey sand with debris, strong odor						
9 10 11 12 1 43.0 10 11 12 13 100 Wet 2.5YR 2.5/1 5 75 10 10 Sodi sodi sodi sodi sodi 11 12 13 100 Wet 2.5YR 2.5/1 5 75 10 Sodi sodi sodi	8-13									SN									
10 11 12 443.0 11 12 12 13 100 Wet 2.5YR 2.5/1 5 75 10 10 Soft 504.0 13 14 15 75 10 10 Soft 504.0 F 14 15 75 Wet 2.5YR 2.5/1 5 75 10 10 Soft 504.0 14 15 75 Wet 2.5YR 2.5/1 5 75 10 10 Soft F			6																
11 12 12 13 100 Wet 2.5YR 2.5/1 5 75 10 Soft 504.0 Reddish black sand, wet at 12 13 14 15 75 Wet 2.5YR 2.5/1 5 75 10 Soft 504.0 Reddish black sand, wet at 12 13 14 15 75 Wet 2.5YR 2.5/1 5 75 10 Soft 226.0 Reddish black sand, odor 14 15 75 Wet 2.5YR 2.5/1 5 76 10 Soft 226.0 Reddish black sand, odor										443.	Q								
12 13 100 Wet 2.5YR 2.5/1 5 75 10 Soft 504.0 Reddish black sand, wet at 1. 13 14 15 75 Wet 2.5YR 2.5/1 5 75 10 10 Soft 226.0 Reddish black sand, odor 14 15 75 Wet 2.5YR 2.5/1 5 75 10 10 Soft 226.0 Reddish black sand, odor			2																
13 14 14 15 75 10 10 Soft 226.0 Reddish black sand, odor 14 15 75 10 10 Soft 226.0 Reddish black sand, odor 14 15 75 10 10 Soft 226.0 Reddish black sand, odor						5	75				0		wet at 12.5 fbgs, some debris, strong						
15 75 Wet 2.5YR 2.5/1 5 75 10 10 Soft 226.0 Reddish black sand, odor Boring terminated at 15 fbgs.			**																
						3	75	i											
							<u></u>						bgs.						

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North March

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NTRUM N

OKIMN Site Assessment Investigation OVERBURDEN BORING LOG

													SITE ID: ASB39
CLIENT		ľ	Confidential	ntial		l							Page 1 of 1
STTE NAME:	_	10	Oakdale. MN	NM A							ELEV (GND) ^b	1012,81	DATE: 4-Dec-2006
PROJECT NO.:	ð	10	2181-2	02181-202-005-0001	0001					£.,	NORTHING:	192135.8501	9905511-4194511[6-1489]454894455216715
Area Name:			\ bresch	1 Site - N	Abresch Site - N. of Hwy 5	. .					EASTING:	464479.5481	Location Type: (X) GeoProbe () Well
Drilling Contractor:	ractor:		Matrix	Matrix Environmental	mental					Dep	Depth to Water (ft bgs)		(X) Soil Boring () Other:
Dritting Equipment: Logged By:	ament:	-[-]	Tim Walls	robe IIs		. ,				Total Dept	Total Boring Depth (ft bgs) Depth to Refusal (ft bgs):		Completion Zone: (Completion Type: (
Site Description:	an:	1-	n cleare	d area m	Boring In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP04.	ed in v	icimity	of pre	vious bor	born ing GPO	Boring Diameter (inches): GPO4.	аннония (1999). Электрополистика	() Other (Provide Connerts)
			Лелл	einis	olor	đ	Grain Size	5	цібиє	WA	pəjdu uwnj Buja		
	Sample	e je	39 H	юМ	co				45	0	00		
	(u bgs)	(5)	(%)		Nunsel	ö	8 S	õ	1020-00-00	Units	****	2115	Lithic Description
0-3	•									3.3			
		2									×		
	2	•	100	D D	5YR 4/6	10	70 1	10 10	Soft	152.0		Yellowish red f.g.	sand
3-5	1 00	4									×		
	4	w	8	D. D	5YR 4/2		60 1	10 25	Soft	705.0		Dark reddish gra	gray clayey f.g. sand, cdor
5-7	v,	9									×		
	Ŷ	~	8	Mst	5YR 4/6		E0 1	10 20	Soft	0.6		Yellowish red cl	Yellowish red clayey f.g. sand, odor
7-9	5	80									×		
	80	6	10	Mst	Gley2 10BG 2.5/1	0	40 1	10 50	Soft	5.0			Bluish black sandy clay, some debris, odor
9-10	\$	10	95	Mst	na		10 0	0 0				_	
10-11	E0	11	100	Mst	Gley1 10GY 5/1		80	5 10	Soft	4.6		Gray f.g. to m.g.	Gray f.g. to m.g. sand
11-15	11	12											
	12	13											
		4											
	14	15	70	Wet	5YR 4/3		80 5	5 10	Soft	4.0		Reddish brown f.g. to m.g. sand,	g. to m.g. sand, wet at 12.7 fbgs
												Boring terminated at 15 fbgs	
f.g. m.g., c.g.: Flue-, Medium-, and Coarse-grain size	e-, Medin	m-, and	Coarse-gr	taka sige	X: FC Sanple	Í	Х V	V: VOC Sample		ŀ			

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NENGYM

OKMN Site Assessment Investigation OVERBURDEN BORING LOG

												SITE ID: ASB40
CLIENT: CLIENT: PROJECT NO.: Area Name: Drilling Equipment: Logged By: Site Description:	or: nt:	Confidenti Confidenti Oakdale, N 02181-202 Abresch Si Matrix En Track Pro Tim Walls In cleared a	Confidential Confidential Oakdale, MN 02181-202-005-0001 Abreech Site - N. of Fly Abreech Site - N. of Fly Marix Environmental Track Probe Tim Walk In cleared area noth of	Confidential Confidential Makdale, MN 02181-202-005-0001 Abresch Site - N. of Rwy 5 Matrix Environmental Track Probe Tim Walls In cleared area north of Hwy 5.					EL NK NK Depth Depth Depth Bering	ELEY (GND) ^b NORTHING: EASTING: Depth to Water (ft bgs) Letal Boring Depth (ft bgs) Depth to Retuesal (ft bgs) Depth to Retuesal (ft bgs): Boring Diameter (inches):		Page 1 of 1 1010.67 DATE: 4-Dec-2006 192208.4476 182208.4476 182208.4476 Jare: 4-Dec-2006 44392.288 (X) Sed Boring () Other: 3 Completion Zone: (X) Overburden () Bedrock (X) Abandoned by Grout 3 () Other (Provide Comments)
	Sample Interval	Цесолецу	Moisture	Color	Ś	Grain Size	¢	Strength	WNO	pnhoð	beiqma2	
	(y bgs)	Ê		Nunsell	ື ບັ	10 10	5		chts Units	404 (119)4511611717171711411414		Lithic Description
0-5 0									1.9		×>	ann a teor i an tao main ann an Arran an Arran an Arran an Arran an Arran an Arra
1						· · · ·			1.9		<	
C. C.	4					<u> </u>					X	
*	1 0	8	Dry	5YR 4/4	0	60 10	20	Stiff	46.8		μĸ	Reddish brown clavey m.g. sand, odor
5.6	2	8	ļ	5YR 4/6	10 6	60 10	8	Stiff			X	Reddish brown clavey m.g. sand, odor
9 (-9		8		Gley1 10GY 5/1	wn.	·		Soft	115.0			Greenish gray clay, odor
7-10 7	00 50							1000110011001				
	80 6							-	648.0		>	
6) 10		Wet	Gley1 10GY 5/1	10 5	55 10	25	Soft			X	Greenish gray clayey m.g. to c.g. sand, strong odor, wet at 8.2 fbgs
10-15	10 11								820.0			
	11 12									<u>2</u>		
4	12 13								262.0			
1440 1940 1940 1940 1940 1940 1940 1940	14 15	100) Wet	5YR 4/2	10 6	60 10	2	Soft	66.0	<u> </u>		Dark reddish gray clayey sand, strong odor
												Boring terminated at 15 fbgs.
f.g. m.g., c.g.). Flate, Medium-, and Coarse grain size	Medium	and Coar	te-grain size	X; FC Sample	1	V: VOC Sample	Sample					

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OKIN Sie Assessment Investigation OVERBURDEN BORING LOG

Confidential Contrained files Constructed in vicinity of previous boring GP0s Constructed in vicinity of previous boring GP0s Constructed in vicinity of previous boring GP0s Contracted in vicinity of previous boring GP0s <													
Circulation ELEV (GND) ⁵ Oblidate, MN ELEV (GND) ⁵ District Dispension ELEV (GND) ⁵ District Dispension Contract Dispension District Dispension Display a Ware of Bay Display and the poly Display a Ware of Bay Display and the Early of protein and the poly Display a Ware of Bay Display and the Early of protein and the poly Display a Ware of Bay Display and the Early of protein and the Early of	CLIENTI		Cent	dential									
Theref Early 5. RATING: Application of the water (helps) The first first interemental Thread in which is the water (helps) Thread Freebo Thread Free transment of	ITTE NAME:	-	Oakd	ale, MN	. anat					M Z	LEV (GND) ¹	_	
IT Track Frehe Task Brone Depth (if bg) This the frehe The Reneal (if bg) The Kers north of Hwy 5. Constructed in vicinity of previous boring GP0s. In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP0s. A frequencies in vicinity of previous boring GP0s. In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP0s. X In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP0s. X In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP0s. X In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP0s. X In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP0s. X In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP0s. X In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP0s. X In cleared area Color Go Dy In cleared area Solity 200 A 70 Msi 57 5 5 In cleared area 5 6 100 101 102.0 2 102	trea Name: Prilling Contr	actor:	Abre	sch Site - ix Enviro	Hwy					Dept	EASTING: h to Water (ft b		13. 1. 1. 1. 1. 1. 1. 1. 1
In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP08. Animple Recovery 7 Noise Mol sture Noise Mol sture No In cleared area north of Hwy 5. Constructed in vicinity of previous boring GP08. Recovery 1 100 Dry 5 YR 5/6 10 70 No 13 Y Y 2 100 Dry 5 YR 5/6 10 70 10 10 201 7 Y Y 3 2 100 Dry 5 SYR 5/6 10 7 7 Y Y 7 7 Must 10YR 2/1 0 60 20 10 7 Y Y 7 7 Mist 5/YR 5/6 10 7 7 2 10/YR 2/1 0 60 20 10 <th>rilling Equip ogged By:</th> <th>ment:</th> <th>Trac</th> <th>k Probe Walls</th> <th></th> <th></th> <th></th> <th></th> <th></th> <th>Total I Depth</th> <th>Soring Depth (f) • to Refusal (f) b • Dismates (ind</th> <th></th> <th></th>	rilling Equip ogged By:	ment:	Trac	k Probe Walls						Total I Depth	Soring Depth (f) • to Refusal (f) b • Dismates (ind		
Sammple interval interval F Color Grain Size interval Strength St	ite Descriptic	1	In cle	ared area	north of Hwy 5. Construct		îcinity	r of pr	evious bor	ing GP06			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Sample	ļ	Molsture	Color	G	rain	97X	Strength	WNO		beigmeß	
		(u bgs)		berneline en ser se	Munsel	δ	H			Units			Lithic Description
	0-1	6	<u>8</u>							3.3			Yellowish red sand
	1-2	7		·····			ļ					×	odor
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	2-4									792.0			
4 5 6 100 Mst 10YR $2/1$ 0 60 30 10 Soft 863.0 7 8 7 0 60 30 10 Soft 324.0 7 8 9 95 Mst Gley2 10G 4/1 0 60 5 35 Soft 209.0 5 9 10 11 12 10 11 172.0 X 10 11 12 1 172.0 172.0 X 50.0 172.0 11 12 13 14 15 70 Wet Gley2 5BG 4/1 0 5 50.0 10 X					5YR 5/6		ž					×	Yellowish red silty sand, odor
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	4-6									863.0			
7 8 7 324.0 7 8 9 95 Mst Gley2 10G 4/1 0 60 5 35 Soft 209.0 5 9 10 11 12 1 172.0 172.0 11 12 13 14 50.0 5 55 50.0 X 13 14 15 70 Wet Gley2 5BG 4/1 0 5 55.0 50.0		· · · · ·			10YR 2/1				-			×	Black silty sand, odor
7 8 9 95 Mst Gley2 10G 4/1 0 60 5 35 Soft 209.0 5 9 10 11 1 172.0 172.0 X 10 11 12 13 14 15 70 Soft 209.0 13 14 15 70 Wet Gley2 5BG 4/1 0 5 85 10 10	6-9									324.0			
8 9 95 Mst Gley2 10G 4/1 0 60 5 35 Soft 209.0 9 10 11 12 1 172.0 172.0 X 10 11 12 13 1 2 3 2 3													
9 10 11 172.0 10 11 12 13 11 12 13 50.0 12 13 14 50.0 13 14 15 70 14 15 70 Wet Gley2 5BG 4/1 0 5 85 10 Soft 20.0					Gley2 10G 4/1			·		209.0			Dark greenish gray clayey sand, odor
10 11 172.0 11 12 172.0 12 13 14 13 14 50.0 14 15 70 15 70 Wet 14 15 70	9-15											×	
11 12 13 50.0 12 13 14 50.0 13 14 15 70 14 15 70 12 10 58 13 14										172.0			
12 13 50.0 13 14 50.0 14 15 70 14 15 70													
13 14 13 14 15 70 Wet Gley2 5BG 4/1 0 5 85 10 Soft 20.0 E E										50.0			, , , , , , , , , , , , , , , , , , ,
14 15 70 Wet Cley2 5BG 4/1 0 5 85 10 Soft 20.0 Dark greenish gray silt, wet at 13 fbgs Boring terminated at 15 fbgs. Boring terminated at 15 fbgs. Boring terminated at 15 fbgs.													
						0				20.0			Dark greenish gray silt, wet at 13 fbgs
										-			Boring terminated at 15 fbgs.



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المعتقر والمحافظ

OVERBURDEN BORING LOG^{ekclale, MN}

												STTE ID: ASB42
CLIENT		Confidential	lential			ĺ						Page 1 of 1
SFITE NAME:		Oukda	Oakdale, MN	والمتعارضة والمعالمات المحالي والمحالي والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية والمحالية					E)	ELEV (GND) ^b		DATE:
PROJECT NO.:		02181.	02181-202-005-0001	.0001	_				4	NORTHING:		11
Area Name:		Abres	ch Site - ?	Abresch Site - N. of Hwy 5						EASTING:		039 Location Type: (X
Drilling Contractor:	tor:	Metri	Matrix Environmental	mental						Depth to Water (ft bgs)		19.5 ((X) Soil Boring () Other:
Lorged By:		Thm Walls	Thm Walls						Dept	Losa Borng Lycpa (It bgs): Depth to Refusal (It bgs):		Completion Type: () Monitoring Well
									Boria	Boring Diameter (inches):		
Site Description:	-/	In cica	red area n	In cleared area north of Hwy 5.								() Other (Previde Contracts)
A CONTRACTOR OF		×	a					ц 				
<i>(</i> /)	Sample	(ecover	nuteloM	Color	U	Grain Size	iize	ignend?	MVO	Boring Columi	Sampled	
	Interval	3			-	- H						
╋		2		10581714	5						>	
				*********			<u></u>		2.6		< ;	амусыныналалалалалалалалалалалалалалалалалал
	8	8	Â	5YR 5/6	n	2	15 10	Soft	*******		×	Yellowish red silty f.g. sand
2.3.5 2	3.5	65	Mst	5YR 4/2	Ś	8	15 20	Soft	40,4			Dark reddish gray silty clayey f.g. sand
3.5-9 3.5	4			ge na hele in senare to s							×	
4	+ 5								15.1			
	5 6									š	×	
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	8										×	
00	e 8	100	Mst	5YR 4/2	5	09	15 20	Suff	24.4			Dark reddish gray silty clayey f.g. sand with debris
9-15 9	0 10									1		
									35.0			
									23.1			, , , , , , , , , , , , , , , , , , ,
-	13 14											
	14 15	75	Wet	5YR 4/2	Ś	2	10 15	Soft	11.2	. <u></u>		Dark reddish gray clayey sand, wet at 10.5 fbgs
							_					
E.g., m.g., c.g.: Fine-, Medium-, and Conne-grain size	Medhun-, a	and Contract	-grain size	X: FC Sanple		0 7	V: VOC Semple	24				

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OVERBURDEN BORING LOG^{akdala, MN}

CLIENT: STIE NAME: PROJECT NO., Area Name: Drilling Contractor: Drilling Equipment: Logged By: Site Description:	A. actors meate	- E - E - I - I - I - E - E - E	Confidential Oakdale, MN 02181-202-00 Abresch Site Matrix Envir Track Probe Tim Walls	Confidential Cakdale, MN 0.2181-202-005-0001 Abresch Site - N. of HI Matrix Environmental Track Probe Tim Walls In cleared area north of	Confidential Oakdale, MN 0.2181-202-005-0001 Abresch Site - N. of Hwy 5 Matrix Environmental Track Probe Tim Walls In Cleared area north of Hwy 5. Constructed		vicinity	/ of pr	EI N N Depti Tetal B Deptin Boring In vicinity of previous boring GP05	Tet D Boog Boog OH	ELEV (GND) ^b NORTHING: EASTING: EASTING: Depth to Water (ft bgs) Total Boring Depth (ft bgs) Depth to Refueal (ft bgs) Boring Diameter (inches): GPO5		Page 1 of 1 1013.83 DATE: 4-Dec-2006 192104.1943 DATE: 4-Dec-2006 192104.1943 Location Type: (X) GeoProbe () Well 13.2 (X) Sadl Borring () Other: 13.2 (X) Sadl Borring () Other: 13.3 (X) Overburden () Bedrock 15 Completion Type: () Monitoring Well 3 () Other: () Monitoring Well
·	Sample		Кесолеіл	Moisture	Color		Grain Size	2jze	uppnen2	WAO	Boring Column	peiqma2	
	(U bgs)		(%)	n waanintur n	Nunsell	ð	5	5 5	-	Units		T	Lithic Description
0-3	e	-			, , , , , , , , , , , , , , , , , , ,					1.9	1	÷	
	-	6									1	×	
	3	er2	<u>10</u>	Mst	5YR 4/6	2	50	15 3	30 Firm	n 171.0	0		Yellowish red silty clayey f.g. to m.g. sand
3-5	რ ,	4										×	
	4	kr;	95	Dry	5YR 3/2		50	25 2	20 Firm	n 555.0	0		Dark reddish brown clayey silty sand, debris present, solvent odor
5-10		9									£	×	
		7											
		80											
		6								782.0	0		
	9	10	<u>10</u>	Mst	5YR 4/6	Ś	60	5 3	30 Soft		ā	×	Yellowish red clayey sand, debris, 9-10 fbgs increased clay and
10-15	2	11								173.0			black in color, odor
	11	12								11 + 11 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1			
			100	Mst	5YR 4/6		80	15 2	25 Soft	ft 142.0	ē		Yellowish red silty clayey sand
	6	14									1	-	
	4	15	95	Wet	5YR 4/6	0	8	15 2	25 Soft	ft 50.0	0		Yellowish red silty clayey sand, wet at 13.2 fbgs
													Boring terminated at 15 fbgs.
f.g. tn.g c.g.: Fine., Medium., and Course-grain size	e, Medin	per '-un	Conse-	unin size	X: FC Sample		N. K	V: VOC Sample	ile				

02181-202-004-0001

	GP01	Page 1 of 2 DATE: 29 Nov 05 occation Type: (X) GeoProbe () Well Soil Boring () Other: ompletion Type: (X) Overburden () Bedrock Completion Type: () Monitoring Well Completion Type: () Monitoring Well Completion Type: () Abondoned by Grout () Abondoned by Grout () Abondoned by Grout () Tennorary Well			assana ana control tay bayon ay na bayon da bayon da da ba				solvent odor	101	Stit	, , , , , , , , , , , , , , , , , , ,		s c (s b-sport) = b i 2633 (a) San statebrick () as directed an give an sin	19.5 feet.		144 (15 1151)93)9413941 (1987444 417 418777) // (- //)///////	به الجماع الجارية الله الله الله الله المحالية الإلمانية المحالية المحالية المحالية الله الله المحالية المحالي				******		
	G	Fage 1 of 2 DATE: 29 Location Type: (X) GeoProbe () Well () Soil Boring, () Other: Completion Type: (X) Overburden () Completion Type: () Monitoring Well Completion Type: () Monitoring Well () Abandoned by Gree (X) Other (Provide Co (X) Other (Provide Co		Lithic Description	t 	đ		nt odor	h rounded gravel	suong solvent o	d to sandy clayey		1991 (4) (4) (4) (4) (4) (4) (4) (5) (5) (4) (4) (4) (5) (5) (4) (4) (5) (5) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	****	rary well set 9.5-	,		681461938999326984699(1262) MOE(1469	131341747747777777777777777777777777777	***************************************	****************************	**********************	anne literateratură ră na sana 1 - 1	bgs: below ground surface
	SITE ID:	Page Location Type: () () Soil Boting () Completion Type: Completion Type:		Lithk	n sandy clayey si	n claycy silty san	dy silt, strong sol	ided gravel, solve	dy clayey silt wit	and to sandy slit	n clayey silty san	49616115127349212898673241566746674777	silty sand	*************************************	at 20 feet, tempo	243 2193 1106 204 417 4 04 740 6 (1933) 54 6 Physic		*******	438.41444989999944448849144444444444444444	ARAAAAAA MA DE IYYYAACAA AYYYYYYYYYYYYYYYYYYYYY		******		
		1013.46 2890585.451 1058162.748 10.59 NA NA			Dark reddish brown sandy clayey silt	Dark reddish brown clayey silty sand	Grayish brown sandy silt, strong solvent odor	As above with rounded gravel, solvent odor	Very dark gray sandy clavey silt with rounded gravel, solvent odor	Black clayey silty sand to sandy silt, strong solvent odor	Dark grayish brown clayey silty sand to sandy clayey silt		Dark greenish grey silty sand	As above	Boring terminated at 20 feet, temporary well set 9.5-19.5 feet.			****************************	90/96/3142886538FINEBENJEED MI OP TEN			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	un distanta and and and and and and and and and an	f.g. m.g., c.g.: Fine-, Medium-, and Coarse-grain size
							Ø	₹						A	<u>m</u>									Fine, M
GW Investigation Oakdale, Minnesota	·	ELEV (ftmsl, GND) NORTHING: EASTING: Depth to Water (ft bgs) Total Baring Depth (ft bgs) Depth to Refusal (ft bgs) Borhig Diameter (htches):	nmuloO lleW								[113141-0013141-0011	f.g. m.g., c.g.: Fire-, Medium-, and
MANAN CW Investigation akdale, Minnesot	Ċ	ELEV NOI EA Depth 14 Depth 16 Depth 16 Depth 10 Borthg D	MVVO	Units			areases and a second	36.1		188.1			194.0	106.8		•••	-							
ga o R	BORING LOG		ritenatic		Soft	Fim	Fim	Firm	ЦШ	Fim	Fim		Soft											
	RIN		Size	O W			50 10	50 20					20 10											_
		e, MN	rain Size	6	20	ž		20					2											
	Na la	akda)	6	E	0	0	0	2		0	0	0	0											
	OVERBURDEN	Confidential Oakdale, MN Disposal Facility Oakdale, MN Disposal Facility 02181.202-002-0001 North of Highway 5 Barry Crawford North of Highway 5, Abresch Site, Oakdale	Color	Munsel	2.5YR 3/4	5YR 3/3	2.5YR 3/2		5YR 3/1	5Y 2.5/1	2.5Y 4/2	4)14c[4c]¥=18241644461841641861)147(1481	10GY 4/1	AB		********	444154444949494914454444444444444					1914 1919 1919 1919 1919 1919 1919 1919 1919 1919 1919 1919 1919 1919 1919 1919	-1 17 19 19 19 19 19 19 19 19 19 19 19 19 19	
	0	Confidential Oakdale, MN Disposal Fac Oakdale, MN Disposal Fac 02181-202-002-0001 North of Highway 5 Barry Crawford North of Highway 5, Abre	Moisture							Mst	Wet	- i	Sat				iasejedivas iešeksenseen					*****************		
		Confidential Oakdale, M Oakdale, M North of Hil American T American T Track-mout Barry Craw	Recovery	Ø	8	8	100		8	8	8		8	100										
			e ş	8	1	6	4	s	6	01	11.5		15	20					8.544646163	-				
		CLJENT: SITE NAME: PROJECT NO.: Area Name: Drilling Contractor: Drilling Equipment: Logged Ry: Location Description:	Sample	(R,bgs)	0	1	3	4	'n	6	10	-	2	15								·		
$ \begin{array}{c} c_{1} & c_{2} \\ c_{2} & c_{3} \\ c_{3} c_{3} $		CLJENT: SFIE NAME: PROJECT NO Area Name: Drilling Contro Drilling Equipa Logged By: Location Desci		+	1	ž					2009/10/10/10/10/10/10/10/10/10/10/10/10/10/		ž					E		1	**********	2	an wi hye i te cher a na i bah di ti di	1



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OVERBURDEN BORING LOG

CLIENT: SITE NAME: PROJECT NO.: Area Name:					1						and the second se	
SITE NAME: PROJECT NO.: Area Name:	0	Confidential	tial								1113917171733333355555555555555555555555	Page 1 of 2 DATE: 30 Nov 05
IECT NO.: Name:		akdale,	MN Dis	Oakdale, MN Disposal Facility					ELE	ELEV (funsl, GND)	1012.11	****
Name:	9	2181-20	02181-202-002-0001	01					Ζ.	NORTHING:	2890676.004	
	Z ·	erth of	North of Highway S	5					\$	LABIENU:	29 7	
Drumg Contractor: Drilliau Foniment:	< F	menca	American 1 esting, inc. Track-mointed GenPi	American Lesung, Inc. Track-mounted GeoPrube					Total h	Total Bering Denth (ft bes)		Completion Zone: (X) Overburden () Bedrock
Lamod Ry	• #	O ALLS	Barry Crawford						Denth	Denth to Refusal (ft bes):	₹Z	Completion Type: () Monitoring Well
8 T 0 7 0	1								Boring	Boring Diameter (Inches):	·······	
Location Description:	•	orth of	Highway	North of Highway 5, Abresch Site, Oakda	akdah	de, MN						
												Temporary Well
Sample	<u>.</u>	Кесолецу	Moisture	Color	Ő	3rain Size	ez)	Strength	MVO	nmuloO llə'		
ELEV. Interval	al c				la				- Inte			I this Description
	, ,		Ţ					-	╈			
0	'n	g	Mst	2.5 YK 4/2		ā.	<u> </u>				Weak red claycy si	W Cak foo clayey suly sand, sugnt solvent odor
8	9	100	Mst	10YR 3/1	S	25 55	50 20		1.9		Very dark grey cla	Very dark grey clayey sandy silt, solvent odor
9	5	100	Dry	7.5YR 4/1		فسيسب	50 30				Grey sandy clayey	Grey sandy clayey silt, solvent odor
_	6	<u>8</u>	Mst	7.5YR 4/3	Ś		30 15	Firm			Brown clayey silty	Brown clayey silty sand, strong solvent odor
	12	8	Wet	7.5YR 3/2			10 30	Soft	58.5		Dark brown clayey	Dark brown clavey sand, strong solvent odor
21	4	100	Sat	7.5YR 3/2		â	10 30	Soft	104.2		Dark brown claye)	Dark brown clayey sand, strong solvent odor
		ŧ									Boring terminated	Boring terminated at 14 feet. Termonary well set from 4 to 14

11.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.1 1.	2517315H	<u>i</u>	***	1 2 4 5 7 5 7 5 7 5 7 4 4 7 4 4 7 4 7 4 7 4	-						14444444444444444444444444444444444444	
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	-114 221-11-2											1) III MANATANYA NYA MANATANYA NYA MANATANYA MANATANYA NYA MANATANYA AMIN'NYA MANATANYA NYA MANATANYA MANATANY
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1911 (1914) 11 h h h el (1917) 21 h el h fei h levret est si	1111			*****								
											f.s. m.g., c.g. Tine-, Mediure-, and Course-grain size	ก หรือยายานการการการการการการการการการการการการการก
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OVERBURDEN BORING LOG

Order Northink is Altricut Strategie Northink is (05831.006 Northis (05831.006 Northis (05831.006		Cent	Confidential Oakdale, MN	Confidential Oakdale, MN Disposal Facility					ELE	ELEV (frmsl, GND)) 1013.11	
Neutron of Tailys, Line Lastrices Lossentions Lossentions <thlossentions< th=""></thlossentions<>	PROJECT NO.	0218	1-202-00	2-0001					Z	ORTHING:	2890771.677	
Attention Treating, Jim. Attention Treating, Jim. Distribution (1, 1) Completion (2, 1) Completion (Nort	h of High	Iway 5						EASTING:	1058431,096	Lacation Type: (X) GeoProbe () Well
Track annualed Ge/Prole Track Interact Park (11 %) 17 Completion 17 Completion 17 Barry Crawford Data to the stant Park (11 %) Data to	Drilling Contractor:	Ame	rican Tes	sting, Inc.					Dept	h to Water (ft bgs,	10.28	÷ ž×
Barry Crawford Death to Readed (if the) Death to Readed (if the) <thdeath (i<="" readed="" th="" to=""><th>Drilling Equipment:</th><th>Trac</th><th>k-mount</th><th></th><th></th><th></th><th></th><th></th><th>Total 1</th><th>Soring Depth (ft b</th><th></th><th>Completion Zone: (X) UVET Durden (</th></thdeath>	Drilling Equipment:	Trac	k-mount						Total 1	Soring Depth (ft b		Completion Zone: (X) UVET Durden (
North of Highway 5, Abreach Site. Oakdale, MN Morie and site Morie and site Morie and site 2 92 Mst 2.5YR 4/2 5 50 30 15 Soft Weilt and site 2 92 Mst 2.5YR 4/2 5 50 30 15 Soft Weilt and site 3 100 Mst 7.5YR 4/3 0 50 20 Soft Brown sity clays and site 7 100 Weilt 7.5YR 4/3 0 50 20 Soft Brown sity clays and site 7 100 Weilt 7.5YR 4/3 0 50 Soft Brown sity clays and site 7 100 Weilt 7.5YR 4/3 0 50 Soft Brown sity clays and site 1000 Weilt 7.5YR 4/3 0 50 Soft Brown sity clays and site Brown site		Bar	y Crawf	brd	÷				Depti	r to Refusal (fi bgs v Diameter (linches	s): s:: s:: 2:	ЭС
Train in the content of the	Location Description:	Nort	h of High		Oakd	ale, M	z			0		×.
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Weak C Unlike Weak red claycy silty. 2 92 Mst $2.5YR.4/2$ 5 50 30 15 Soft Weak red claycy silty. 6 65 Mst $10YR.3/1$ 5 255 50 30 15 Soft Very dark grey claycy silty. 13 100 Mst $7.5YR.4/3$ 0 30 40 20 Soft 379.0 13 100 Wet $7.5YR.4/3$ 0 30 20 Soft 379.0 177 100 Wet $7.5YR.4/3$ 0 30 20 Soft 379.0 1 100 Wet $7.5YR.4/3$ 0 30 20 Soft Soft Boring terminated at 1 1 100 Wet $7.5YR.4/3$ 0 30 20 Soft Soft Boring terminated at 1 1 100 Wet $7.5YR.4/3$ 0 30 20 Soft Soft Soft	Sample			Color	0	irain	Size	dignerite Alternation		nmulo) HeW		
2 92 Mst 2.5YR 4/2 5 50 30 15 Soft Weak red clayes sardy sight 12 100 Mst 7.5YR 4/3 10 30 40 20 Soft 379.0 13 100 Mst 7.5YR 4/3 10 30 40 20 Soft 379.0 17 100 Wet 7.5YR 4/3 0 50 20 Soft 307.0 17 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 Brown slity clayey sandy sinterminated at 1 1 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 1 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 1 100 Wet 7.5YR 4/3 0 50 20 Soft (ayey sandy sinterminated at 1 1 100 Wet 7.5YR 4/3 0 50 20 20 20	(n hes)			Munsel	ð				nuh			Lithic Description
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13 100 Mst 7.5YR 4/3 0 50 20 Soft 20.7 17 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 17 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 17 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 17 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 17 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 17 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 17 100 Wet 7.5YR 4/3 0 50 20 20 17 100 Wet 7.5YR 4/3 0 50 20 18 100 Wet 100 100 100 19 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 <	÷		1	÷	10		ā	<u> </u>		0	Brown clayey san	ly silt, some gravel, moderate solvent odor
17 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 Brown silty clayey sam 17 100 Wet 7.5YR 4/3 0 50 20 Soft 20.7 Brown silty clayey sam 17 100 Wet 7.5YR 4/3 0 50 20 Soft Boring terminated at 1 1 Boring terminated Boring termin	.	;			0		A	Į	-	-	Brown sity claye	/ sand
	<u> </u>		ì.	÷	0	8	À	Ì			Brown silty claye	/ sand
											Boring terminated	at 17 feet. Set temporary well from 7 to 17 fee
				================================						: 		940777787681838718441477183844444749147914793479431714793841794471747947179777747179
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		29 NOV 05 eff) Bedrock Comments)			47 6 6 7 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		soil.				to 10 5	C 12 0			63613141421833 E1SE4	***********************					02181.202.002.0001
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OVERBURDEN BORING LOG

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	5	l of 2 DATE: GeoProbe () W Other: N Overburden () Monitoring Well) Abandaned by G X) Other (Provide Termorary Well		ption				01	strong solv	todor	ent odor		well set fix	4) + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 +		****	 		 , 9 94 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2	*********		ground surface	
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	SITE ID				Dark reddish brown clayey sandy silt	y silt	Dark brown silty sand, strong solvent odor	Black clayey sandy silt, strong solvent odor	Very dark greenish gray sandy silty clay, strong solvent odor	Weak red clayey silty sand, strong solvent odor	Strong brown sandy silty clay, slight solvent odor	Reddish brown silty clayey sand, no odor	at 24 feet.	*****	**********	114517 IB 30 Kalil 41444731	 sa sa s		 			n size	V. Frm)
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GW Investigation Caticate, Minnesota

OVERBURDEN BORING LOG

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Gaw Investigation Oakdale, Minnesota

OVERBURDEN BORING LOG

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APPENDIX B WELL SEALING RECORDS



CONSULTANTS • ENVIRONMENTAL • GEOTECHNICAL • MATERIALS • FORENSICS

REPORT OF MONITORING WELL ABANDONMENT

PROJECT:

MENARD'S SITE OAKDALE, MINNESOTA **REPORTED TO:**

WESTON SOLUTIONS, INC. 1400 WESTON WAY, BLDG. 5-2 WEST CHESTER, PA 19380

ATTN: JAI KESARI

AET JOB NO.: 01-03287

DATE: DECEMBER 18, 2006

INTRODUCTION

On December 13, 2006, we sealed 3 monitoring wells, at the project site. The wells were sealed in accordance with the State of Minnesota Water Well Code. The work was done as directed by Weston Solutions, Inc.

WELL ABANDONMENT

Abandonment of the wells was done by pumping neat cement grout through a tremmie pipe starting from the bottom of the wells and proceeding to 2' below the ground surface. The riser pipes were cut off approximately 2' below the ground surface. The protective posts and casings were removed.

Attached are the well owner copies of the Minnesota Department of Health Sealing Record. We ask that you forward a copy to the appropriate person at 3M Company.

This document shall not be reproduced, except in full, without written approval of American Engineering Yesting, inc. 550 Cleveland Avenue North • St. Paul, MN 55114 Phone 651-659-9001 • Toll Free 800-972-6364 • Fax 651-659-1379 • www.amengtest.com Offices throughout Florida, Minnesota, South Dakota & Wisconsin AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

CLOSURE

To protect you, the public, and American Engineering Testing, this report (and all supporting information) is provided for your use for this specific project authorization.

Report Prepared By:

Survey and

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American Engineering Testing, Inc.

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Pat Francis Drilling Department Manager

WELL OR BORING LOCATION		WEI			DEPARTMENT OF HEALTH MI	nnesota Well and Boring aling No.	H 251544
WASHINGTON		AACCI				nnesota Unique Well No. W-series No.	
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GEOLOGICAL MATERIAL NOT KNOWN, INDICATE ESTIMATED FOR SILLY SAND SAND WY SILT	COLOA nation log trom nee Brown Brown	HKE HARDNESS OR FORMATION DY WHE O' DOING MED DEASE DEASE DEASE	0 271 1/2	29'8 57 61	Type of Obstructions (Describe) Obstructions removed? Yes PUMP Type Bernoved Not Present Other METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: In. from to In. from to In. from to Other GROUTING MATERIAL(S) Grouting Material ANEAT Cone bag of cement = 94 libs., one bag of bentonite < 50 libs.)
GEOLOGICAL MATERIAL NOT KNOWN, INDICATE ESTIMATED FOR SILLY SAND SAND WY SILT	COLOA nation log trom nee Brown Brown	HKE HARDNESS OR FORMATION DY WHE O' DOING MED DEASE DEASE DEASE	0 271 1/2	29 2 57 61	Type of Obstructions (Describe) Obstructions removed? Yes No Describe PUMP Type Bernoved Not Present Other METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: MILE TO METHOD INTO THE TO TH
GEOLOGICAL MATERIAL NOLKNOWN, INCLUSE ESTIMATED FOR STUT: SAND SAND WY SILT SANDY LEAN CLAY	COLOR nation log from nos Brown Brown Brown	CH KE HARDNESS OR FORMATION DY WE'D O DOING DEASE DEASE VIETCY STIFF STIFF	0 23 ½ 5 7	29'2 57 61	Type of Obstructions (Describe) Obstructions removed? Yes No Describe PUMP Type Image: Proved Not Present Other Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE: Method USED to SEAL ANNULAR SPACE BETWEEN 2 CASINGS Method USED to Seal Annular space grouted with tremie pipe I Casing Perforator/Removal
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GEOLOGICAL MATERIAL NOLKNOWN, INCLOSE OSTANDING TO THE SAND WY SILT SAND WY SILT SAND LEAN CLAY MARKS, SOURCE OF DATA MARKS, SOURCE OF DATA MONITORING JOMPLETE FILL JEAT (JEMENT SOTTOM OF	COLOR nation log trom nos BROWN BROWN BROWN DIFFICULTIES IN WELL SCREERN DE. RE CUT CUT	CH KE HARDNESSOR FORMATION DEASE DEASE DEASE VIETCY STIFF STIFF STIFF STIFF STIFF CONT SEALING EALEY ITH TRI TO AG SEAL		29'2 57 6(Type of Obstructions (Describe) Obstructions removed? Yes No Describe PUMP Type Image: Constructions removed? Yes No Describe PUMP Type Image: Constructions removed? Yes No Describe Image: Constructions removed? QNot Present Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? QNot Present Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? QNot Present Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? QNot Present Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions removed? Image: Constructions re
GEOLOGICAL MATERIAL MINOWN, INDEGLE ESTIMATED FOR SILT, SAND SAND W/ SILT SAND LEAN CLAY SANDY LEAN CLAY MARKS, SOURCE OF DATA MONITORING SOMPLETE FILL SOMPLETE FILL SOTTOM OF SECON GRA ND PRO TOP	COLOR nation log tram nos BROWN BROWN BROWN BROWN BROWN BROWN BROWN BROWN COLOR SCREEN DE. RE CUT C	CH KE HARDNESSOR FORMATION DEASE DEASE DEASE VIETCY STIFF STIFF STIFF STIFF STIFF CONT SEALING EALEY ITH TRI TO AG SEAL		29'2 57 6(Type of Obstructions (Describe) Obstructions removed? Yes No Describe PUMP Type Type Imethod Used to seal Annular space Between 2 Casings, on Casing and Bone Hole: Method Used to seal Annular space grouted with remie pipe Imethod Used to seal Annular space grouted with remie pipe Imethod used to seal Annular space grouted with remie pipe Imethod used to seal Annular space grouted with remie pipe Imethod used to seal Annular space grouted with remie pipe Imethod used to seal Annular space grouted with remie pipe Imethod used to seal annular space grouted with remie pipe Imethod used to seal Annular space grouted with remie pipe Imethod used to seal annular space grouted with remie pipe Imethod used to seal annular space grouted with remie pipe Imethod used to to seal annular space grouted with remie pipe Imethod used to the seal of cement = 94 libs, one bag of bentonite = 50 libs.) Grouting Material MEAT (One bag of cement = 94 libs, one bag of bentonite = 50 libs.) Grouting Material MEAT (Imethod to the seal of the seal of the seal of the many to the seal of the many to the seal of the many to the seal of the basis of boring on propenty? Yes Intern unsealed and unused weat or boring on propenty? Yes

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WELL OR BORING LOCATION			DEPARTMENT OF HEALTH Minnesota Well and Boring
County Name	ł		RING SEALING RECORD Sealing No. H 251545
WASHINGTON Township Name Township No. Range No.	Section No. Fraction		a Statutes, Chapter 1031 Of W-series No. 737653
29 21		Esws	
GPS Latitude degrees _			12/13/06 Z/15/06
LOCATION:			Depth Before Sealing R. Original Depth R.
Numerical Street Address or Fire Number and Cit	y of Welf or Boring Locat	seconds	AQUIFER(S) STAFIC WATER LEVEL
3205 HADLEY AVEN	ONCONCE	128	VIELL/BORING
Show exact location of well or boring in section grid with "X") Sketch map of we location, showing	t or boring property	Env. Bore Hole Other 22.5 A. Kokow Dabove land surface
1 1	linas, roads, and t	uildings.	CASING TYPE(S)
	#	1	Steel D Plastic D Tile D Other
w	3205	J	WELLHEAD COMPLETION
╎ ┝╌╈╌┿╍┿╍┿╍┿╍┽╍┥┨	1	٠	Outside: Uvell House Inside: Basement Offset
Brites	T		Pittess Adapter/Unit Weil Pit
]		C Well Pit C Suried
F 1994	1		Buried 6" PEOTOP
PROPERTY OWNER'S NAME COMPANY NAME MENANCO INC			CASING(5)
Property owner's mailing address If different than well		ibove	Diameter Depth Set in oversize hole? Annutiar space initiality grouned? Z_in_from + Z_ to 2/_ ft. Ø Yes □ No No Yes □ No
4777 MENARD DA			
EAU CLIRE, Wi			in. from 10 fl. 🛛 Yes 🖸 No 🛄 Yes 🗋 No 🗍 Unknown
ATTU: TIM ENJE	407		in. from
WELL OWNER'S NAME/COMPANY NAME 3 M COMPANY Welf owner's mailing address if different than property of			SCREEN/OPEN HOLE
Well owners mailing address if cittefent than property of 900 BUSH AUE	wher's address indicated a	bove	Screen from to ft.
ST. PAUL MN 5	Elol-		OBSTRUCTIONS □ Rods/Drop Pipe □ Check Valve(s) □ Debris □ Fill XNo Obstruction
· · · -			r
ATTNI BOB PASC	HADONESS OD		Type of Obstructions (Describe)
GEOLOGICAL MATERIAL COLOR	FORMATION PROP	то	Obstructions removed? Yes No Describe
- 10 D		<u></u>	Туре
DANIN/GRAVEL DROWN	0		Removed Stressent Other
CLAY/ SAND BROWN	13	1	METHOD USED TO SEAL ANNULAR SPACE BETWEEN 2 CASINGS, OR CASING AND BORE HOLE:
SANN/GRAVEL BROWN			Your Annular Space Exists Image: Annular space grouted with termic pipe Image: Casing Parloration/Removal in. from to ft. Image: Parlorated Image: Removart
CIAY SAND BROWN	40	7 8	
GRADEL/SAND BROWN	46	60	in, fromtott.
11 My / LIMESTONE BROWN	60	62	Type of perforator
LIMESTONE GRAY		82	C Other
~ /			GROUTING MATERIAL(S) (One bag of cement = 94 lbs., one bag of bentonite = 50 lbs.)
	**************************************	<u> </u>	Grouting Material NEAT CEMENT from Z to 81 ft yards 11/2 bags
		<u> </u> [
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		 	to trom to tags bags
EMARKS, SOURCE OF DATA, DIFFICULTIES IN	CEAT INC	L	OTHER WELLS AND BOHINGS
MONITORION INFILSE	ALEN BA	- F	Other unseated and unused well or boring on property? Yes X No How many?
Amount FILLING W	ITH THERM	ED	INTERCED OF Recisi FERED CONTRACTOR CERTIFICATION This wall or boring was sealed in accordance with Minnesota Rules, Chapter 4725. The information contained in this report is fue to the beat of my knowledge.
NEW DEWENT FORD	- rizom	1	A construction of the Network Construction of the Construction of
JOTTOM OF SCREFN. Z' BELOW GRADE, K	To A	5 . [AMERICAN ENGINEERING TESTING 1795 Contractor Business Name Liberse or Registration No.
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AND PRUTOP CUT O	FF THE		Kathy 9 Kleite 996 12/14/06
Z' BELOW GRADE			Aemonzeo neposontatrifo Signature
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Table III. Summary of PFDA, PFUnA, and PFDoA in Soil Samples (continued)

		C10 Aci	i PFDA	C11 Acid	PFUnA	C12 Acid	PFDoA
		Perflucroded	anoic Acid	Perflucround	ivcanolic Acid	Perflueradod	ecanole Asid
Exygen ID	Cilent Sample ID	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)
C0225096 C0225096 Rep	OKMN-SB-ASB35-DB-0035 OKMN-SB-ASB35-DB-0035*	NR NR	-	NR NR	-	11.6° 13.5°	0.20 0.29
C0225097	OKMN-SB-ASB35-0-0055	393	0.20	30.1*	0.20	35.8°	0.20
C0225097 Rep	OKMN-SB-ASB35-0-0055*	353	0.20	23.7*	0.20	30.4°	0.20
C0225098	OKMN-SB-ASB35-0-0085	333^*	2.0	0.322*1	0.20	ND"	0.20
C0225098 Rep	OKMN-SB-ASB35-0-0085*	199^*	2.0	ND*1	0.20	ND"	0.20
C0225099 C0225099 Rep	OKMN-SB-ASB36-0-0000 OKMN-SB-ASB36-0-0000*	17.6** 26.7**	2.0 2.0	NR NR	-	NR NR	-
C0225100	OKMN-SB-AS832-0-0075	0.793*	2.0	ND"	0.20	ND"	0.20
C0225100 Rep	OKMN-SB-AS832-0-0075*	0.934*	2.0	ND"	0.20	ND"	0.20
C0225102	OKMN-SB-ASB33-0-0000	0.685^*	0.20	0.465°	0.20	0.532^°	0.20
C0225102 Rep	OKMN-SB-ASB33-0-0000*	0.496^*		0.467°	0.20	0.786^*	0.20
C0225103	OKMN-SB-ASB33-0-0015	9.67^*	0.20	NR		NR	-
C0225103 Rep	OKMN-SB-ASB33-0-0016*	18.3^*	0.20	NR	-	NR	
C0225104 C0225104 Rep	OKMN-SB-ASB33-0-0035 OKMN-SB-ASB33-0-0035*	11.6° 13.0'	0.20 0.20	NR NR	-	NR NR	-
C0225105	OKMN-S8-ASB33-D8-0035	11.5*	0.20	NR	-	NR	u.
C0225105 Rep	OKMN-S8-ASB33-D8-0035*	9.78*	0.20	NR		NR	16
C0225106	OKMN-S8-ASB33-0-0055	20.3°	0.20	NR		NR	-
C0225106 Rep	OKMN-SB-ASE33-0-0055*	21.8°	0.20	NR	-	NR	
C0225107	OKMN-SB-ASB33-0-0085	31.8'	0.20	3.66*	0.40	3.46^*	0.40
C0225107 Rep	OKMN-SB-ASB33-0-0085*	38.6'	0.20	5.14*	0.40	5.24**	0.40
C0225108	OKMN-SB-ASB34-0-0000	0.570°	0.20	0.497°	0.20	0.844*	0.20
C0225108 Rep	OKMN-SB-ASB34-0-0000*	0.597°	0.20	0.565°	0.20	1.08*	0.20
C0225109 C0225109 Rep	OKMN-9B-AS834-0-0015 OKMN-SB-AS834-0-0015*	10.1° 8.93°	0.20 0.20	NR NR	•	NR NR	-
C0225110	OKMN-SB-ASB31-0-0000	0.308°	0.20	0.270*1	0.20	0.325^*	0 20
C0225110 Rep	OKMN-SB-ASB31-0-0000*	0.259°	0.20	ND*1	0.20	0.458^*	0.20
C0225111	OKMN-SB-AS831-0-0015	3.23^*	0.20	1.55°	0.20	NR	:
C0225111 Rep	OKMN-SB-AS831-0-0015*	5.45^*	0.20	1.87°	0.20	NR	
C0225112 C0225112 Rep	OKMN-SB-ASB31-0-0035 OKMN-SB-ASB31-0-0035*	NR NR	-	NR NR	-	24.4° 21.6°	0.20 0.20
C0225113 C0225113 Rep	OKMN-SB-ASE31-0-0055 OKMN-SB-ASB31-0-0055*	NR NR	-	NR NR	-	NR NR	•
C0225114 C0225114 Rep	OKMN-SB-ASB31-0-0070 OKMN-SB-ASB31-0-0070*	NR NR	-	NR NR	-	NR NR	-
C0225115 C0225115 Rep	OKMN-SB-ASB32-0-0300 OKMN-SB-ASB32-0-0000*	2.91° 2.77°	0.20 0.20	NR NR		NR NR	-
C0225116 C0225116 Rep	OKMN-SB-ASB32-0-0015 OKMN-SB-ASB32-0-0015*	NR NR	-	NR NR	•	9.50° 10.4°	0.20 0.20
C0225117	OKMN-SB-ASB32-OB-0015	125	0.20	9.47	0.20	10.8	0.20
C0225117 Rep	OKMN-SB-ASB32-DB-0015*	96.5	0.20	7.26	0.20	8.56	0.20
C0225118	OKMN-SB-ASB32-0-0035	139	0.20	8.01	0.20	7.92	0.20
C0225118 Rep	OKMN-SB-ASB32-0-0035*	144	0.20	7.61	0.20	7.81	0.20
C0225119	OKMN-SB-ASB32-0-0055	122	0.20	7.29	0.20	9.22	0.20
C0225119 Rep	OKMN-SB-ASB32-0-0055*	121	0.20	6.31	0.20	7.54	
C0225120	OKMN-SB-ASB39-0-0035	26.8	0.20	4.55	0.20	5.64	8.20
C0225120 Rep	OKMN-SB-ASB39-0-0035*	25.6	0.20	4.51	0.20	5.83	0.20
C0225121	OKMN-SB-ASB39-0-0055	36.2	0.20	4.82	0.20	5.35	0.20
C0225121 Rep	OKMN-SB-ASB39-0-0055*	44.5	0.20	4.87	0.20	6.11	0.20

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*Laboratory Duplicate *Relative Percent Difference > 30% *Sample results with expanded assessed accuracy between +1- 30% and +7-60%. *Relative Percent Difference was not calculated due to the presence of a nondetect and resulting uncertainty. ND = Not detected at or above acceptable EOQ. NR = Not reported due to quality control failures.

Exygen Research Amendment Number 1

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Table III. Summary of PFDA, PFUnA, and PFDoA in Soil Samples (continued)

•		C10 Acia Perfluoradeo		C11 Acid		C12 Acid Perfluorodod	
Exygen (D	Client Sample ID	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)
C0225122	OKMN-SB-ASB39-0-0070	34.3^	0.20	2.47	0.20	2.62	0.20
C0225122 Rep	OKMN-SB-ASB39-0-0070*	23.3^	0.20	2.03	0.20	2.75	0.20
C0225123	OKMN-SB-ASB40-0-0000	0.825	0.40	ND	0.20	ND"	0.20
C0225123 Rep	OKMN-SB-ASB40-0-0000*	0.948	0.40	ND	0.20	ND"	0.20
C0225124	OKMN-SB-AS840-0-0015	0.999	0.40	0.202'	0.20	ND	0.20
C0225124 Rep	OKMN-S8-AS840-0-0015*	0.838	0.40	ND'	0.20	ND	0.20
C0225125	OKMN-SB-ASB40-0-0035	0.956^	0.40	ND	0.20	ND	0.20
C0225125 Rep	OKMN-SB-ASB40-0-0035*	1.53^	0.40	ND	0.20	ND	0.20
C0225126	OKMN-SB-ASB40-0-0055	NR	•	ND	0.20	ND"	0.20
C0225126 Rep	OKMN-SB-ASB40-0-0055*	NR		ND	0.20	ND"	0.20
C0225127	OKMN-SB-ASB40-0-0090	ND	0.20	ND	0.20	ND	0.20
C0225127 Rep	OKMN-SB-ASB40-0-0090*	ND	0.20	ND	0.20	ND	0.20
C0225128	OKMN-SB-ASB41-0-0015	11.2	0.20	0.508^	0.20	0.252"	0.20
C0225128 Rep	OKMN-SB-ASB41-0-0015*	8.73	0.20	0.371^	0.20	ND*	0.20
C0225129	OKMN-SB-AS841-0-0035	39.8	0.20	3.14	0.20	2.44^	0.20
C0225129 Rep	OKMN-SB-AS841-0-0035*	35.8	0.20	2.75	0.20	1.61^	0.20
C0225130	OKMN-SB-ASB41-0-0055	36.7	0.20	2.77	0.20	NR	*
C0225130 Rep	OKMN-SB-ASB41-0-0055*	31.3	0.20	2.29	0.20	NR	
C0225131	OKMN-SB-ASB41-0-0090	ND	0.20	ND	0.20	ND	0.20
C0225131 Rep	OKMN-SB-ASB41-0-0090*	ND	0.20	ND	0.20	ND	0.20
C0225132	OKMN-SB-ASB41-D8-0090	ND	0.20	ND	0.20	ND	0.20
C0225132 Rep	OKMN-SB-AS841-DB-0090*	ND	0.20	ND	0.20	ND	0.20
C0225133	OKMN-SB-ASB42-0-0000	ND	0.20	ND	0.20	ND	0.20
C0225133 Rep	OKMN-SB-ASB41-0-0000*	ND	0.20	ND	0.20	ND	0.20
C0225134	OKMN-SB-ASB42-0-0015	ND1	0.20	ND	0.20	ND	0.20
C0225134 Rep	OKMN-SB-ASB41-0-0015*	0.2391	0.20	ND	0.20	ND	0.20
C0225135	OKMN-SB-AS842-0-0035	0.363	0.20	ND	0.20	0.282'	0.20
C0225135 Rep	OKMN-SB-AS841-0-0035*	0.274	0.20	ND	0.20	יכוא	0.20
C0225136	OKMN-SB-ASB42-0-0055	0.785°	0.20	ND	0.20	0.226"	0.20
C0225136 Rep	OKMN-SB-ASB41-0-0055*	0.972°	0.20	ND	0.20	ND'	0.20
C0225137	OKMN-SB-ASB42-0-0070	0.360^	0.20	ND	0.20	ND	0.20
C0225137 Rep	OKMN-SB-ASB41-0-0070*	0.530^	0.20	ND	0.20	ND	0.20
C0225139	OKMN-SB-ASB43-0-0015	0.867^	0.20	ND	0.20	0.600^	0.20
C0225139 Rep	OKMN-SB-ASB43-0-0015*	0.443^	0.20	ND	0.20	0.197^	0.20
C0225140	OKMN-SB-ASB43-0-0035	:3.8^	0.20	3.32	0.20	4.49°	0.20
C0225140 Rep	OKMN-SB-ASB43-0-0035*	8.29^	0.20	2.51	0.20	3.70°	0.20
C0225141	OKMN-SB-ASE43-0-0055	13.0	0.20	2.97°	0.20	2.98	0.20
C0225141 Rep	OKMN-SB-ASB43-0-0055*	10.6	0.20	3.03°	0.20	3.91	0.20
C0225142	OKMN-S8-ASB43-0-0090	0.245^	0.20	ND	0.20	ND	0.20
C0225142 Rep	OKMN-SB-AS843-0-0090*	0.172 ^x	0.20	ND	0.20	ND	0.20

*Laboratory Duplicate *Relative Percent Difference > 30% *Semple results with expanded assessed acouracy between +/- 30% and +/- 60%. *Relative Percent Difference was not calculated due to the presence of a nondetect and resulting uncertainty. ND = Not detected at or above acceptable LOQ. NR = Not reported due to cuality control failures.

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Summary of PFBS, PFHS, and PFOS in Soil Samples Table IV.

		C4 Sulfon		C6 Sulfon:		C8 Sulfon	
		Perfluorobula		Perfluorohexa		Perfluerooch	
	Client	Analyte Found	Acceptable	Analyte Found	Acceptable	Analyte Found	Acceptable
Exygen ID	Sample (D	(ppb, ng/g) Dry Weight	LOQ (wet) (ng/g)	(ppb, ng/g) Dry Weight	LOQ (wet) (ng/g)	(ppb, ng/g) Dry Weight	LOQ (wet) (ng/g)
C0225070	OKMN-SB-A8B37-0-0056	1.51^*	0.20	7.03"	0.20	1	
C0225070 Rep	OKMN-SB-ASB37-0-0055*	2.28^*	0.20	9.12"	0.20	15200 18900	0.20
C0225071	OKMN-SB-ASB37-0-0075	ND"	0.20	0.688*	0.20	678	0.20
C0225071 Rep	OKMN-SB-ASB37-0-0075*	0.178**	0.20	0.639*	0.20	666	0.20
C0225072	OKMN-SB-ASB38-0-0000	0.696^*	0.20	2.16°	0.20	405^*	0.20
C0225072 Rep	OKMN-S8-ASB38-0-0000*	0.470^*	0.20	1.66"	0.20	287**	0.20
C0225073	OKMN-SB-ASB38-0-0015	0.66†^*	0.20	4.49^*	0.20	588^	0.20
C0225073 Rep	OKMN-SB-ASB38-0-0015*	0.934^*	0.20	7.59^*	0.20	1360^	0.20
C0225074	OKMN-SB-ASB38-0-0035	2.08	0.20	9,16*	0.20	1180	0.20
C0225074 Rep	OKMN-SB-AS338-0-0035*	1.94	0.20	B.60*	0.20	1040	0.20
C0225075	OKMN-SB-AS838-DB-0035	1.89*	0.20	9.39	0.20	1400	0.20
C0225075 Rep	OKMN-SB-AS838-DB-0035*	2.12*	0.20	9.54°	0.20	1410	0.20
C0225076	OKMN-SB-ASE38-0-0055	2.11^*	0.20	8.77**	0.20	1280^	0.20
C0225076 Rep	OKMN-SB-ASB38-0-0055*	3.04^*	0.20	12.3**	0.20	1980^	0.20
C0225077	OKMN-SB-ASB38-0-0080	1.66*	0.20	NR	-	NR	-
C0225077 Rep	OKMN-SB-AS838-0-0080*	1.86*	0.20	NR	*	NR	u
C0225078	OKMN-SB-ASB39-0-0015	8.88*	0.20	75.8°	0.20	6710	0.20
C0225078 Rep	OKMN-SB-ASB39-0-0015'	9.38*	0.20	70.8°	0.20	6100	0.20
C0225079	OKMN-SB-A8639-DB-0015	10.4"	0.20	79.3"	0.20	4690^	0.20
C0225079 Rep	OKMN-SB-ASB39-DB-0015*	12.5*	0.20	97.7°	0.20	6730^	0.20
C0225080	OKMN-SB-AS636-0-0015	8.17*	0.20	73.1^*	0.20	NR	-
C0225080 Rep	OKMN-SB-ASB36-0-0015*	6.56'	0.20	52.2^*	0.20	NR	
C0225081	OKMN-SB-ASB36-DB-0015	9,47°	0.20	67.0*	0.20	22200	0.20
C0225081 Rep	OKMN-SB-ASB36-DB-0015*	9.36*	0.20	69.0°	0.20	24600	0.20
C0225082	OKMN-SB-ASB36-0-0030	31.2^*	0.20	NR	-	39300	0.20
C0225082 Rep	OKMN-SB-ASB36-0-0030*	17.9^*	0.20	NR	•	35200	0,20
C0225083	OKMN-SB-ASB36-0-0055	20.8"	0.20	NR		11900	0.20
C0225083 Rep	OKMN-SB-ASE36-0-0055*	24.0*	0.20	NR		11000	0.20
C0225084	OKMN-SB-ASB38-0-0095	17.6	0.20	9.10^*	0.20	115^	0.20
C0225084 Rep	OKMN-SB-ASB36-0-0095*	16.4	0.20	14.4^*	0.20	62.3^	0.20
C0225086	OKMN-SB-ASB37-0-0000	ND™	0.20	1.55^*	0.40	NR	-
C0225086 Rep	OKMN-SB-ASB37-0-0000*	0.599**	0.20	3.19^*	040	NR	-
C0225087	OKMN-SB-ASB37-0-0015	2.63°	0.20	18.5*	0.40	5920	0.40
20226087 Rop	OKMN-SB-ASB37-0-0015*	2.42^	0.20	14.3"	0.40	5110	0.40
C0225088	OKMN-SB-ASB37-0-0035	1.01	0.20	8.41	0.40	3100	0.40
C0225088 Rep	OKMN-SB-ASB37-0-0035*	0.790	0.20	6.94	0.40	2410	0.40
C0225089	OKMN-SB-ASB37-DB-0035	1.15"	0.20	10.3°	0.20	3810^*	0.20
20225089 Rep	OKMN-SB-AS837-DB-0035*	1.13"	0.20	10.8*	0.20	2600^"	0.20
C0225090	OKMN-SB-ASB34-0-0035	8.08°	0.20	126	0.20	7560	0.20
0225090 Rep	OKMN-SB-ASB34-0-0035*	9.21"	0.20	158	0.20	9820	0.20
C0225091	OKMN-SB-ASB34-0-0055	24.2°	0.20	1030	0.20	69900°	0.20
20225091 Rep	OKMN-SB-ASB34-0-0055*	28.3"	0.20	1040	0.20	68900*	0.20
C0225092	OKMN-SB-AS834-0-0085	224*	0.20	5540	0.20	17800	0.20
0225092 Rep	OKMN-S8-ASB34-0-0085*	223*	0.20	5630	0.20	17300	0.20
C0225093	OKMN-SB-ASB35-0-0000	0.662**	0.20	NR	-	207*	0.20
0225093 Rep	OKMN-SB-AS835-0-0000*	0.477**	0.20	NR	-	263°	0.20
C0225094	OKMN-SB-AS835-0-0015	11.9°	0.20	NR		9360	0.20
0225094 Rep	OKMN-SB-ASB35-0-0015*	13.8"	0.20	NR	-	9060	0.20
C0225095	OKMN-SB-ASB35-0-0035	22.9*	0.20	NR	. 1	36100	0.20
0225095 Rep	OKMN-SB-ASB35-0-0035*	22.7°	0.20			100 M 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	v

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*Laboratory Duplicate * Relative Percent Difference > 30% * Sample results with expanded assessed accuracy between +/- 30% and +/- 60%. *Relative Percent Difference was not calculated due to the presence of a nondetect and resulting uncertainty. ND = Not reported due to quality control failures.

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Table IV.	Summary of PFBS, PFHS, and PFOS in Soil Samples
	(continued)

		C4 Sulfon Perfluorabute		C6 Sulfon		C8 Sulfon	
		Analyte Found	Acceptable	Perflueronex	A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER	Parfluoroecte	
	Client	(ppb, ng/g)	LOO (wel)	Analyte Found (ppb. ng/g)	Acceptable LOQ (wet)	Analyte Found (ppb, ng/g)	Acceptable LOQ (wet)
Exygen ID	Sample ID	Dry Weight	(hg/g)	Dry Weight	(ng/y)	Dry Weight	(ng/g)
C0225096	OKMN-SB-ASB35-DB-0035	19.7*	0.20	116'	0.20	00000	
C0225096 Rep	OKMN-SB-ASE35-DB-0035*	20.6*	0.20	114	0.20	29900 26000	0.20 0.20
00005007						1	
C0225097 C0225097 Rep	OKMN-SB-ASB35-0-0055 OKMN-SB-ASB35-0-0055*	56.8" 50.8*	0.20 0.20	482	0.20	27000	0.20
	00000-00000	50.6	0,20	407	0.20	26200	0.20
C0225098	OKMN-SB-AS835-0-0085	102*	0.20	94.7°	0.20	NR	
C0225098 Rep	OKMN-SB-ASB35-0-0085*	94.5°	0.20	71.8"	0.20	NR	-
C0225099	OKMN-SB-ASB36-0-0000	0.573^*	0.20	2,88^	0.20	4000	0.00
C0225099 Rep	OKMN-SB-ASB36-0-0000*	0.295^*	0.20	1.88*	0.20	1290 1630	0.20 0.20
00005466							
C0225100 C0225100 Rep	CKMN-SB-ASB32-0-0075 OKMN-SB-ASB32-0-0075*	NR NR	-	220°	0.20	NR	-
	010111100100001-0-0010	1NCX	-	188"	0.20	NR	-
C0225102	OKMN-S8-AS833-0-0000	NR	-	0.825^	0.20	151^	0.40
C0225102 Rep	OKMN-SB-ASB33-0-0000*	NR	•	0.399^	0.20	106^	0.40
C0225103	OKMN-SB-AS833-0-0015	5.97°	0.20	NR		4530	0.40
C0225103 Rep	OKMN-SB-ASB33-0-0015*	5.42°	0.20	NR	-	5200	0.40
						1	0.10
C0225104 C0225104 Rep	OKMN-SB-ASB33-0-0035 OKMN-SB-ASB33-0-0035*	4.15	0.20	NR	-	3780*	0.40
00020104 ; tep	01000-0000	3.41°	0.20	NR	-	3480°	0.40
C0225105	OKMN-SB-AS833-DB-0035	NR		48.5°	0.20	5080°	0.20
C0225105 Rep	OKMN-SB-ASB33-DB-0035*	NR		52.9°	0.20	4990*	0.20
C0225106	OKMN-SB-ASB33-0-0055	18.6*	0.00	0.15		F 1 F 2	
C0225106 Rep	OKMN-SB-ASB33-0-0055*	16.0"	0.20 0.20	215 161	0.20	5180° 5680°	0.20 0.20
		1				0000	0.20
C0225107 C0225107 Rep	OKMN-SE-ASB33-0-0085	NR	-	1150	0.20	16900^	0.20
COLED TOT REP	OKMN-SB-AS833-0-0085*	NR	-	1210	0.20	3310*	0.20
C0225108	OKMN-SB-ASB34-0-0000	ND*	0.20	0,469*	0.20	NR	
C0225108 Rep	OKMN-SB-ASB34-0-0000*	ND"	0.20	0.441*	0.20	NR	-
C0225109	OKMN-SB-AS834-0-0015	NR		00.00			
C0225109 Rep	OKMN-SB-ASB34-0-0015*	NR		22.2° 21.7°	0.20 0.20	5560 5190	0.20 0.20
A		l			0.00	0100	0.20
C0225110 C0225110 Rep	OKMN-SB-ASB31-0-0000 OKMN-SB-ASB31-0-0000*	NR NR	-	NR	-	NR	-
002201101020	0/00/00/00/00/00/00/00/00/00/00/00/00/0	NR	•	NR	-	NR	+
C0225111	OKMN-SB-ASE31-0-0015	4.92^*	0.20	NR	-	3190*	0.20
C0225111 Rep	OKMN-SB-ASB31-0-0015*	7.85^*	0.20	NR	-	885^	0,20
C0225112	OKMN-SB-AS831-0-0035	27.7*	0.20	0444			
C0225112 Rep	OKMN-SB-ASB31-0-0035*	12.5*	0.20	911^ 250^	0.20	88500^ 38200^	0.20 0.20
		l.		200		30200	0.20
C0225113 C0225113 Rep	OKMN-SB-ASB31-0-0065	14.9**	0.20	303^*	0.20	36900	0.20
SOLLS ITS Rop	OKMN-SB-AS831-0-0055*	23.8**	0.20	2160^*	0.20	47500	0.20
C0225114	OKMN-SB-ASB31-0-0070	36.8*	0.20	NR	-	73100	0.20
C0225114 Rep	OKMN-SB-ASB31-0-0070*	35.5*	0.20	NR	-	55300	0.20
C0225115	OKMN-SB-AS832-0-0000	3 35^*	0.20	11.6**		1000	
C0225115 Rep	OKMN-SB-ASB32-0-0000*	2.19^*	0.20	7.09^*	0.20	1330 1270	0.20 0.20
00000440	.					12/0	0.20
C0225116 C0225116 Rep	OKMN-SB-ASB32-0-0015 OKMN-SB-ASB32-0-0015*	57.0**	0.20	840	0.20	33900	0.20
outo no nap	07/417-30-76832-0-0015	78.0^*	0.20	1030	0.20	40700	0.20
C0225117	OKMN-SB-AS832-DB-0015	125^	0.20	1490^	0.40	33900^	0.40
0225117 Rep	OKMN-SB-ASB32-DB-0015*	47.4^	0.20	858^	0.40	22700^	0.40
C0225118	OKMN-SB-ASB32-0-0035	74.9	0.20	185	ļ	1010000	n / a
0225118 Rep	OKMN-SB-ASB32-0-0035*	94.5	0.20	NR NR		101000° 115000°	0.40 0.40
						110000	0.40
C0225119	CKMN-SE-ASB32-0-0055	102	0.20	†240°	0.40	NR	
0225119 Rep	OKMN-SB-ASB32-0-0055*	90.1	0.20	1120°	0.40	NR	-
C0225120	OKMN-SB-ASB39-0-0035	18.2	0.20	159	0.20	13900	0.20
0225120 Rep	OKMN-SB-ASB39-0-0036*	10.9	0.20	185	0.20	12700	0.20
C0225121	OKMN-SB-AS839-0-0055	20.6	7.00 L	10			
0225121 Rep	OKMN-SB-ASB39-0-0055*	20.6 24.8	0.20	NR NR		NR NR	*
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*Laboratory Duplicate *Relative Percent Difference > 30% *Sample results with expended assessed accuracy between +/- 30% end +/- 60%. ND = Not delected at or above acceptable LCQ. NR = Not reported due to quality control failures.

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		C4 Sulfon Perfluorobulg		C6 Sulfon Pertigoration		C8 Sulfon: Perfiuoroocta	
		Analyte Found	Acceptable	Analyte Found	Acceptable	Analyte Found	Acceptable
	Client	(ppb, ng/g)	LOQ (wel)	(ppb, ng/g)	LOQ (wet)	(ppb, ng/g)	LOQ (wet)
Exygen ID	Sample ID	Dry Weight	(hg/g)	Dry Weight	(ng/g)	Dry Weight	(ng/g)
C0225122							
C0225122 Rep	OKMN-SB-ASB39-0-0070 OKMN-SB-ASB39-0-0070*	14.3	0.20	199	0.20	NR	-
00220122 Rep	CHMIN-36-7/3839-0-0070-	12.0	0.20	217	0.20	NR	-
C0225123	OKMN-SB-ASB40-0-3000	0.260	0.20	ND	0.20	193	0.20
C0225123 Rep	OKMN-SB-ASB40-0-0000*	0.313	0.20	ND	0.20	224	0.20
					0.20		0.20
C0225124	OKMN-SB-ASB40-0-0015	0.463	0.20	0.760	0.20	223^	0.20
C0225124 Rep	OKMN-SB-ASB40-0-0015*	0.544	0.20	0,970	0.20	186^	0.20
C0225125	OKMN-SB-ASB40-0-0035	0.0044					
C0225125 Rep	OKMN-SB-ASB40-0-0035*	0.324^ 0.668^	0.20	1.75^	0.20	271^*	0.20
Over 120 Nep	OVW14-30-M3640-0-0033	0.000	0.20	2.76^	0.20	476**	0.20
C0225126	OKMN-SB-AS840-0-0055	0,485	0.20	0.873*	0.20	119	0.20
C0225126 Rep	OKMN-SB-ASB40-0-0055*	0.586	0.20	1.14	0.20	146	0.20
						1	0.20
C0225127	OKMN-SB-ASB40-0-0090	0.539*	0.20	0.880	0.20	37.5	0.20
C0225127 Rep	OKMN-SB-ASB40-0-0090*	0.487*	0.20	0.674	0.20	38.2	0.20
C0225128	OKMN-SB-ASB41-0-0015						
C0225128 Rep	OKMN-SB-ASB41-0-0015*	7.45 6.53	0.20 0.20	79.0 68.2	0.20 0.20	6530	0.20
	01111-00-00-00-00-00-00-00-00-00-00-00-0	0.55	0.20	08.2	0.20	4950	0.20
C0225129	OKMN-S8-ASB41-0-0035	11.2	0.20	31.5	0.20	1880*	0.20
C0225129 Rep	OKMN-SB-ASB41-0-0035*	11.0	0.20	29.5	0.20	1490*	0.20
		1					
C0225130	OKMN-SB-ASB41-0-0055	8.18	0.20	32.2	0.20	2300	0.20
C0225130 Rep	OKMN-SB-ASB41-0-0055*	6.81	0.20	26.7	0.20	2400	0.20
C0225131	OKMN-SB-ASB41-0-0090	4.31	0.20	3.73	0.00		
C0225131 Rep	OKMN-SB-ASB41-0-0090*	4.07	0.20	4.06	0.20 0.20	19.0 22.2	0 20 0.20
		4.01	0.20	4.00	0.20	26.2	0.20
C0225132	OKMN-SB-ASB41-DB-0090	4.50	0.20	4.13	0.20	29.6	0.20
C0225132 Rep	OKMN-SB-AS841-DB-0090*	3.67	0.20	3.22	0.20	15.8	0.20
0000000							
C0225133 C0225133 Rep	OKMN-S8-ASB42-0-0000 OKMN-SB-ASB41-0-0000*	ND	0.20	ND	0.20	23.5	0.20
00225153 Rep	QKWW-5B-AS841-0-0000"	ND	0.20	ND	0.20	25.7	0.20
C0225134	OKMN-SB-ASB42-0-0015	0.289	0.20	ND	0.20	44.2	0.20
C0225134 Rep	OKMN-SB-ASE41-0-0015*	0.278	0.20	ND	0.20	75.2	0.20
			0.20		0.20	10.2	0.20
C0225135	OKMN-SB-AS842-0-0035	4.13"	0.20	12.9	0.20	196^	0.20
C0225135 Rep	OKMN-SB-ASB41-0-0035*	4.25*	0.20	· 10.2	0.20	141^	0.20
C0225136	OKMN-SB-ASB42-0-0055						
C0225136 Rep	OKMN-SB-ASB42-0-0055 OKMN-SB-ASB41-0-0055*	4.33 5.05	0.20	15.4	0.20	NR	•
0020100100	00000-0000	5.05	0.20	18.0	0.20	NR	-
C0225137	OKMN-SB-ASB42-0-0070	4.14	0.20	5.09	0.20	73.0	0 20
C0225137 Rep	OKMN-SB-ASE41-0-0070*	4.14	0.20	5,23	0.20	78.1	0.20
C0225139	OKMN-S8-AS843-0-0015	4.61*	0.20	16.3*	0.20	264^	0.20
C0225139 Rep	OKMN-SB-ASB43-0-0015*	3.94"	0.20	11.8*	0.20	150^	0.20
C0225140	OKMN-SB-ASB43-0-0035	7.66^	0.20	112	0.20		0.00
C0225140 Rep	OKMN-S8-AS843-0-0035*	5.60*	0.20	94.0	0.20 0.20	4540^° 3170^°	0.20 0.20
				¥7.V	0.60	5170	0.20
C0225141	OKMN-SB-ASB43-0-0055	16.1	0.20	240^	0.20	6280^*	0.20
C0225141 Rep	OKMN-SB-ASB43-0-0055*	15.3	0.20	146^	0.20	4340^*	0.20
C0225142	0// III 05 400 14 4 4/						
C0225142 C0225142 Rep	OKMN-SB-ASB43-0-0090 OKMN-SB-ASB43-0-0090*	8.27 9.28	0.20	27.4	0.20	167	0.20
AAREA LAR WOR	GUINER GENIQ043-0-008(/	8.25	0.20	31.7	0.20	196	0.20

Summary of PFBS, PFHS, and PFOS in Soil Samples Table IV. (continued)

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*Laboratory Duplicate ^ Relative Percent Difference > 30% * Sample results with expanded assessed accuracy between +/- 30% and +/- 60% ND = Not detected at or above acceptable ECQ. NR = Not reported due to gusity control failures.

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Table V. Summary of PFBA, PFPeA, and PFHA in Water Samples

					C6 Acid Perfluorohe	
Client Sample ID	Analyte Found (ppb, ng/mL)	Acceptable LOQ (ng/mL)	Anatyte Found (ppb, ng/mL)	Acceptable LOQ (ng/ml.)	Analyte Found (ppb, ng/mL)	Acceptable LOQ (ng/mL)
OKMN-SB-AS836-RB-061204	ND	0.050	ND	0.050	ND	0.050
OKMN-SB-ASB32-RB-061204	ND	0.050	ND	0.050	ND	0.050
OKMN-SB-ASB42-RB-061205	ND	0.050	ND	0.050	ND	0.050
OKMN-SB-TRIP1-0-D61204	ND	0.050	ND	0.050	ND	0.050
OKMN-SB-TRIP2-0-061204	ND	0.050	ND	0.050	ND	0.050
	Sample ID OKMN-SB-ASB36-RB-061204 OKMN-SB-ASB32-RB-061204 OKMN-SB-ASB42-RB-061205 OKMN-SB-TRIP1-0-061204	Client Chient (ppb, ng/mL) Sample ID (ppb, ng/mL) OKMN-SB-ASB32-RB-061204 ND OKMN-SB-ASB32-RB-061204 ND OKMN-SB-ASB42-RB-061205 ND OKMN-SB-TRIP1-0-061204 ND	Client Sample ID (ppb, ng/mL) LOQ (ng/mL) OKMN-SB-ASB36-RB-061204 ND 0.050 OKMN-SB-ASB32-RB-061204 ND 0.050 OKMN-SB-ASB42-RB-061205 ND 0.050 OKMN-SB-ASB42-RB-061204 ND 0.050 OKMN-SB-ASB42-RB-061205 ND 0.050	Perfluerobutanole Acid Perfluerobutanole Acid Perflueropen Client Sample ID Analyte Found (ppb, ng/mL) Acceptable LOQ (ng/mL) Analyte Found (ppb, ng/mL) OKMN-SB-ASB36-RB-061204 ND 0.050 ND OKMN-SB-ASB32-RB-061204 ND 0.050 ND OKMN-SB-ASB32-RB-061205 ND 0.050 ND OKMN-SB-ASB42-RB-061204 ND 0.050 ND OKMN-SB-ASB42-RB-061204 ND 0.050 ND	Perfluorobutanole Acid Perfluoropentanole Acid Perfluoropentanole Acid Ctient Sample ID Analyte Found (ppb, ng/mL) Acceptable LOQ (ng/mL) Analyte Found LOQ Acceptable (ppb, ng/mL) Analyte Found LOQ Acceptable (ppb, ng/mL) Analyte Found LOQ Acceptable (ppb, ng/mL) Analyte Found LOQ Acceptable (ppb, ng/mL) Acceptable LOQ ND 0.050 ND 0.050 OKMN-SB-ASB32-RB-061204 ND 0.050 ND 0.050 ND 0.050 OKMN-SB-ASB32-RB-061205 ND 0.050 ND 0.050 ND 0.050 OKMN-SB-ASB42-RB-061204 ND 0.050 ND 0.050 ND 0.050	Perfluorobutanoic Acid Perfluoropontanoic Acid Perfluorobutanoic Acid

ND = Not detected at or above the acceptable LOQ.

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Table VI. Summary of PFHpA, PFOA, and PFNA in Water Samples

		C7 Acid Perfluorohep		CB Acid Perfluorocc		C9 Acid Perfluoronor	
Exygen ID	Client Sample ID	Analyte Found (ppb, ng/mL)	Acceptable LOQ (ng/mL)	Analyte Found (ppb, ng/mt.)	Acceptable LOQ (ng/mL)	Analyte Found (ppb. ng/mL)	Acceptable LOQ (ng/mL)
C0225085	OKMN-SB-ASB36-RB-061204	ND	0.10	ND	0.050	ND	0.050
C0225101	OKMN-SB-ASB32-RB-061204	ND	0.10	ND	0.050	ND	0.050
C0225138	OKMN-SB-AS842-RB-061205	ND	0.10	ND	0.050	ND	0.050
C0225143	OKMN-SB-TRIP1-0-061204	ND	0.10	ND	0.050	ND	0.050
C0225146	OKMN-SB-TRIP2-0-061204	ND	0.10	ND	0.050	ND	0.050

ND = Not detected at or above the acceptable LOQ.

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Table VII. Summary of PFDA, PFUnA, and PFDoA in Water Samples

		C10 Acia Perfluorodec		C11 Acid Perfluoround		C12 Acid	
Exygen 1D	Client Sample ID	Analyte Found (ppb, ng/mL)	Acceptable LOQ (ng/mL)	Analyte Found (ppb, ng/mL)	Acceptable LOQ (ng/mt.)	Analyte Found (ppb, ng/mL)	Acceptable LOQ (ng/mL)
C0225085	OKMN-S8-ASB36-RB-061204	ND	0.20	ND	0.050	ND	0.050
C0225101	OKMN-SB-ASB32-RB-061204	ND	0.20	ND	0.050	ND	0.050
C0225138	OKMN-SB-ASB42-RB-061205	ND	0.20	ND	0.050	ND	0.050
C0225143	OKMN-SB-TRIP1-0-061204	ND	0.20	ND	0.050	ND	0.050
C0225146	OKMN-SB-TRIP2-0-061204	NÐ	0.20	ND	0.050	ND	0.050

ND = Not detected at or above the acceptable LOQ.

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Table VIII. Summary of PFBS, PFHS, and PFOS in Water Samples

					C8 Sulfonate PFOS Perlluorocctanesulfonate		
Client Sample ID	Analyte Found (ppb, ng/mL)	Acceptable LOQ (ng/mL)	Analyte Found (ppb. ng/mL)	Acceptable LOQ (ng/mL)	Analyte Found (ppb, rg/mL)	Acceptable LOQ (ng/mL)	
OKMN-SB-ASB36-RB-061204	ND	0.050	ND	0.050	ND	0.050	
OKMN-SB-ASB32-RB-061204	ND	0.050	ND	0.050	ND	0.050	
CKMN-SB-ASB42-RB-061205	ND	0.050	ND	0.050	ND	0.050	
OKMN-SB-TRIP1-0-061204	ND	0.050	ND	0.050	ND	0.050	
OKMN-SB-TRIP2-0-061204	ND	0.050	ND	0.050	ND	0.050	
	Client Sample ID OKMN-SB-ASB36-RB-061204 OKMN-SB-ASB32-RB-061204 OKMN-SB-ASB42-RB-061205 OKMN-SB-TRIP1-0-061204	Client Analyte Found (ppb, ng/mL) Sample (D CKMN-SB-ASB36-RB-061204 ND CKMN-SB-ASB32-RB-061204 ND CKMN-SB-ASB42-RB-061205 ND OKMN-SB-TRIP1-0-061204 ND	Client Sample ID Analyte Found (ppb, ng/mL) Acceptable LOQ (ng/mL) OKMN-SB-ASB36-RB-061204 ND 0.050 OKMN-SB-ASB32-RB-061204 ND 0.050 OKMN-SB-ASB32-RB-061204 ND 0.050 OKMN-SB-ASB32-RB-061204 ND 0.050 OKMN-SB-ASB42-RB-061205 ND 0.050 OKMN-SB-TRIP1-0-061204 ND 0.050	Perfluorobutaresultionate Perfluorobutaresultionate Client Sample (D Analyte Found (ppb, ng/mL) Acceptable LOQ (ng/mL) Analyte Found (ppb, ng/mL) OKMN-SB-ASB36-RB-061204 ND 0.050 ND OKMN-SB-ASB32-RB-061204 ND 0.050 ND OKMN-SB-ASB32-RB-061205 ND 0.050 ND OKMN-SB-ASB42-RB-061204 ND 0.050 ND OKMN-SB-ASB42-RB-061205 ND 0.050 ND	Perfluorobutanesulfonate Perfluorobutanesulfonate Client Sample (D Analyte Found (ppb, ng/mL) Acceptable LOQ (ng/mL) Analyte Found (ppb, ng/mL) Acceptable LOQ (ng/mL) OKMN-SB-ASB36-RB-061204 ND 0.050 ND 0.050 OKMN-SB-ASB32-RB-061204 ND 0.050 ND 0.050 OKMN-SB-ASB32-RB-061204 ND 0.050 ND 0.050 OKMN-SB-ASB32-RB-061205 ND 0.050 ND 0.050 OKMN-SB-ASB42-RB-061204 ND 0.050 ND 0.050 OKMN-SB-ASB42-RB-061204 ND 0.050 ND 0.050 OKMN-SB-ASB42-RB-061205 ND 0.050 ND 0.050 OKMN-SB-TRIP1-0.061204 ND 0.050 ND 0.050	Perfluorobutanesulfonate Perfluorobutanesulfonate Perfluorobitanesulfonate Perfluo	

ND = Not detected at or above the acceptable LOQ.

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T		Perflue	4 Acid PFBA probutanoic	Acid		Acid PPPeA propentanoic			5 Acid PFHA prohexanoic	Anid
Sample Description	Amount Spiked	Amt Found in Sample	Amount Recovered	Recovery	Amt Found in Sample	Amount Recovered	Recovery	Amt Found in Sample	Amount Recovered	Recovery
Lieschild(n)	(ng/g)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)
OKMN-SB-ASB37-0-0055 (C0225070 Spk C, 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	5.58	NA	NA
OKMN-SB-ASB37-0-0055 (C0225070 Spk D, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	5.58	109	52
OKMN-SB-ASB37-0-0075 (C0226071 Spk E, 2 ppb Spike)	2	NR	NR	NR	0.472	1.34	43	0.981	1.79	40
OKMN-SB-ASB37-0-0075 (C0225071 Spk F, 200 ppb Spike)	200	· NR	ŃR	NR	3.472	NA	NA	0.981	NA	NA
OKMN-SB-ASB38-0-0000 (C0226072 Spk G, 2 ppb Spike)	2	1.71	3.26	78	1.14	2.80	83	NR		
OKMN-SB-ASB38-0-0000	_		0.20	10	1.14	2.00	0.5	INPC	NR	NR
(C0225072 Spk H, 200 ppb Spike)	200	1.71	NA	NA	1.14	NA	NA	NR	NR	NR
OKMN-SB-ASB38-0-0015 (C0225073 Spk C, 2 ppt: Spike)	2	1.82	2.64	41	1.09	0.00	40			
OKMN-SB-ASB38-0-0015						2.00	46	NR	NR	NR
(C0226073 Spk D, 200 ppb Spike)	200	1.82	NA	NA	1.09	NA	NA	NR	NR	NR
OKMN+SB-ASB38-0-8035 (C0225074Spk E, 2 ppb Spike)	2	6.40	NA	NA	2.77	3.91	57	7.25	NA	NA
OKMN-SB-ASB38-0-0035 (C0225074 Spk F, 200 ppb Spike)	200	6.40	104	49	2.77	NA	NA	7.25	106	49
OKMN-SB-ASB38-D8-0335 (C9225075 Spk G, 2 ppb Spike)	2	7,03	NA	NA	3.01	4.04	52	8.20	NA	NA
OKMN-SB-ASB38-DB-0035 (C0225075 Spk H, 200 ppb Spike)	200	7.03	101	47	3.01	NA	NA	8.20	103	47
OKMN-SB-ASB38-0-0055 (C0225076 Spk C, 2 ppb Spike)	2	11.0	NA	NA	4.66	NA	NA	14.5	NA	NA
OKMN-SB-ASB38-0-00555 (C0225076 Spk D, 200 ppb Spike)	200	110	101	45	4.66	102	49	14.5	106	46
OKMN-S8-ASB38-0-0030 (C0225077 Spk E, 2 ppb Spike)	2	16.1	NA	NA	5,95	NA	NA	19.5		
OKMN-SB-AS838-0-0080	_				3,00	1964		19.0	NA	NA
(C0225077 Spk F, 206 ppb Spike)	200	16.1	112	48	5.95	105	50	19.5	115	48
OKMN-SB-ASB39-0-0015 (C0225978 Spk G, 2 ppb Spike)	2	26.6	NA	NA	11,7	NA	NA	24.4	NA	NA
OKMN-S8-AS839-0-0015 (C0225078 Spk H, 200 pp5 Spike)	200	26.6	123	48	11.7	108	48	24.4	124	50
OKMN-SB-ASB39-DB-0015 (C0225079 Spk C, 2 ppb Spike)	2	29.2	NA	NA	14.1	NA	NA	29.8	NA	NA
OKMN-SB-ASB39-DB-0015 (C0225079 Spk D, 200 ppb Spike)	200	29.2	132	51	14.1	114	50	29.8	133	52
OKMN-SB-ASB36-0-0015 (C0225080 Spk E, 2 ppb Spike)	2	48.7	NA	NA	12.5	NA	NA	54.3	NA	NA
OKMN-SB-ASE36-0-0015 (C9225080 Spk F, 200 ppb Spike)	200	48.7	162	52	12.5	120	54	54.3	169	57
OKMN-SB-ASB36-OB-0015 (C0225081 Spk G, 2 ppb Spike)	2	NR	NR	NR	16.9	NA	NA	NR	NR	NR
OKMN-S6-ASB36-DB-0015 (C622508t Spk H, 200 ppb Splke)	200	NR	NR	NR	16.9	112	48	NR	NR	NR

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NR = Not reported due to quality control feature. NA = Not applicable; matrix splice level outside the relevant range for the endogenous concentration in the sample. Samples and 200 mg/g splice relevant for 4.0 mg/g to less than 400 mg/g endogenous level in the sample. Note: Since this summary table shows rounded results, rocovery values may vary slightly from the values in the raw data.

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			4 Acid PFBA probutanoic			6 Acid PFPeA propentanoic			6 Acid PFHA prohexanoic	Acid
~	Amount	Amt Found	Amount		Amt Found	Amount		Amt Found	Amount	
Sample Description	Spiked (ng/g)	in Sample (ng/g)	Recovered (ng/g)	Recovery (%)	in Sample (ng/g)	Recovered	Recovery (%)	in Sample	Recovered	Recovery
OKMN-SB-ASB36-0-0030 (C0225082 Spk C, 2 ppb Spike)	2	NR	NR	NR	33.3	(ng/g) NA	NA	(ng/g) 147	(ng/g) NA	<u>(%)</u> NA
OKMN-SB-ASB36-0-0330 (C0225082 Spk D, 200 ppb Spike)	200	NR	NR	NR	33.3	134	50	147	229	41
OKMN-S8-ASB36-0-0055 (C0225083 Spk E, 2 ppb Spike)	2	381	NA	NA	58,4	NA	NA	204	NA	NA
OKMN-SB-ASB36-0-0055 (C0225083 Spk F, 200 ppb Spike)	200	361	500	70	58.4	163	52	204	310	53
OKMN-SB-ASB36-0-0095 (C0225084 Spt G, 2 ppb Spike)	2	396	NA	NA	41.1	NA	NA	118	NA	NA
OKMN-S8-ASB36-0-0095									1	
(C0225984 Spk H, 200 ppb Spike)	200	396	516	60	41.1	146	52	118	256	69
OKMN-SB-ASB37-0-0000 (C0225088 Spk C, 2 ppb Spike)	2	3.48	5.37	95	1.74	3.09	68	NR	NR	NR
CKMN-SB-ASB37-0-0000 (C0225086 Spk D, 200 ppb Spike)	200	3.48	NA	NĄ	1.74	NA	NA	NR	NR	NR
OKMN-SB-AS337-0-0015 (C0225087 Spk E, 2 ppb Spike)	2	6.38	NA	NA	3.67	4.76	55	10.1	NA	NA
OKMN-SB-ASB37-0-0015 (C0225087 Spk F, 200 ppb Spike)	200	6.38	96.6	45	3.67	NA	NA	10.1	116	53
OKMN-SB-ASB37-0-0035 (C0225086 Spk G, 2 ppb Spike)	2	NR	NR	NR	1.52	3.05	77	4.58	NA	NA
OKMN-SB-ASB37-0-0035 (C0225088 Spk H, 200 ppb Spike)	200	NR	NR	NR	1.52	NA	NA	4.58	106	51
OKMIN-SB-ASB37-DB-0035 (C0225089 Spk C, 2 ppb Spike)	2	4.26	NA	NA	2.00	3.04	52	6.14	NA	NA
OKMN-SB-ASB37-DB-0035 (C0225089 Spk D, 200 ppb Spike)	200	4.26	114	55	2.00	NA	NA	6.14	136	65
OKMN-SB-ASB34-0-0035 (C0225090 Spk E, 2 ppb Spike)	2	44.5	NA	NA	14.0	NA	NA	24,3	NA	NA
OKMN-SB-ASB34-0-0035 (C0225090 Spk F, 200 ppb Spike)	200	44,5	14C	48	14.0	122	54	24.3	132	54
OKMN-SB-ASB34+0-0055 (C0225091 Spk G, 2 ppb Spike)	2	NR	NR	NR	95.3	NA	NA			
OKMN-SB-ASB34-0-0055 (C0225091 Spk H, 200 ppb Spike)	200	NR	NR	NR	95.3	182	43	150	NA 236	NA 43
OKMN-SB-ASB34-0-0085 (C0225092 Spk C, 2 ppb Spike)	2	1160	RE	RE						
OKMN-SB-ASE34-0-0085 (C0225092 Spk 0, 200 ppb Spike)	200	1160	RE	RE	NR NR	NR	NR NR	730 730	RE	RE
,			1.164	~~	CUL	DIES	int	730	RE	RE
OKMN-SB-ASE35-0-0000 (C0225093 Spk E, 2 ppb Spike)	2	NR	NR	NR	2.15	3.95	80	2.34	4.87	127
OKMN-SB-ASB35-0-0000 (C0225093 Spk F, 290 ppb Spike)	200	NR	NR	NR	2.15	NA	NA	2.34	NA	NA
OKMN-SB-ASB35-0-0015 (C0225094 Spk G, 2 ppb Spike)	2	35.5	NA	NA	23.8	NA	NA	31.5	NA	NA
OKMN-SB-ASB35-0-0015 (C0225094 Spk H, 200 ppb Spike)	200	35.5	133	49	23.8	124	50	31.5	137	53
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NR = Not reported due to quality control failure.
RE = Re-extraction required at a higher fortification level; see Table X81 for extraction requires.
NA = Not applicable; matrix spike level outside the relevant range for the andogenous concentration in the sample. 2 ng/g spike televant for 0.2 ng/g to less than 4 ng/g endogenous level in the sample and 200 ng/g spike relevant (or 0.1 ng/g to less than 4 ng/g endogenous level in the sample.
Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw date.

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Sample Description OKMN-SB-ASB35-0-0035 (C0225095 Spk C, 2 ppb Spike) OKMN-SB-ASB35-0-0035 (C0225095 Spk D, 200 ppb Spike) OKMN-SB-ASB35-DB-0035 (C0225096 Spk E, 2 ppb Spike) OKMN-SB-ASB35-DB-0035 (C0225096 Spk F, 200 ppb Spike) OKMN-SB-ASB35-DB-0035 (C0225097 Spk C, 2 ppb Spike) OKMN-SB-ASB35-00055 (C0225097 Spk H, 200 ppb Spike) OKMN-SB-ASB35-0-0055 (C0225098 Spk H, 200 ppb Spike) OKMN-SB-ASB35-0-0065 (C0225098 Spk C, 2 ppb Spike) OKMN-SB-ASB35-0-0085 (C0225098 Spk D, 200 ppb Spike) OKMN-SB-ASB35-0-0085 (C2225098 Spk D, 200 ppb Spike) OKMN-SB-ASB36-0-0085 (C2225098 Spk D, 200 ppb Spike) OKMN-SB-ASB36-0-0085 (C2225098 Spk D, 200 ppb Spike) OKMN-SB-ASB36-0-0085 (C2225098 Spk D, 200 ppb Spike) OKMN-SB-ASB36-0-0085 CX225098 Spk D, 200 ppb Spike) OKMN-SB-ASB36-0-0085 CX225098 Spk D, 200 ppb Spike)	Amount Spiked (ng/g) 2 200 2 200 2 200 2 200	Amt Found in Sample (ng/g) NR NR 24.6 24.6	Amount Recovered (ng/g) NR NR NR	Recovery (%) NR NR NR	Amt Found in Sample (ng/g) 24.3 24.3	Amount Recovered (ng/g) NA 110	Recovery (%) NA	Amt Found in Sample (ng/g) 78.6	Amount Recovered (ng/g) NA	Recove (%) NA
Description OKMN-SB-ASB35-0-0035 (C0225695 Spk C, 2 ppb Spike) OKMN-SB-ASB35-0-0035 (C0225695 Spk D, 200 ppb Spike) OKMN-SB-ASB35-DB-0036 (C0226696 Spk F, 200 ppb Spike) OKMN-SB-ASB35-DB-0035 (C0226967 Spk C, 2 ppb Spike) OKMN-SB-ASB35-DB-0035 (C0225097 Spk C, 2 ppb Spike) OKMN-SB-ASB35-0-0055 (C0225097 Spk K, 200 ppb Spike) OKMN-SB-ASB35-0-0055 (C0225097 Spk K, 200 ppb Spike) OKMN-SB-ASB35-0-0055 (C0225097 Spk K, 200 ppb Spike) OKMN-SB-ASB35-0-0055 (C0225098 Spk C, 2 ppb Spike) OKMN-SB-ASB35-0-0055 (C0225098 Spk C, 2 ppb Spike) OKMN-SB-ASB35-0-0055 (C0225098 Spk C, 2 ppb Spike) OKMN-SB-ASB35-0-0065 (C0225098 Spk D, 200 ppb Spike)	<u>(ha/u)</u> 2 200 2 200 2	(ng/g) NR NR 24.6	(19:1/9) NR NR	(%) NR NR	(ng/g) 24.3	(ng/g) NA	<u>(%)</u> NA	(ng/g)	(ng/g)	(%)
(Co225095 Spk C, Z ppb Spike) OKMN-SB-ASB35-O-0035 (Co225095 Spk 0, 200 ppb Spike) OKMN-SB-ASB35-DB-0036 (Co222096 Spk E, 2 opb Spike) OKMN-SB-ASB35-DB-0035 (Co225096 Spk F, 200 ppb Spike) OKMN-SB-ASB35-O-0055 (Co225097 Spk K, 2 ppb Spike) OKMN-SB-ASB35-O-0055 (Co225097 Spk H, 200 ppb Spike) OKMN-SB-ASB35-O-0085 (Co225098 Spk C, 2 ppb Spike) OKMN-SB-ASB35-O-0085 (Co225098 Spk C, 2 opb Spike)	200 2 200 2	NR 24.6	NR	NR				78.6	NA	NA
(C0225095 Spk 0, 200 ppb Spike) OKIMN-SB-ASB35-DB-0035 (C0225096 Spk E, 2 ppb Spike) OKIMN-SB-ASB35-DB-0035 (C0225096 Spk F, 200 ppb Spike) OKIMN-SB-ASB35-0-0055 (C0225097 Spk G, 2 ppb Spike) OKIMN-SB-ASB35-0-0055 (C0225097 Spk H, 200 ppb Spike) OKIMN-SB-ASB35-0-0085 (C0225098 Spk D, 200 ppb Spike)	2 200 2	24.6			24.3	110				
(C0225096 Spk E, 2 opb Spike) OKMN-SB-ASB35-DB-0035 (C0225096 Spk F, 200 ppb Spike) OKMN-SB-ASB35-0-0055 (C0225097 Spk G, 2 ppb Spike) OKMN-SB-ASB35-0-0055 (C0225097 Spk H, 200 ppb Spike) OKMN-SB-ASB35-0-0085 (C0225098 Spk D, 200 pp6 Spike) OKMN-SB-ASB35-0-0085 (C0225098 Spk D, 200 pp6 Spike)	200		NA	NA		-	43	78.6	175	48
(C0225096 Spir F, 200 ppb Spike) OKIMN-SB-AS835-0-0055 (C0225097 Spir G, 2 ppb Spike) OKIMN-SB-AS835-0-0055 (C0225097 Spir H, 200 ppb Spike) OKIMN-SB-AS835-0-0085 (C0225098 Spir C, 2 ppb Spike) OKIMN-SB-AS835-0-0085 (C0225098 Spir D, 200 ppb Spike)	2	24.6		INAL	NR	NR	NR	66.2	NA	NA
(C0225097 Spk G, 2 ppb Spike) OK/MN-SB-ASB36-0-0055 (C0225097 Spk H, 200 ppb Spike) OK/MN-SB-ASB35-0-0085 (C0225098 Spk C, 2 ppb Spike) OK/MN-SB-ASB35-0-0085 (C0225098 Spk D, 200 pp6 Spike)			114	45	NR	NR	NR	68.2	159	45
(C0225097 Spk H, 200 ppb Spike) OKMN-SB-ASB35-0-0085 (C0225098 Spk C, 2 ppb Spike) OKMN-SB-ASB35-0-0085 (C0225098 Spk D, 200 pp6 Spike)	200	135	NA	NA	87.5	NA	NA	619	RE	RE
(C0225098 Spk C, 2 ppb Splke) OKMN-SB-ASB35-0-0085 (C2225098 Spk D, 200 ppb Splke)		135	249	57	87.5	190	51	619	RE	RE
(C5225098 Spk D, 208 ppb Spike)	2	NR	NR	NR	84.0	NA	NA	399	RE	RE
OKMN-SB-ASB36-0-0000	200	NR	NR	NR	64.0	186	51	999	RE	RE
(C0225099 Spit E, 2 ppb Spike)	2	9.84	NA	NA	2.28	3.31	52	2.56	3.76	60
OKMN-SB-ASB36-0-0000 (C0225099 Spk F, 200 pp5 Spike)	200	9.84	98.6	44	2.28	NA	NA	2.56	NA	NA
OKMN-SB-ASB32-0-0075 (C0225100 Spk G, 2 ppb Spike)	2	1320	RE	RE	NR	NR	NR	538	RE	RE
ОКМN-SB-ASB32-0-0075 (С0225100 Spk H, 200 pp5 Spike)	200	1320	RE	RE	NR	NR	NR	538	RE	RE
OKMN-S8-AS833-0-0000 (C0225102 Spk C, 2 ppb Spike)	2	6.78	NA	NA	NR	NR	NR	1.25	2.93	84
OKMN-SB-ASB33-0-0000 (C0225102 Spk D, 200 ppb Spike)	200	6.78	89:4	41	NR	NR	NR	1,25	NA	NA'
OKMN-SB-ASB33-0-0015 (C0225163 Spk E, 2 ppb Spike)	2	10.1	NA	NA	5.08	NA	NA	8.63	NA	NA
OKMN-SB-ASB33-0-0015 (C0225103 Spk F, 200 ppb Spike)	200	10.1	112	51	5.08	94.1	45	8.63	106	49
OKMN-SB-ASB33-0-0035 (C0225104 Spk G, 2 ppb Spike)	2	11.9	NA	NA	6.01	NA	NA	9.44	NA	NA
OKMN-SB-ASB33-0-0035 (C0225104 Spk H, 200 ppb Spike)	200	11.9	100	44	6.01	92.3	43	9.44	101	46
OKMIV-SB-ASB33-DB-0035 (C0225105 Spk C, 2 ppb Spike)	2	9.21	NA	NA	6.88	NA	NA	7.87	NA	NA
OKMN-SB-ASB33-DB-0035 (C0225105 Spk D, 200 ppb Spike)	200	9.21	90.9	41	6.88	141	67	7.87	119	56
OKMN-SB-ASB33-0-0055 (C0225106 Spk E, 2 ppb Spike)	2	NR	NR	NR	20.7	NA	NA	NR	NR	NR
OKMN-SB-ASB33-0-0055 (C0225106 Spk F, 200 ppb Spike)	200	NR	NR	NR	20.7	133	56	NR	NR	NŔ
OKMN-SB-AS833-0-0085 (C0225107 Spk G, 2 ppb Spike)	2	NR	NR	NR	29.3	NA	NA	NR	NR	NR
OKMN-SB-AS833-0-0085 (C0225107 Spk H, 200 ppb Spike)	200	NR	NR	NR	29.3	110	40	NR	NR	NR

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			4 Acid PFBA orobutanoic	Acid		5 Acid PFPeA propentanoic			6 Acid PFHA prohexanoic	Acid
	Amount	Amt Found	Amount		Amt Found	Amount		Amt Found	Amount	
Sample	Spiked	in Sample	Recovered	Recovery	in Sample	Recovered	Recovery	in Sample	Recovered	Recovery
Description	(ng/g)	(ng/g)	(r)g/g)	(%)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)
OKMN-SB-ASB34-0-0000 (C0225108 Spk C, 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	0.405	1.34	47
OKMN-SB-ASB34-0-0000 (C0225106 Spk D, 200 pp5 Spike)	200	NR	NR	NR	NR	NR	NR	0.405	NA	NA
OKMN-SB-ASB34-0-0015 (C0225109 Spk E, 2 ppb Spike)	2	8.53								
OKMN-SB-ASB34-0-0015		0.55	NA	NA	NR	NR	NR	6.59	NA	NA
(C0225109 Spk F, 200 ppb Spike)	200	8.53	104	48	NR	NR	NR	6.59	99.2	46
OKMN-SB-ASB31-0-0000 (C0225110 Spk G, 2 ppb Spike)	2	10.5	NA	NA	NR	NR	NR	NR	NR	NR
CKMN-SB-ASB31-0-0000 (C0225110 Spk H, 200 ppb Spike)	200	10.5	101	45	NR	NR	NR	NR	NR	NR
CKMN-SB-ASB31-0-0015										
(C0225111 Spk C, 2 ppb Spike) OKMN-SB-ASB31-0-0015	2	NR	NR	NR	6.56	NA	NA	12.8	NA	NA
(C0225111 Spk D, 200 ppb Spike)	200	NR	NR	NR	6.58	107	50	12.8	93.5	40
OKMN-SB-ASB31-0-0035 (C0225112 Spk E, 2 ppb Spike)	2	199	NA	NA	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB31-0-0035 (C0225112 Spk F, 200 ppb Spike)	200	199	328	65	NR	NR	NR	NR	NR	NR
OKMN-SB-AS831-0-0055		0.05								
(C0225113 Spk G, 2 ppb Spike)	2	206	NA	NA	79.9	NA	NA	NR	NR	NR
OKMN-SB-ASB31-0-0055 (C0225113 Spk H, 200 ppb Spike)	200	206	320	57	79.9	179	50	NR	NR	NR
OKMN-SB-ASB31-0-0070 (C0225114 Spk C, 2 ppb Spike)	2	309	NA	NA	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB31-0-0070 (C0225114 Spk D, 200 ppb Spike)	200	309	408	50	NR	NR	NR	NR	NR	
OKMN-SB-ASB32-0-0000								NIX.	INEX	NR
(C0225115 Spk E, 2 ppb Spike) OKMN-SB-ASB32-0-0000	2	NR	NR	NR	4.67	NA	NA	NR	NR	NR
(C0225115 Spk F, 200 ppb Spike)	200	NR	NR	NR	4.67	96.2	46	NR	NR	NR
OKMN-SB-ASB32-0-0015 (C0225116 Spk G, 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	NR	NR	NR
OKMN-SB-ASS32-0-0015 (C0225116 Spk H, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB32-DB-0015										
(C0225117 Spk C, 2 ppb Spike) OKMN-SB-AS832-DB-0015	2	285	NA	NA	69.4	NA	NA	154	NA	NA
(C0225117 Spk D, 200 ppb Spike)	260	285	548	132	69.4	245	88	154	316	81
OKMN-SB-ASB32-0-0035 (C9226118 Spk £, 2 ppb Spike)	2	759	RE	RE	145	NA	NA	NR	NŔ	NR
OKMN-SB-AS832-0-0035 (C0225118 Spk F, 200 ppb Spike)	200	759	RE	RE	145	263	59	NR		
OKMN-SB-ASB32-0-0055	-					200		ING	NR	NR
(C0225119 Spk G, Z ppb Spike) OKMN-SB-ASB32-0-0055	5	816	RE	RE	165	NA	NA	NR	NR	NR
(C0225119 Spk H, 290 ppb Spike)	200	816	RE	RE	165	284	60	NR	NR	NR
v Not resident due to quality readent full-					14		L			

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AR ≠ Not reported due to quality control failure.
 AR ≠ Not reported due to quality control failure.
 AR = Re-extraction required at a higher fortification level; see Table XIII for extraction results.
 NA ≤ Not applicable; matrix spike level cutside the relevant range for the endogenous concentration in the sample.
 2 rg/g spike relevant for 0.2 rg/g to table than 4 rg/g endogenous level in the sample.
 Note: Since this summary table shows rounded results, recovery values may very slightly from the values in the raw data.

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			4 Acid PFBA probutanoic			5 Acid PFPeA propentanoic			6 Acid PFHA prohexanoic	
	Amount	Amt Found	Amount		Amt Found	Amount		Amt Found	Amount	
Sample Description	Spiked (ng/g)	in Sample (ng/g)	Recovered (ng/g)	Recovery (%)	in Sample	Recovered	Recovery	in Sample	Recovered	Recovery
	1	0.3/97	<u>(1941)</u>	(74)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)
OKMN-SB-ASE39-0-0035 (C0225120 Spk C, 2 ppb Spike)	2	74.7	NA	NA	16.7	NA	NA	26.3	NA	NA
OKMN-SB-ASB39-0-0035 (C0225120 Spk D, 200 ppb Spike)	200	74.7	234	80	16.7	202	93	26.3	219	96
OKMN-SB-ASB39-0-0055 (C0225121 Spk E, 2 ppb Spike)	2	274	NA	NA	38.3	NA	NA	90.6	NA	NA
OKMN-SB-ASB39-0-0055 (C0225121 Spk F, 200 ppb Spike)	200	274	419	73	38,3	211	86	90,6	253	81
OKMN-SB-ASB39-0-0070 (C0225122 Spit G, 2 ppb Spike)	2	173	NA	NA	23.5	NA	NA	36.7	NA	
OKMN-S8-ASB39-0-0070					20.0	INA	INA	30.7	NA	NA
(C0225122 Spk H, 200 ppb Spike)	200	173	295	6 1	23.5	188	82	36.7	204	84
OKMN-S8-AS840-0-0000 (C0225123 Spk C, 2 ppb Spike)	2	NR	NR	NR	1.01	3.11	105	0.343	2.56	111
CKMN-SB-AS840-0-0000 (C0225123 Spk D, 200 ppb Spike)	200	NR	NR	NR	1.01	NA	NA	0.343	NA	NA
OKMN-SB-ASB40-0-0015 (C0225124 Spk E, 2 ppb Spike)	2	0.365	1.58	61	0.364^	2.47	105	0.705	2,78	104
OKMN-SB-ASB40-0-0015 (C0225124 Sek F, 200 ppb Spike)	200	0.365	NA	NA	0.364^	NA	NA	0.705	NA	NA
OKMN-SB-ASB40-0-0035 (C0225125 Spk G, 2 ppb Spike)	2	1.28	2.16	44	0.587	2.30	86	1.30	2.73	72
OKMN-SB-AS840-0-0035 (C0225125 Spk H, 200 ppb Spike)	200	1.28	NA	NA	0.587	NA	NA	1.30	NA	NA
OKMN-SB-ASB40-0-0055 (C9225126 Spik C, 2 ppb Spike)	2	2.43	4.51	104	0.897	3.17	114	3.31	5.86	128
OKMN-SB-ASB40-0-0055 (C0225125 Spk 9, 200 ppb Spike)	200	2.43	NA	NA	0.897	NA	NA	3.31	NA	NA
OKMN-SB-ASB40-0-0090 (C8225127 Spk E, 2 ppb \$pike)	2	3.93	5.63	85	2.68	4.81	107	19.4	NA	
OKMN-SB-AS840-0-0090 (C9225127 Spk F, 200 ppb Spike)	200	3.93	NA							NA
OKMN-SB-ASB41-0-0015	200	3.85	INA	NA	2.68	NA	NA	<u> 19.4</u>	206	93
(C0225126 Spk G, 2 ppb Spike) OKMN-SB-ASB41-0-0015	2	8.64	NA	NA	7.14	NA	NA	15.6	NA	NA
(C0225128 Spk H, 200 ppb Spiks)	200	8.84	202	97	7.14	184	88	15.6	207	96
OKMN-SB-ASB41-0-0035 (C0225129 Spk C, 2 ppb Spike)	2	39,5	NA	NA	15.1	NA	NA	54.5	NA	NA
OKMN-SB-ASB41-0-0035 (C0225129 Spk D, 200 ppb Spike)	200	39.5	205	83	15.1	192	88	54.5	205	75
OKMN-SB-ASB41-0-0055 (C6225130 Spk E, 2 ppb Spike)	2	27.6	NA	NA	11.5	NA	NA	35.2	NA	NA
OKMN-SB-ASB41-0-0055 (C0225138 Spk F, 236 ppb Spike)	200	27.6	221	97	11.5	220	104	35.2	193	79
OKMN-SB-ASB41-0-0090 (C0225131 Spk G, 2 ppb Spike)	2	94.0	NA	NA	13.9	NA	NA	30.5	NA	NA
OKMN-SB-ASB41-0-0090 (C0225131 Spk H, 270 ppb Spike)	200	94.0	268	87	13.9	183	85	30.5	183.	NJA 76

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Asample reported as ND on Table (but sample result was used to calculate the matrix spike recovery. NR = Not reported the to quality control failure. NA = Not applicable; matrix spike level outside the relevant range for the endogenous concentration in the sample. 2 rg/g spike relevant for 0.2 rg/g to less than 4 rg/g endogenous level in the sample and 20 rg/g spike relevant for 4 rg/g to less than 400 rg/g endogenous level in the sample. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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		Perflu	4 Acid PFBA probutanoic			5 Acid PFPeA propentanoic			6 Acid PFHA prohexanoic	
Sample Description	Amount Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)
OKMN-S8-AS841-D8-0090 (C0225132 Spk C, 2 ppb Spike)	2	88.3	NA	NA	12.3	NA	NA	NR	NR	NR
OKMN-SB-ASB41-DB-0090 (C0225132 Spk D, 200 pp5 Spike)	200	88.3	324	118	12.3	196	92	NR	NR	NR
OKMN-S8-AS842-0-0000 (C0228133 Spk E, 2 ppb Spika)	2	ND	2.02	101	0.231	1.64	70	ND	1.59	80
OKMN-SB-ASB42-0-0000 (C0225133 Spk F; 200 ppb Spike)	200	ND	NA	NA	0.231	NA	NA	ND	NA	NA
CKMN-SB-ASB42-0-0015 (C0225134 Spk G, 2 ppb Spike)	2	ND	1.66	83	ND	2.4	120	0.357	1.88	76
OKMN-SB-ASB42-0-0015 (C6325134 Spk H, 200 ppb Spike)	200	NO	NA	NA	ND	NA	NA	0.357	NA	NA
OKMN-SB-ASB42-0-0035 (C0225135 Spk C, 2 ppb Spike)	2	7.93	NA	NA	3.14	5.42	114	16,4	NA	NA
OKMN-SB-ASB42-0-0035 (C0225135 Spk D, 209 ppb Spike)	200	7.93	172	82	3.14	NA	NA	16.4	214	99
OKMN-SB-ASB42-0-0055 (C0225136 Spk E, 2 ppb Spike)	2	8.85	NA	NA	3.21	5.25	102	16.2	NA	NA
OKMN-SB-ASB42-0-0055 (00225136 Spk F, 200 ppb Spike)	200	6.85	199	95	3.21	NA	NA	16.2	208	96
OKMN-SB-AS842-0-0070 (C0225137 Spk G, 2 ppb Spike)	2	15.0	NA	NA	4.22	NA	NA	20.8	NA	NA
OKMN-S8-ASB42-0-0070 (C0225137 Spk H, 200 ppb Spike)	200	15.0	183	84	4.22	195	95	20.8	212	96
OKMN-SB-ASB43-0-0015 (C0225138 Spk C, 2 ppb Spike)	2	6.77	NA	NA	4,69	NA	NA	8.76	NA	NA
OKMN-SB-AS843-0-0015 (C0225139 Spk D, 200 ppb Spike)	200	6.77	177	85	4.69	199	97	8.76	181	86
OKMN-SB-ASB43+0-0085 (C8225140 Spik E, 2 ppb Spike)	2	31.7	NA	NA	13.1	NA	NA	15.5	NA	NA
OKMN-SB-ASB43-0-0035 (C0225140 Spk F, 200 ppb Spike)	200	31.7	217	93	13.1	217	102	16.5	175	80
OKMN-SB-ASB43-0-0055 (C0225141 Spk G, 2 ppb Spike)	2	81.1	NA	NA	24.6	NA	NA	31.5	NA	NA
OKMN-SB-ASB43-0-0055 (C0225141 Spk H, 200 ppb Spike)	200	81.1	216	67	24.5	213	94	31.5	188	78
OKMN-SB-ASB43-0-0090 (C0225142 Spk C, 2 ppb Spike)	2	35.3	NA	NA	18.3	NA	NA	36.2	NA	NA
OKMN-SB-ASB43-0-0090 (C0225142 Spk D, 200 ppb Spike)	200	35.3	233	99	18.3	195	88	36.2	206	84
		Standard	Average: 1 Deviation:	67 23	Standar	Average: d Deviation:	70 24	Standan	Average: 1 Deviation:	69 23

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Not entroported due to quality control failure.
 NA = Not reported due to quality control failure.
 NA = Not reported due to quality control failure.
 NA = Not applicable; matrix spike level outside the relevant range for the endogenous concentration in the sample. 2 rg/g spike relevant for 0.2 rg/g to less than 4 rg/g endogenous level in the sample and 200 rg/g spike relevant for 4 rg/g to less than 4 rg/g endogenous level in the sample.
 Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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Amount Amount<				Acid PFHpA			8 Acid PFOA orooctanoic			9 Acid PFNA Irononancic	
	()					Amt Found	Amount		Amt Found	Ampunt	
CHAIN-SB-ABB37-0.0055 CIL											Recove (%)
concentry base A: 2 pub Selven 2 0.54 NA NA 9.32 NA NA NR			<u> </u>				(19.97)		(19.9)	(19/4)	(76)
OKUMA SBA ABB 70 0055 CIRCUMA SBA ABB 70 0075 CIRCUMA SBA ABB		2	6.94	N4	ΝΔ	0.32	NA	N/0	ND	6103	
OKUM-SB-AS37-0-0075 Image: Control of the						0.01		110-1	nn.	110	NR
(cd22207) Spir. J Jup B Spire) 2 NR NR NR NR 12.6 NA NA ND 1.01 2 (cd2207) Spir. JUB ppb Spire) 200 NR NR NR NR 12.6 106 47 ND NA NA (cd2207) Spir. JUB ppb Spire) 2 1.33 4.13 110 17.1 NA NA 0.175 0.074 4 (cd2207) Spir. JUB ppb Spire) 2 1.33 4.13 110 17.1 NA NA 0.175 0.074 4 (cd2207) Spir. JuB ppb Spire) 2 NR NR NR 73.9 NA NA NR	(C0225076 Spk D, 206 ppb Spike)	200	6.94	104	49	9.32	191	91	NR	NR	NR
CHARLANGE AGBERT-GOATS NR NR<	OKMN-SB-AS837-0-0075										
(cccccccc) Cccccccc) NR NR NR NR 12.6 105 47 ND NA NA CKUM-SB-ASB36-0000 2 1.33 4.13 116 17.1 NA NA 0.175 0.674 4 CKUM-SB-ASB38-0000 2 1.33 NA NA 17.1 106 44 0.175 NA NA CKUM-SB-ASB38-0005 2 NR NR NR NR 73.9 NA NA NR N	(C0225071 Spk &, 2 ppb Spike)	2	NR	NR	NR	12.6	NA	NA	ND	1.01	51
CKUN-SB-ASE38-0-0000 2 1.33 4.13 110 17.1 NA NA 0.175 0.674 4 CKUN-SB-ASE38-0-0000 200 1.33 NA NA 17.1 NA NA 0.175 NA NA CKUN-SB-ASE38-0-0015 2 NR NR NR NR 73.9 NA NA NR											
(10225072 Spir R, 2 pp 5 Spire) 2 1.33 4.13 110 17.1 NA NA 0.175 0.674 4 CRUMP 56 ASSIS 0-0000 200 1.33 NA NA 17.1 106 44 0.175 NA NA NA CRUMP 56 ASSIS 0-0015 2 NR NR NR NR 73.9 NA NA NR <		200	NR(NR	NK	12.6	106	47	ND	NA	NA
CHUMN-SB-ASB36-0.0000 200 1.33 NA NA NA 17.1 106 4.4 0.175 NA NA CHGMM-SB-ASB38-0.0015 2 NR NR NR NR 73.9 NA NA NR S0.2		,	4.53								
CG2223072 Spk H, 200 pp5 Spike) 200 1.33 NA NA 17.1 106 44 0.175 NA NA CKLMN-SE-AS380-0015 NR NR NR NR 73.9 NA NA NR			1.90	4.10	110	17.3	INA	NA	0.1/5	0.974	40
OKAIN-SB-ASB38-0.0015 (0222073 Sex G, 2 peb Senwa) Z NR NR NR 73.9 NA NA NR NR NR NR NR NR NR NA NA NR		200	1.93	NA	NA	17.1	106	44	0.175	NA	NA
(c0223073 Spic C, 2 pob Spike) 2 NR NR NR NR 73.3 NA NA NR SGEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEEE	OKANN CD. ACD39 () DO15										
DICKIN-SB-AS339-0-0016 (202207395;k 0, 200 ppb Spike) 200 NR NR NR 73.9 170 4.8 NR NR NR DICKIN-SB-AS338-0-0035 (20220749;k 2, ppb Spike) 2 8.11 NA NA 107 NA NA NR NR NR NR DICKIN-SB-AS338-0-0035 (20220749;k 2, ppb Spike) 200 8.11 102 47 107 218 56 NR NR NR NR DICKIN-SB-AS338-0-0035 (2022075 Spik 0, 2 ppb Spike) 2 8.02 NA NA 123 NA NA NR NR NR NR DICKIN-SB-AS538-0-0055 (2022075 Spik 0, 2 ppb Spike) 2 8.02 10C 46 123 220 48 NR NR NR DICKIN-SB-AS538-0-0055 (2022075 Spik 0, 2 ppb Spike) 2 19.7 NA NA NR		2	NR	NR	NR	73.9	NA	NA	NR	NR	NR
CKIM-SB-AS338-0-0035 Z 8.11 NA NA 107 NA NA NR NR<											
(C02280749bk E, 2 ppb Spike) 2 8.11 NA NA 107 NA NA NR Sabs 30-000015 C02	(C0225073 Spk D, 200 ppb Spike)	200	NR	NR	NR	73.9	170	48	NR	NR	NR
OKANN-SB-ASB38-0-0035 200 8.11 102 47 107 218 56 NR NR NR NR OKANN-SB-ASB38-0-0035 0 8.02 NA NA 123 NA NA NR Stastastastastasta											
(C0225074 Spk #, 200 ppb Spike) 200 8.11 102 47 107 218 56 NR SG2 SG2 <td></td> <td>2</td> <td>8.11</td> <td>NA</td> <td>NA</td> <td>107</td> <td>NA</td> <td>NA</td> <td>NR</td> <td>NR</td> <td>NR</td>		2	8.11	NA	NA	107	NA	NA	NR	NR	NR
OKAN-SB-ASE38-DE-0055 2 8.02 NA NA 123 NA NA NR NR NR OKAN-SB-ASE38-DE-0055 200 8.02 100 46 123 220 49 NR SSSS-0.0015 CO200015<		200	8.11	102	47	107	219	56	NB	N1C	NR
(02228075 Spk G, 2 ppb Spike) 2 8.02 NA NA 123 NA NA NR Stasstastastas					· · ·		210	50	DIR.	PALS.	INK
OKINI-SB-ASB36-DB-0035 200 8.02 100 46 123 220 49 NR NR NR OKIMI-SB-ASB38-0-0055 19.7 NA NA NR <		2	8.02	NA	NA	123	NΔ	NΔ	NG	ND	NR
OKMN-SB-ASB38-0-0055 2 19.7 NA NA NR SG2 SG2						125	1123	00	TWO,	INC	EVEN.
(C0225076 Spk C. 2 ppb Spike) 2 19.7 NA NA NR SG2000000000000	C0225075 Spk H, 200 ppb Spike)	200	8,02	10C	46	123	220	49	NR	NR	NR
OKMN-SB-ASE39-0-0055 200 19.7 106 43 NR SG20200	OKMN-SB-ASB38-0-0055										
(20225076 Spk D, 200 ppb Spike) 200 19.7 106 43 NR	(C0225076 Spk C, 2 ppb Spike)	2	19.7	NA	NA	NR	NR	NR	NR	NR	NR
OKIMN-SB-ASB38-0-0080 (00225077 Spk E, 2 ppb Spike) 2 14.7 NA NA NR NR ND 0.886 44 OKIMN-SB-ASB38-0-0080 (00225077 Spk E, 2 00b Spike) 200 14.7 97.5 41 NR NR ND 0.886 44 OKIMN-SB-ASB38-0-0015 (00225077 Spk G, 2 ppb Spike) 200 14.7 97.5 41 NR NR ND NA NA OKIMN-SB-ASB39-0-0015 (20225078 Spk H, 200 ppb Spike) 2 30.7 NA NA 418 RE RE NR NR NR OKIMN-SB-ASB39-0-0015 (20225078 Spk C, 2 ppb Spike) 200 30.7 124 47 418 RE RE NR NR NR OKIMN-SB-ASB39-DB-0015 (20225078 Spk C, 2 ppb Spike) 2 59.8 155 48 452 RE RE NR NR NR OKAIN-SB-ASB39-DB-0015 (20225078 Spk C, 200 pb Spike) 2 108 NA NA 967 RE RE NR NR OKAIN-SB-ASB36-DB-0015 (20225068 Spk F, 200 pb Spike)<		200	40.7								
(C0225077 Spk E, 2 ppb Spike) 2 14.7 NA NA NR NR NR ND 0.886 4.4 OKMN-SB-AS836-0-0080 200 14.7 97.5 41 NR NR NR ND NA NL OKMN-SB-AS839-0-0015 2 30.7 NA NA 418 RE RE NR		200	18.7	100	43	NPC	NR	NR	NR	NR	NR
OKMN-SB-ASB36-0-0080 200 14.7 97.5 41 NR NR ND NA NL OKMN-SB-ASB36-0-0015 2 30.7 NA NA 418 RE RE NR NR NR NR NR NR NR NR NR NA NA NA NA NA NA NA NA NA NR N			14 7	NIð	NIA	N IED	NO	ND 1	10	0.000	
(C0225077 Spk F, 200 ppb Spike) 200 14.7 97.5 41 NR NR NR ND NA NL OKMN-SB-ASB39-0-0015 2 30.7 NA NA NA 418 RE RE NR			14.1	11/5		INC	1967	1417	ND	0.896	43
(C0225070 Spk G, 2 ppb Spike) 2 30 7 NA NA 418 RE RE NR NR NN OKMN-SB-ASB39-0015 200 30.7 124 47 418 RE RE NR NR NN OKMN-SB-ASB39-0B-0015 200 30.7 124 47 418 RE RE NR NR NN OKMN-SB-ASB39-0B-0015 2 59.8 NA NA 452 RE RE NR NR NR OKMN-SB-ASB39-0B-0015 2 59.8 155 48 452 RE RE NR NR NR NR OKMN-SB-ASB36-0015 200 59.8 155 48 452 RE RE NR NR NR OKMN-SB-ASB36-0015 2 103 NA NA 997 RE RE NR NR NR OKMN-SB-ASB36-015 2 103 208 50 997 RE RE <t< td=""><td></td><td>200</td><td>14.7</td><td>97.5</td><td>41</td><td>NR</td><td>NR</td><td>NR</td><td>ND</td><td>NA</td><td>NA</td></t<>		200	14.7	97.5	41	NR	NR	NR	ND	NA	NA
(C0225070 Spk G, 2 ppb Spike) 2 30 7 NA NA 418 RE RE NR NR NN OKMN-SB-ASB39-0015 200 30.7 124 47 418 RE RE NR NR NN OKMN-SB-ASB39-0B-0015 200 30.7 124 47 418 RE RE NR NR NN OKMN-SB-ASB39-0B-0015 2 59.8 NA NA 452 RE RE NR NR NR OKMN-SB-ASB39-0B-0015 2 59.8 155 48 452 RE RE NR NR NR NR OKMN-SB-ASB36-0015 200 59.8 155 48 452 RE RE NR NR NR OKMN-SB-ASB36-0015 2 103 NA NA 997 RE RE NR NR NR OKMN-SB-ASB36-015 2 103 208 50 997 RE RE <t< td=""><td>OKMN-SB-ASB39-0-0015</td><td></td><td></td><td></td><td></td><td></td><td></td><td> </td><td></td><td></td><td></td></t<>	OKMN-SB-ASB39-0-0015										
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OKMN-SB-ASB39-DB-0015 200 59.8 155 48 452 RE NR NR NR CKMN-SB-ASB36-0-0015 2 103 NA NA 997 RE RE NR NR NR NR CKMN-SB-ASB36-0-0015 2 103 NA NA 997 RE RE NR NR NR OKMN-SB-ASB36-0-0015 2 103 NA NA 997 RE RE NR NR NR OKMN-SB-ASB36-0-0015 2 103 208 50 997 RE RE NR NR NR OKMN-SB-ASB36-DB-0015 2 NR NR NR 959 RE RE NR NR NF DKMN-SB-ASB36-DB-0015 2 NR NR NR 959 RE RE NR NR NF DKWN-SB-ASB36-DB-0015 200 100 100 100 100 100 100 100 <td></td>											
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CKMN-SB-ASE36-0-0015 2 105 NA NA 997 RE RE NR NF OKMN-SB-ASE36-0015 0 103 208 50 997 RE RE NR NR NF OKMN-SB-ASE36-0615 0 103 208 50 997 RE RE NR NR NF OKMN-SB-ASE36-0B-0015 0 103 208 50 997 RE RE NR NR NF OKMN-SB-ASE36-0B-0015 0 0 103 208 50 997 RE RE NR NR NF OKMN-SB-ASE36-0B-0015 0 0 NR NR 959 RE RE NR NR NF OKMN-SB-ASE36-0B-0015 0 0 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 <td< td=""><td></td><td>200</td><td>59.8</td><td>155</td><td>48</td><td>452</td><td>RE</td><td>RE</td><td>NB</td><td>NR</td><td>NR</td></td<>		200	59.8	155	48	452	RE	RE	NB	NR	NR
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OKMN-SB-ASB36-0-0015 200 103 208 50 967 RE RE NR NR NF OKMN-SB-ASB36-0B-0015		2	108	NA	NA	997	RE	RE	NR	NR	NR
OKMN-SB-ASB36-0B-0015 Q NR NR 959 RE RE NR NF OKVM-SB-ASB36-0B-0015 Q NR NR NR 959 RE RE NR NF OKVM-SB-ASB36-0B-0015 Q NR NR NR 959 RE RE NR NF	OKMN-SB-AS836-0-0015										
(C0225081 Spk G, 2 ppb Spike) 2 NR NR NR 959 RE RE NR NR NF OK/WN-SB-ASB 00-0015	C0225680 Spk F, 200 ppb Spike)	200	103	208	50	997	RÉ	RE	NR	NR	NR
DKMN-S8-ASB36-DB-0015								******			
		2	NR	NR	NR	959	RE	RE	NR	NR	NR
		200	NR	NP	NP	968	RE		NO	<u>م: ت</u>	
	· · · · Marcoking						ne.	<u>م</u> دد،	INT	INF(NR
Re-extraction required at a higher forification level; see Table XIII for extraction results. Not applicable; matrix spike level outside the relevant range for the endogenous concentration in the sample. 2 rg/g apike relevant for 0.2 rg/g to less than 4 rg/g endogenous level in the	wur sopiicable; mainx spike ievel outsi	te the relevant m	ange for the endog i fhan 400 ng/g en	encue concentra	tion in the san	∙ple. 2 ng/g spika	relevant for 0.2	ng/g to less the	in 4 ngig endogen	ous level in the	

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			Acid PFHpA			8 Acid PFOA orooctanoic			9 Acid PFNA arenonanoic	
	Amount	Amt Found	Amount		Arnt Found	Amount		Amt Found	Amount	
Sample	Spiked	in Sample	Recovered	Recovery	in Sample	Recovered		in Sample	Recovered	
Description	(ng/g)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)
OKMN-SB-ASB36-0-0030 (C0225082 Spk C, 2 ppb Spike)	2	165	NA	NA	1500	RE	RE	NR	NR	NR
OKMN-SB-ASB36-0-0030 (C0225082 Spk 0, 200 ppb Spike)	200	165	255	45	1500	RE	ŔE	NR	NR	NR
OKMN-SB-ASB36-0-0055 (C0226082 Spk E, 2 ppb Spike)	2	185	NA	NA	2450	RE	RE	4.45	NA	NA
OKMN-S8-ASB36-0-0055 (C0225063 Spk F, 200 ppb Spike)	200	185	298	57	2450	RE	RE	4.45	89.0	42
OKMN-SB-ASB36-0-0095 (C9225064 Spk G, 2 ppb Spike)	2	55.3	NA	NA	NR	NR	NR	ND	1.15	58
OKMN-SB-ASB36-0-0095 (C0225084 Spx H, 200 ppb Spike)	200	55.3	220	82	NR	NR	NR	ND	NA	NA
OKMN-SB-ASB37-0-0000 (C6225686 Spk C, 2 ppb Spike)	2	1,91	4.37	123	NR	NR	NR	0.281	1,18	45
OKMN-SB-ASB37-0-0000 (C0225066 Spk D, 200 ppb Spike)	200	1.91	NA	NA	NR	NR	NR	0.281	NA	NA
OKMN-SB-ASB37-0-0015 (C0225087 Spk 5, 2 ppb Spike)	2	16.7	NA	NA	222	NA	NA	NR	NR	NR
OKMN-SB-ASB37-0-0015 (C0225087 Spk F, 200 ppb Spike)	200	16.7	120	52	222	312	45	NR	NR	NR
OKMN-SB-ASB37-0-0035 (C0225088 Spk G, 2 ppb Spike)	2	7.00	NA	NA	81.9	NA	NA	NR	NR	NR
OKMN-SB-AS837-0-0035 (C0225088 Spk H, 200 ppb Spike)	200	7.00	109	51	81.9	201	60	NR	NR	NR
OKMN-SB-ASB37-(JB-0035 (C0225089 Spk C, 2 ppb Spike)	2	8,29	NA	NA	88.2	NA	NA	NR	NR	NR
OKMN-SB-ASB37-DB-0035 (C8225089 Spk D, 200 ppb Spika)	200	8.29	109	50	88.2	265	88	NR	NR	NR
OKMN-SB-ASB34-0-0035 (C0225090 Spike, 2 ppb Spike)	2	37.0	NA	NA	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB34-0-0035 (C0225090 Spk F, 200 ppb Spike)	200	37.0	144	54	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB34-0-0055 (C0225091 Spk G, 2 ppb Spike)	2	156	NA	NA	4230	RE	RE	NR	NR	NR
OKMN-SB-ASB34-0-0055 (C0225091 Spk H, 200 ppb Spike)	200	156	246	45	4230	RE	RE	NR	NR	NR
OKMN-SB-AS834-0-0085 (C0225092 Spk C, 2 ppb Spike)	2	884	RE	RE	13100	RE	RE	12.2	NA	NA
OKMN-SB-ASB34-0-0085 (C8225092 Spk 0, 200 ppb Spike)	200	884	RE	RE	13100	RE	RE	12.2	96.4	42
OKMN-SB-ASB35-0-0000 (C0225093 Spk E, 2 ppb Spike)	2	1.18	3.08	95	11.5	NA	NA	NR	NR	NR
OKMN-SB-ASB35-0-0000 (C0225093 Spk F, 200 ppb Spike)	200	1.18	NA	NA	11.5	100	44	NR	NR	NR
OKMN-SB-ASB35-0-0015 (C0225094 Spk G, 2 ppb Spike)	2	34.1	NA	NA	884	RE	RE	NR	NR	NR
OKMN-SB-ASE35-0-0015 (C0225094 Spk H, 200 ppb Spike)	200	34.1	144	55	884	RE	RE	NR	NR	NR

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ND = NXI detacted at or above the acceptable LOQ reported on Table II.
 NR = Not reported due to quality control failure.
 RE = Re-extraction required at a higher forfication issel, see Table XIII for extraction results.
 NA = Not reported to a bigher forfication issel, see Table XIII for extraction results.
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 NA = Not reported to a bigher forfication issel, see Table XIII for extraction results.
 NA = Not reported to a bigher for ALD reported to a bigher for the endogenous concentration in the sample. 2 rg/g spike relevant for 0.2 rg/g to less than 4 rg/g endogenous level in the sample.
 Note: Since this summary table shows roanded results, recovery values may vary slightly from the values in the raw data.

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		C7 Acid PFHpA Perfluoroheptanoic Acid				8 Acid PFOA		C9 Acid PFNA Perfluorononanoic Acid			
Sample Description	Amount Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	
CKMN-SB-ASB35-0-0035 (C0225095 Spk C, 2 ppb Spike)	2	NR	NR	NR	2770	RE	RE	NR		NR	
OKMN-SB-ASB35-0-0035 (C0225095 Spk D, 200 ppb Spike)	200	NR	NR	NR	2770	RE	RE	NR	NR	NR	
OKMN-SB-AS835-DB-0035 (C0225096 Spk E, 2 ppb Spike)	2	NŔ	NR	NR	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASE35-DB-0035 (C6225098 Spk F, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB35-0-0055 (C0225097 Spk G, 2 ppb Spike)	2	824	RE	RE	12000	RE	RE	25.0	NA	NA	
OKMN-SB-ASB35-0-0055 (C0225097 Spix H, 206 ppb Spike)	200	624	RE	RE	12000	RE	RE	25.0	110	43	
OKMN-SB-ASB35-0-0085 (C0225098 Spk C, 2 ppb Spike)	2	1080	RE	RE	3300	RE	RE	441	NA	NA	
OKMN-SB-ASB35-0-0085 (C0225098 Spk D, 200 ppb Spike)	200	1080	RE	RE	3300	RE	RE	4.41	121	58	
OKMN-SB-ASB36-0-0000 (C0225099 Spk E, 2 ppb Spike)	2	1.38	2.78	70	13.3	NA	NA	NR	NR	NR	
OKMN-SB-ASB36-0-0000 (C0225099 Spk F, 200 ppb Spika)	200	1.38	NA	NA	13.3	104	48	NR	NR	NR	
OKMN-SB-ASB32-0-0075 (C0225100 Spk G, 2 ppb Spike)	5	172	NA	NA	1820	RE	RE	NR	NR		
OKMN-SB-ASB32-0-0075 (C0225100 Spk H, 200 ppb Spike)	200	172	274	51	1820	RE	RE	NR	NR	NR NR	
OKMN-SB-ASB33-0-0000 (C0225102 Spk C, 2 ppb Spike)	2	0.556	1.97	71	3.91	6.91	150	0.200	1.25	53	
OKMN-S8-AS833-0-0000 (C0225192 Spk 0, 200 ppb Spike)	200	0.556	NA	NA	3.91	NA	NA	0.200	1.20 NA	NA	
OKMN-SB-ASB33-0-0015 (C0226103 Spk E, 2 ppb Spike)	2	14.0	NA	NA	599	RE	RE	NR	NR		
OKMN-SB-ASB33-0-0015 (C0225103 Spk F, 200 ppb Spike)	200	14.0	111	49	599	RE	RE	NR	NR	NR NR	
ОКМN-SB-ASB33-0-0035 (C0225104 Spk G, 2 ppb Spike)	2	12.7	NA	NA	NR	NR	NR	NR		,	
OKMN-SB-AS933-0-0035 (C0225104 Spk H, 200 ppb Spike)	200	12.7	104	46	NR	NR	NR	NR	NR NR	NR NR	
OKMN-SB-ASB33-DB-0035 (C0225105 Spk C, 2 ppb Spike)	2	8.58	NA	NA	NR	NR	NR	NR			
OKMN-SB-ASB33-DB-0035 (C0225105 Spk D, 256 ppb Spike)	200	8.58	138	65	NR	NR	NR	NR	NR NR	NR NR	
OKMN-SB-ASB33-0-0055 (C0225106 Spk E, 2 ppb Spike)	2	41.5	NA	NA	671	RE	RE	NR			
OKMN-S3-ASE33-0-0055 (C0225106 Spk F, 209 ppb Spike)	200	41.5	142	50	671	RE	RE	NR	NR NR	NR NR	
OKMN-SB-ASB33-0-0085 (C3225107 Spk G, 2 ppb Spike)	2	NF	NR	NR	3140	RE	RE				
OKMN-SB-ASB33-0-0085 (C0225107 Spk H, 200 ppb Spike)	200	NR	NR	NR	3140	RE	RE	NR NR	NR	NR	
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NR = Nol reported due to quality control laibre.
 RE = Re-extraction required at a higher for fication level; see Table XIII for extraction results.
 NA = Not applicable; matrix splike level outside the relevant range for the endogenous concentration in the sample. 2 rg/g splike relevant for 0.2 rg/g to less than 4 rg/g endogenous level in the sample and 200 rg/g splike relevant for 4.0 rg/g to less than 4 rg/g endogenous level in the sample.
 Note: Since this summary table shows rounded rasults, recovery values may vary slightly from the values in the raw data.

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		C7 Acid PFHpA Perfluoroheptanoic Acid				8 Acid PFOA orooctanoic		C9 Acid PFNA Perfluorononanoic Acid		
	Amount	Amt Found	Amount		Amt Found	Amount		Amt Found	Amount	
Sample	Spiked	in Sample	Recovered	Recovery	in Sample	Recovered	Recovery	in Sample	Recovered	Recovery
Description	(ng/g)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)
OKMN-SB-ASB34-0-0000 (C0225108 Spk C, 2 ppb Spike)	2	0.302	1.20	45	6.89	NA	NA	ND	0.918	46
OKMN-SB-ASB34-0-0000 (C0225108 Spk D, 200 ppb Spike)	200	0.302	NA	NA	6.89	117	55	ND	NA	NA
OKMN-SB-ASB34-0-0015 (C0225109 Spk E, 2 ppb Spike)	2	6.02	NA	NA	NR	NR	10	10	+ 15%	
		0.02	144	11/24	IND.	INIX	NR	NR	NR	NR
OKMN-SB-ASB34-0-0015 (C0225109 Spk F, 200 ppb Spike)	200	6.02	90. 8	42	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB31-0-0000 (C0225110 Spk G, 2 ppb Spike)	2	0.629	1.35	36	5.32	NA	NA	ND	1.04	52
CKMN-SB-ASB31-0-0000 (C0225110 Spk H, 200 ppb Spike)	200	0.629	NA	NA	5.32	119	57	ND	NA	NA
OKMN-S8-ASB31-0-0015										
(C0225111 Spk C, 2 ppb Spike) CKMN-SS-ASB31-0-0015	2	9.47	NA	NA	NR	NR	NR	0.734	1.77	52
(C0225111 Spk D, 200 ppb Spike)	200	9.47	95.9	43	NR	NR	NR	0.734	NA	NA
OKMN-SB-ASB31-0-0035 (C0225112 Spk €, 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB31-0-0035 (C0225112 Spk F, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB31-0-0055 (C0225113 Spk G, 2 ppb Spike)	2	NR	NR	NR	5490	RE	RE	NR	NR	NR
OKMN-S8-AS831-0-0055										1475
(C0225113 Spk H, 200 ppt Spike)	200	NR	NR	NR	5490	RE	RE	NR	NR	NR
OKMN-S8-ASB31-0-0070 (C0225114 Spk C, 2 ppb Spike)	2	NR	NR	NR	8360	RE	RE	NR	NR	NR
OKMN-SB-ASB31-0-0070 (C0225114 Spk D, 200 ppb Spike)	200	NR	NR	NR	8360	RE	RE	NR	NR	NR
OKMN-SB-ASB32-0-0000 (C0225115 Spk E, 2 ppb Spike)	2	NR	NR	NR	16.2	NA	NA	NR	NR	NR
OKMN-SB-ASB32-0-0000										
(C0225†15 Spk F, 200 ppb Spike)	200	NR	NR	NR	16.2	106	45	NR	NR	NR
OKMN-S8-ASB32-0-0015 (C#225116 Spk G, 2 ppb Spike)	2	NR	NR	NR	4130	RE	RE	NR	NR	NR
OKMN-S8-ASB32-0-0015 (C0225116 Spk H, 200 ppb Spike)	200	NR	NR	NR	4130	RE	RE	NR	NR	NR
OKMN-SB-ASB32-OB-0015 (C0225117 Spk C, 2 ppb Spike)	2	150	NA	NA	3170	RE	RE	7.47	NA	NA
OKMN-SB-AS832-DB-0015 (C0225117 Spk D, 200 ppb Spike)	200	150	284	67	3170	RE	RE	7.47	109	51
OKMN-SB-ASB32-0-0035 (C0225118 Spk E, 2 ppb Spike)	2	249	NA	NA	11000	RE	RE	NR	NR	NR
OKMN-SB-ASB32-0-0035				ŀ						
(C0225118 Spk F, 200 ppb Spike)	200	249	351	51	11000	RE	RE	NR	NR	NR
OKMN-SB-ASB32-0-0055 (C9225119 Spk G, 2 ppb Spike)	2	NR	NR	NR	5050	RE	RE	NR	NR	NR
OKMN-SB-ASB32-0-0055 (C0225119 Spk H; 200 ppb Spike)	200	NR	NR	NR	5050	RE	RE	NR	NR	NR
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N2 = Not detected is in advective the acceptable I. OC reported on Table II.
 N8 = Not executive the acceptable I. OC reported on a faile II.
 N8 = Not executive the acceptable II. OC reported on a faile II.
 N8 = Not executive the acceptable II. OC reported on a faile II.
 RE = Re-extraction required at a higher fordination leval; see Table XIII for extraction results.
 N4 = Not explicable; matrix spike level cutaids the relevant range for the endogenous concentration in the sample.
 N4 = Not explicable; matrix spike relevant for 4.0 mg/g to less than 400 mg/g andogenous level in the sample.
 Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the rew data.

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Sample Description Amount (rgg) Amount			C7 Acid PFHpA Perfluoroheptanoic Acid				8 Acid PFOA orooctanoic	Acid	C9 Acid PFNA Perfluorononanoic Acid			
Description (rg/g) (r	8l-				-				Amt Found	Amount		
OKUN-SB-A5830-0035 (0022133 \$km C. 2 pth 5km) 2 28.3 NA NA 931 RE RE 4 11 NA NA CKUN-SB-A5830-0035 (0022173 \$km C. 2 pth 5km) 200 28.3 225 100 531 RE RE 4 11 NA NA CKMN-SB-A5830-0055 (0022173 \$km C. 2 pth 5km) 2 100 NA NA 1200 RE RE 4 11 NA NA CKMN-SB-A5830-0055 (0022173 \$km C. 2 pth 5km) 200 105 243 68 1260 RE RE 4 11 108 51 CKMN-SB-A5830-0070 (0223173 \$km C. 2 pth 5km) 2 53.0 NA NA 655 RE RE 4 37 140 66 CKMN-SB-A5840-00000 (0223173 \$km C. 2 pth 5km) 2 NR NR NR NR NR NA NA NA CKMN-SB-A5840-0005 (0223173 \$km C. 2 pth 5km) 2 0.446 2.57 100 6.09 NA NA NA CKMN-SB-A5840-00015 (0223173 \$km C. 2 pth 5km) 2												
CHARTING Start Day Start Start Constraints Start Day Start		2	28.3	NA	NA							
Clicative Spike, 3: ppi Spikely 2 100 NA NA 1200 RE RE 4_11 NA NA Cirklah SBA SB30-0055 (C022813/1 Spik 7, 300 ppi Spikely 200 108 243 66 1280 RE RE 4_11 108 51 Cirklah SBA SB30-0057 (C022813/2 Spik 6, 300 ppi Spikely 2 53.0 NA NA 8655 RE RE 4_37 NA NA Cirklah SBA SB30-0070 (C0228132 Spik 6, 20 ppi Spikely 200 630 213 800 355 RE RE 4_37 140 68 Cirklah SBA SB40-00000 (C0228132 Spik 6, 20 ppi Spikely 200 NR NR NR NR NR NR ND 1.72 86 Cirklah SBA SB40-00015 (C0228142 Spik 6, 20 ppi Spikely 200 0.446 NA NA 6.09 NA NA ND 1.72 86 Cirklah SBA SB40-0-0015 (C0228142 Spik 1, 20 ppi Spikely 200 0.446 NA NA 6.09 233 113 ND NA		200	28.3	229	100	931	RE	RE	4.11	130	63	
CONCREMENT Signer, 2006 publishing 200 108 243 66 1280 RE RE 4.11 108 51 CKMN-SEA-SES900070 (C02221122 bpt A, 106 ppb Spink) 2 55.0 NA NA 855 RE RE 4.37 NA NA CKMN-SEA-SES900070 (C02221122 bpt A, 106 ppb Spink) 200 53.0 213 800 855 RE RE 4.37 1400 668 CKMN-SEA-SE8400000 (C0222112 bpt A, 106 ppb Spink) 2 NR NA NA NA NA CKMN-SEA-SE8400000 (C022112 bpt A, 106 ppb Spink) 2 0.446 2.57 108 6.09 NA NA <td></td> <td>2</td> <td>100</td> <td>NA</td> <td>NA</td> <td>1260</td> <td>RE</td> <td>RE</td> <td>4.11</td> <td>NA</td> <td>NA</td>		2	100	NA	NA	1260	RE	RE	4.11	NA	NA	
(c) 22372 Spik 0, 2 pp 6 spike) 2 S3.0 NA NA 855 RE RE 4.37 NA NA OKMN-SBASB30-00070 200 53.0 213 80 855 RE RE 4.37 140 68 OKMN-SBASB40-00000 2 NR NR NR NR NR NR NR NR ND 1.72 86 OKMN-SBASB40-00000 2 NR NA <		200	108	243	68	1260	RE	RE	4.11	106	51	
(CR225122 Spt. 4, 300 ppb Spleb) 200 53.0 213 800 855 RE RE 4.37 140 68 OKMM-SB-ASB400000 2 NR <		2	53.0	NA	NA	855	RE	RE	4.37	NA	NA	
(Cuzzersz Spik C. 2. ppb Spike) 2 NR NR NR NR NR NR NR ND 1.72 86 OXMN-SB-ASB40-0-0000 000 NR ND 1.72 86 OKMN-SB-ASB40-0-0015 2 0.446 NA NA 6.09 NA NA ND 1.72 86 OKMN-SB-ASB40-0-0035 2 0.446 NA NA 6.09 NA NA ND 1.71 86 OKMN-SB-ASB40-0-0035 2 1.17 2.32 58 20.1 NA NA ND 1.71 86 OKMN-SB-ASB40-0-0035 2 1.17 NA NA 20.1 179 79 ND NA NA OKMN-SB-ASB40-0-0035 200 2.39 NA NA 12.6		200	53.0	213	80	855	RE	RE	4.37	140	68	
OKMN-SB-ASB40-0-0000 (00223123 sph 0, 200 ppb sphw) ZOO NR ND 1.72 86 OKMM-SB-ASB40-0-035 2 1.17 NA NA 20.1 179 79 ND NA NA OKMM-SB-ASB40-0-035 2 2.39 S.47 154 12.6 223		2	NR	NR	NR	NR	NR	NR	ND	1.72	86	
CR0228124 Spite, 2 ppb Spite) 2 0.446 2.57 108 6.09 NA NA ND 1.72 96 OKMN-SB-ASS 400-0-0036 200 0.446 NA NA 6.09 233 113 ND NA NA OKMN-SB-ASS 400-0-0036 2 1.17 2.32 58 20.1 NA NA ND 1.71 96 OKMN-SB-ASS 40-0-0036 2 1.17 2.32 58 20.1 NA NA ND 1.71 96 OKMN-SB-ASS 40-0-0035 2 1.17 NA NA 20.1 179 79 ND NA NA OKMN-SB-ASS 40-0-0055 2 2.39 5.47 154 12.6 NA NA<		200	NR	NR	NR	NR	NR					
OKMN-SB-AS840-0-0015 (07223124 spik r, 201 ppb Spike) 200 0.446 NA NA 6.09 233 113 ND NA NA OKMN-SB-AS840-0-0035 (C0223128 spik 6, 2 ppb Spike) 2 1.17 2.32 58 20.1 NA NA ND 1.71 86 OKMN-SB-AS840-0-0035 (C0223128 spik r, 201 ppb Spike) 200 1.17 NA NA 20.1 179 79 ND NA NA OKMN-SB-AS840-0-0055 (C0223128 spik 0, 200 pb Spike) 2 2.39 5.47 154 12.6 NA NA ND 1.81 91 OKMN-SB-AS840-0-0055 (C0223128 spik 0, 200 pb Spike) 200 2.39 NA NA 12.6 223 105 ND NA NA OKMM-SB-AS840-0-0090 (C0223127 spik 5, 200 pb Spike) 20 13.2 NA NA 24.1 NA		2	0.448	2 57	106	6.09	NΔ	NA	ND	1 72	96	
OKMN-SB-ASS40-0-0035 (C0226125 Spk G, 2 ppb Spike) 2 1.17 2.32 58 20.1 NA NA ND 1.71 B6 OKMN-SB-ASS40-0-0035 (C0226125 Spk G, 2 ppb Spike) 200 1.17 NA NA 20.1 179 79 ND NA NA OKMN-SB-ASS40-0-0055 (C0226125 Spk C, 2 ppb Spike) 2 2.39 5.47 154 12.6 NA NA ND 1.81 91 OKMN-SB-ASS40-0-0055 (C0226125 Spk C, 2 ppb Spike) 200 2.39 NA NA 12.6 223 105 ND NA NA OKMN-SB-ASS40-0-0055 (C0226127 Spk E, 2 ppb Spike) 200 2.39 NA NA 24.1 NA NA ND 2.34 117 OKMN-SB-ASS40-0-0090 (C0226127 Spk E, 2 ppb Spike) 2 13.2 NA NA 24.1 NA N	OKMN-SB-AS840-0-0015											
OKMN-SB-ASE40-0-0035 (C0225126 Spk H, 200 ppb Spike) 200 1.17 NA NA 20.1 179 79 ND NA NA OKMN-SB-ASE40-0-0055 (C0225126 Spk C, 2 ppb Spike) 2 2.39 5.47 154 12.6 NA NA ND 1.81 91 OKMN-SB-ASE40-0-0055 (C0225126 Spk C, 2 ppb Spike) 200 2.39 NA NA 12.6 223 105 ND NA NA OKMN-SB-ASE40-0-0090 (C0225127 Spk E, 2 ppb Spike) 200 13.2 NA NA 24.1 NA NA <td>OKMN-SB-ASB40-0-0035</td> <td>2</td> <td>· 1 17</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	OKMN-SB-ASB40-0-0035	2	· 1 17									
IC02225126 Spk C, 2 ppb Spike) 2 2.39 5.47 154 12.6 NA NA ND 1.81 91 OKMM-SB-ASB40-0-0055 200 2.39 NA NA 12.6 223 105 ND NA NA OKMM-SB-ASB40-0-0090 2 13.2 NA NA 12.6 223 105 ND NA NA OKMM-SB-ASB40-0-0090 2 13.2 NA NA 24.1 NA NA ND 2.34 117 OKMM-SB-ASB40-0-0090 2 13.2 206 96 24.1 153 64 ND NA NA OKMN-SB-ASB41-0-0015 200 13.2 206 96 24.1 153 64 ND NA NA OKMN-SB-ASB41-0-0015 200 27.0 NA NA 594 RE RE 2.37 3.26 45 OKMN-SB-ASB41-0-0035 200 27.0 224 99 594 RE RE 1.92 3.06 57 OKMN-SB-ASB41-0-0035 200 75.4	OKMN-SB-ASB40-0-0035											
OKMN-SB-ASB40-0-0055 (G0225126 Spk 0, 200 ppb Sp/ke) 200 2.39 NA NA 12.6 223 105 ND NA NA OKMM-SB-ASB40-0-0090 (G0225127 Spk E, 2 ppb Sp/ke) 2 13.2 NA NA 24.1 NA NA ND 2.34 117 OKMN-SB-ASB40-0-0090 (G0225127 Spk E, 2 ppb Sp/ke) 200 13.2 206 96 24.1 153 64 ND NA NA OKMN-SB-ASB41-0-0015 (G0225127 Spk F, 20 ppb Sp/ke) 200 13.2 206 96 24.1 153 64 ND NA NA OKMN-SB-ASB41-0-0015 (G0225128 Spk G, 2 ppb Sp/ke) 2 27.0 NA NA 594 RE RE 2.37 3.26 45 OKMN-SB-ASB41-0-0015 (G0225128 Spk L, 2 ppb Sp/ke) 200 27.0 224 99 594 RE RE 1.92 3.06 57 OKMN-SB-ASB41-0-0035 (G0225128 Spk L, 2 ppb Sp/ke) 2 75.4 NA NA 651 RE 1.92 NA NA <t< td=""><td></td><td>2</td><td>2.39</td><td>5.47</td><td>154</td><td>126</td><td>NA</td><td>NA</td><td>ND</td><td>1.81</td><td>91</td></t<>		2	2.39	5.47	154	126	NA	NA	ND	1.81	91	
(C0225127 Spk E, 2 ppb Spike) 2 13.2 NA NA 24.1 NA NA ND 2.34 117 OKMN-SB-ASB40-0-0090 200 13.2 206 96 24.1 153 64 ND NA NA OKMN-SB-ASB41-0-0015 2 27.0 NA NA 594 RE RE 2.37 3.26 45 OKMN-SB-ASB41-0-0015 2 27.0 NA NA S94 RE RE 2.37 3.26 45 OKMN-SB-ASB41-0-0015 2 27.0 224 99 594 RE RE 2.37 NA NA OKMN-SB-ASB41-0-0035 200 27.0 224 99 594 RE RE 1.92 3.06 57 OKMN-SB-ASB41-0-0035 2 75.4 NA NA 651 RE RE 1.92 NA NA OKMN-SB-ASB41-0-0035 200 75.4 254 89 651 RE 1.92 NA NA OKMN-SB-ASB41-0-0055 200 75.4 254		200	2.39	NA	NA							
OKMN-SB-ASB40-0-0090 (00225127 Spk F, 200 ppb Spike) 200 13.2 206 96 24.1 153 64 ND NA NA OKMN-SB-ASB41-0-0015 (00225128 Spk G, 2 ppb Spike) 2 27.0 NA NA 594 RE RE 2.37 3.26 45 OKMN-SB-ASB41-0-0015 (00225128 Spk H, 200 ppb Spike) 200 27.0 224 99 594 RE RE 2.37 NA NA OKMN-SB-ASB41-0-0035 (00225128 Spk H, 200 ppb Spike) 200 27.0 224 99 594 RE RE 1.92 3.06 57 OKMN-SB-ASB41-0-0035 (00225128 Spk H, 20p b Spike) 2 75.4 NA NA 651 RE RE 1.92 NA NA OKMN-SB-ASB41-0-0035 (00225138 Spk E, 2 ppb Spike) 200 75.4 254 89 651 RE 1.92 NA NA OKMN-SB-ASB41-0-0035 (00225130 Spk E, 2 ppb Spike) 200 75.4 254 89 651 RE 1.92 NA NA O		2	13.2	NA	NA	24.1	NA	NA	ND	2.34	117	
(G6228128 Spk G, 2 ppb Spike) 2 27.0 NA NA 594 RE RE 2.37 3.26 45 OKKINN-SB-ASB41-0-0015 200 27.0 224 99 594 RE RE 2.37 NA NA OKKINN-SB-ASB41-0-0035 200 27.0 224 99 594 RE RE 2.37 NA NA OKKINN-SB-ASB41-0-0035 2 75.4 NA NA 651 RE RE 1.92 3.06 57 OKKINN-SB-ASB41-0-0035 200 75.4 254 89 651 RE RE 1.92 NA NA OKKINN-SB-ASB41-0-0055 200 75.4 254 89 651 RE RE 1.92 NA NA OKKINN-SB-ASB41-0-0055 200 75.4 254 89 651 RE RE 1.92 NA NA OKKINN-SB-ASB41-0-0055 200 52.6 NA NA 511 RE RE 2.18 NA NA OKMN-SB-ASB41-0-0050 200 52.6		200	13.2	206	96	24.1	153					
OKMN-SB-ASE41-0-0015 (C0225128 5pk H, 200 ppb Spike) 200 27.0 224 99 594 RE RE 2.37 NA NA OKMN-SB-ASE41-0-0035 (C0225129 5pk C, 2 ppb Spike) 2 75.4 NA NA 651 RE RE 1.92 3.06 57 OKMN-SB-ASE41-0-0035 (C0225129 5pk C, 2 ppb Spike) 200 75.4 254 89 651 RE RE 1.92 NA NA OKMN-SB-ASE41-0-0035 (C0225139 5pk E, 2 ppb Spike) 200 75.4 254 89 651 RE RE 1.92 NA NA OKMN-SB-ASE41-0-0055 (C0225130 Spk E, 2 ppb Spike) 2 52.6 NA NA 511 RE RE 2.18 3.01 42 OKMN-SB-ASE41-0-0055 (C0225130 Spk F, 200 ppb Spike) 200 52.6 214 81 511 RE RE 2.18 NA NA OKMN-SB-ASE41-0-0090 200 52.6 214 81 511 RE RE 2.18 NA NA		2	27.0	NA	NA	594	RE	RE	2.37	3.26	45	
(C6228129 Spk C, 2 ppb Splke) 2 75.4 NA NA 651 RE RE 1.92 3.06 57 OKMN-SB-ASB41-0-0035 (C0228129 Spk D, 200 ppb Splke) 200 75.4 254 89 651 RE RE 1.92 NA NA OKMN-SB-ASB41-0-0055 (C0228130 Spk E, 2 ppb Splke) 2 52.6 NA NA 511 RE RE 2.18 3.01 42 OKMN-SB-ASB41-0-0055 (C0228130 Spk F, 200 ppb Splke) 200 52.6 214 81 511 RE RE 2.18 NA NA OKMN-SB-ASB41-0-0050 200 52.6 214 81 511 RE RE 2.18 NA NA OKMN-SB-ASB41-0-0090 52.6 214 81 511 RE RE 2.18 NA NA		200	27.0	224	99	594	RE	RE	2.37	NA	NA	
(C022±129 Spk D, 200 ppb Spike) 200 75.4 254 89 651 RE RE 1.92 NA NA OKMN-SB-ASB41-0-0055 2 52.6 NA NA 511 RE RE 2.18 3.01 42 OKMN-SB-ASB41-0-0055 200 52.6 214 81 511 RE RE 2.18 NA NA OKMN-SB-ASB41-0-0055 200 52.6 214 81 511 RE RE 2.18 NA NA OKMN-SB-ASB41-0-0050 200 52.6 214 81 511 RE RE 2.18 NA NA		2	75.4	NA	NA	651	RE	RE	1.92	3.06	57	
(C0228130 Spk E, 2 ppb Spike) 2 52.6 NA NA 511 RE RE 2.18 3.01 42 OKMN-SB-ASB41-0-0055 0 52.6 214 81 511 RE RE 2.18 3.01 42 OKMN-SB-ASB41-0-0055 0 52.6 214 81 511 RE RE 2.18 NA NA OKMN-SB-ASB41-0-0090 52.6 214 81 511 RE RE 2.18 NA NA		200	75.4	254	89	651	RE	RE	1.92	NA	NA	
(C0228130 Spk F, 200 ppb Splke) 200 52.6 214 81 511 RE RE 2.18 NA NA OKMN-SB-ASE41-0-0090		2	52.6	NA	NA	511	RE	RE	2.18	3.01	42	
		200	52.6	214	81	511	RE	RE	2.18	NA	NA	
		2	16.4	NA	NA	55.1	NA	NA	ND	2.04	102	
CKMN-SB-AS841-0-0090 (C0225131 Spic H, 200 ppb Spice) 200 16.4 162 73 55.1 270 167 ND NA NA		200	16.4	162	73	55.1	270	107	ND	NA	NA	

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NC defected at or above the acceptable LOQ reported on Table II.
 NC = Not defected at or above the acceptable LOQ reported on Table II.
 NR = Not reported due to quady control failure.
 RE = Re-extraction required at a higher fortification level; see Table XIII for extraction results.
 NA = Not applicable; matrix spike level auside the relevant range for the endogenous concentration in the sample. 2 rg/g spike relevant for 0.2 rg/g to isse than 4 rg/g endogenous level in the sample and 200 rg/g spike relevant for 4.0 rg/g to less than 400 rg/g endogenous level in the sample.
 Note: Since this summary table shows rounded results, racovery values may vary slightfy from the values in the raw data.

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		C7 Acid PFHpA Perfluoroheptanoic Acid			Perflu	8 Acid PFOA orooctanoic	Acid	C9 Acid PFNA Perfluorononanoic Acid			
Sample Description	Amount Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	
ÖKMN-SB-ASB41-DB-0090 (C0225132 Spk C, 2 ppb Spike)	2	17.1	NA	NA	51.8	NA	NA	ND	2.32	116	
OKMN-SB-ASB41-DB-0090 (C0225132 Spk D, 200 ppb Spike)	200	17.1	227	105	51.8	262	105	ND	NA	NA	
OKMN-SB-ASB42-0-0000 (00225133 Spk E, 2 ppb Spike)	2	ND	2.52	126	0.731	2.13	70	ND	1.53	77	
OKMN-SB-AS842-0-0000 (C0225133 Spk F, 200 ppb Spike)	200	ND	NA	NA	0.731	NA	NA	ND	NA	NA	
OKMN-SB-ASB42-0-0015 (C0225134 Spk G, 2 ppb Spike)	2	0.188	2.67	124	0.949	3.68	137	ND	1.64	77	
OKMN-SB-ASB42-0-0015 (C0225134 Spk H, 200 ppb Spike)	200	0.188	NA	NA	0.949	NA	NA	ND	NA	NA	
OKMN-SB-ASB42-0-0035 (C922513§ Spk C, 2 ppb Spike)	2	12.2	NA	NA	90.2	NA	NA	0.273	1.90	81	
OKMN-SB-ASB42-0-0035 (0022\$135 Spk D, 200 ppb Spike)	200	12.2	211	99	90-2	388	149	0.273	NA	NA	
OKMN-SB-ASB42-0-0055 (C0225136 Spk E, 2 ppb Spike)	2	13.8	NA	NA	201	NA	NA	0.439	1.91	74	
OKMN-SB-ASB42-0-0055 (C0225136 Spk F, 200 ppb Spike)	200	13.8	214	100	201	385	92	0.439	NA	NA	
OKMN-SB-AS842-0-0070 (00225137 Spk G, 2 ppb Spike)	2	11.7	NA	NA	56.0	NA	NA	ND	1.78	89	
OKMN-SB-ASB42-0-0070 (C0225137 Spk H, 200 ppb Spike)	200	11.7	208	98	56.0	243	94	ND	NA	NA	
OKMN-S6-AS843-0-0015 (C0225139 Spk C, 2 ppb Spike)	2	4.77	NA	NA	49.4	NA	NA	0.221	2.06	92	
ОКМN-SB-ASB43-0-0015 (C0225139 Spk D, 209 ppb Spike)	200	4.77	181	86	49.4	258	104	0.221	NA	NA	
OKMIN-SB-ASB43-0-0035 (C0225140 Spk E, 2 ppb Spice)	2	15.5	NA	NA	432	RE	RE	2.61	3.61	50	
OKMN-SB-ASB43-0-0035 (09225140 Spk F, 200 ppb Spike)	200	15.6	204	94	432	RE	RE	2.61	NA	NA	
ОКМN-SB-ASB43-0-0055 (C0225141 Spk G, 2 ррь Spike)	2	31.2	NA	NA	865	RE	RE	NR	NR	NR	
OKMN-SB-ASB43-0-0055 (C6225141 Spk H, 200 ppb Spike)	200	31.2	227	98	365	RE	RE	NR	NR	NR	
OKMN-SB-ASB43-0-0090 (C0225142 Spk C, 2 ppb Spike)	2	26.2	NA	NA	232	NA	NA	0.924	3.05	106	
OKMN-SB-AS843-0-0090 (C0225142 Spk D, 200 ppb Spike)	200	26.2	220	97	232	514	141	0.924	NA	NA	
	<u></u>	Standa	Average: rd Deviation:	72 28	Standa	Average: rd Deviation:	82 35	Standa	Average: rd Deviation:	67 23	

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No = Not detected at or above the acceptable LOC reported on Table II.
 NR = Not reported due to quality control failure
 RE = Re-extraction required at a higher fortification level; see Table XIII for extraction results.
 NA = Not applicable; matrix spike level outside the relevant range for the endogenous concentration in the sample. 2 radg spike relevant for 0.2 radg to less than 4 radg endogenous level in the sample and 200 radg spike relevant for 0.2 radg to less than 4 radg endogenous level in the sample.
 Not: Since this summary table above rounded results, recovery values may vary slightly from the values in the raw data.

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		C19 Acid PFDA Perfluorodecanoic Acid				1 Acid PFUn. roundecanoi		C12 Acid PFDoA Perfluorododecanoic Acid			
	Amount	Amt Found	Amount		Arnt Found	Amount		Amt Found	Amount		
Sample Description	Spiked (ng/g)	in Sample	Recovered		in Sample	Recovered		in Sample	Recovered	Recovery	
Description	1 (19/9)	(ng/g)	(ng/g)	(%)) (ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)	
OKMN-SB-AS837-0-0055 (C0225070 Spk C, 2 ppb Spike)	2	13.1	NA	NA	NR	NR	NR	1.0B	1.92	42	
OKMN-S8-ASB37-0-0055 (C0225070 Spk D, 200 ppb Spike)	200	13.1	124	55	NR	NR	NR	1.08	NA	NA	
OKMN-S8-ASB37-0-0075 (C0225071 Spk E, 2 ppb Spike)	2	1.04	2.34	65	ND	1,49	75	NĎ	1,32	66	
OKMN-SB-ASB37-0-0075 (C0225971 Spk F, 200 ppb Spike)	200	1.64	NA	NA	ND	NA	NA	ND	NA	NA	
OKMN-SB-ASB38-0-0600 (C0225072 Spk G, 2 ppb Spike)	2	0.875	2.04	58	ND	1.23	62	0.197	1,33	57	
OKMN-SB-ASB38-0-0000											
(C0225072 Spk H, 200 ppb Spike)	200	0.875	NA	NA	ND	NA	NA	0.197	NA	NA	
OKMN-SB-ASB38-0-0015 (C0223073 Spk C, 2 ppb Spike)	2	NR	NR	NR	0.252	1.21	48	0.224	1.16	47	
OKMN-SB-ASB38-0-0015 (00225073 Spk B, 200 ppb Spike)	200	NR	NR	NR	0.252	NA	NA	0.224	NA	NA	
OKMN-SB-ASB38-0-0036 (C0225074Spk E, 2 ppb Spike)	2	4.52	NA	NA	0.478	1.43	48	0.762	1.94	62	
OKMN-SB-ASB38-0-0035 (C0225074 Spk F, 200 ppb Spike)	200	4.52	115	55	0.478	NA	NA	0.702	NA	NA	
OKMN-SB-ASB38-DB-0035 (C0225075 Spk G, 2 ppb Spike)	2	5.19	NA	NA	0.582	1.63	52	0.801	2.00	60	
OKMN-SB-ASB38-DB-C035 (C0225075 Spk H, 200 ppb Spike)	200	5.19	110	52	0.582	NA	NA	0.801	NA	NA	
OKMN-SB-ASB38-0-0055 (C0225076 Spk C, 2 ppb Spike)	2	8.27	NA	NA	0.791	1.69	45	0.930	2.21	64	
OKMN-SB-ASB38-0-0055 (C0225076 Spk D, 200 ppb Spike)	200	8.27	102	47	0.791	NA	NA	0.930	NA	NA	
OKMN-SB-ASB38-0-0030 (C0225077 Spk E, 2 ppb Spike)	2	NR	NR	NR	0.276	1.07	40	0.188	1 19	50	
OKMN-SB-ASB38-0-0080 (C0225077 Spk F, 200 ppb Spike)	200	NR	NR	NR	0.276	NA	NA	0.168	NA	NA	
OKMN-SB-ASB39-0-0015 (C0225078 Spk G, 2 ppb Spike)	2	10.7	NA	NA	NR	NR	NR	NR	NF.	NR	
OKMN-SB-ASB39-0-0015 (C0225078 Spk H, 200 ppb Spike)	200	10.7	110	50	NR	NR	NR	NR	NR	NR	
OKWIN-SB-ASB39-DB-0015 (C0225079 Spk C, 2 ppb Spike)	2	10.2	NA	NA	1.72	2.64	46	1.49	2,5		
OKMN-SB-ASB39-DB-0015 (C0225079 Spk 0, 200 ppb Spike)	200	10.2	111	50	1.72	NA	NA	1.49	2,5 NA	53 NA	
OKMN-SB-ASB36-0-0015 (C0225080 Spk E, 2 pph Spike)	2	34.2	NA	NA	NR						
(C0225083 Spk E, 2 Spk Spke) OKMN-SB-ASE36-0-0015 (C0225080 Spk F, 200 ppb Spike)	200	34.2	145	65	NR	NR NR	NR NR	NR	NR	NR	
OKMN-SE-ASB36-DB-0016	[NR	NR	NR	
(C0225081 Spk G, 2 ppb Spike) OKMN-S8-AS836-D8-0015	2	33.6	NA	NA	NR	NR	NR	NR	NR	NR	
(C0225081 Spk H, 200 ppb Spike)	200	33.6	150	58	NR	NR	NR	NR	NR	NR	

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Not detected at or above the acceptable LOQ reported on Table III.
 Not served due to quality control failure.
 NA = Not applicable; matrix spike level outs de the relevant /angle endogenous concentration in the sample.
 2 ray's poke relevant for 0.2 ray's to less than 4 ray's endogenous level in the sample.
 Not applicable; matrix spike level outs de the relevant /angle on the endogenous level in the sample.
 Not applicable; matrix spike relevant for 4.0 ray's to less than 400 ray's endogenous level in the sample.
 Note: Since this summery table shows rounded results, recovery values may vary slightly from the values in the raw data.

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·····	1.	Perflu	10 Acid PFDA prodecanoic	Perfluo	1 Acid PFUn roundecanoi		C12 Acid PFDoA Perfluorododecanoic Acid			
Sample Description	Amount Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found In Sample (ng/g)	Amount Recovered (ng/g)	Recoval (%)
OKMN-SB-ASB36-0-0030 (C0225982 Spk C, 2 ppb Spike)	2	1140	RE	RE	85.2	NA	NA	104	NA	NA
OKMN-SB-ASB36-0-0030 (C0225082 Spk D, 209 pp5 Spike)	200	1140	RE	RE	85.2	232	73	104	245	71
OKMN-SB-ASB36-0-0055 (Cezzsolij3 Spk E, 2 ppb Spike)	2	111	NA	NA	4.36	NA	NA	5.67	NA	NA
OKMN-SB-ASB36-0-0055 (C0225083 Spk F, 200 ppb Spike)	200	111	224	57	4.36	115	55	5.67	134	64
OKMN-SB-ASB36-0-0095 (C9225084 Spk G, 2 ppb Spike)	2	0.246	1.30	53	ND	1.05	53	ND	1.02	51
OKMN-SB-ASB36-0-0095 (C0225084 Spk H, 208 ppb Spike)	200	0.246	NA	NA	ND	NA	NIA	ND	NA	NA
OKMN-SB-ASB37-0-0000 (C9225086 Spk C, 2 ppb Spike)	2	NR	NR	NR	1.36	2.28	45	NR	NR	NR
OKMN-SB-ASB37-0-0000 (C0225086 Spk 0, 200 ppb Spike)	200	NR	NR	NR	1.38	NA	NA	NR	NR	NR
CKMN-SB-ASB37-0-0015 (C0225087 Spk E, 2 ppb Spike)	2	13.2	NA	NA	NR	NR	NR	1.33	2.33	50
OKMN-SB-ASB37-0-0015 (C0225087 Spk F, 200 ppb Spike)	200	13.2	109	48	NR	NR	NR	1.33	NA	NA
OKMN-SB-ASB37-0-0035 (C0225988 Spk G, ≵ ppb Spike)	2	6.31	NA	NA	0.767	1.83	53	0.963	1.98	54
OKMN-S8-AS837-0-0035 (C0225088 Spk H, 200 ppb Spike)	200	6.31	102	48	0.767	NA	NA	0.903	NA	NA
OKMN-SB-ASB37-DB-0035 (C0225059 Spk C, 2 ppb Spike)	2	9.68	NA	NA	1.24	2.43	60	1.56	3.05	75
OKMN-SB-ASB37-DB-0035 (C0225089 Spk D, 200 ppb Spike)	200	9.68	119	65	1.24	NA	NA	1.56	NA	NA
OKMN-SB-ASB34-0-0035 (C0225090 Spk E, 2 ppb Spike)	2	22 6	NA	NA	5.30	NA	NA	6.54	NA	NA
OKMN-S8-ASB34-0-0035 (C0225090 Spk F, 200 ppb Spike)	200	22.6	134	56	5.30	128	61	6.54	128	61
OKMN-SB-ASB34-0-0055 (C0225091 Spk G, 2 ppb Spike)	2	29.4	NA	NA	9.83	NA	NA	11,5	NA	NA
OKMN-SB-ASB34-0-0055 (C0225091 Spk H, 200 ppb Spike)	200	29.4	187	79	9.83	149	70	11.5	139	64
OKMN-SB-ASB34-0-0035 (C0225092 Spk C, 2 ppb Spike)	2	34.4	NA	NA	NR	NR	NR	0.410	1.32	46
OKMN-SB-ASB34-0-0065 (0225092 Spk D, 200 ppb Splke)	200	34.4	139	52	NR	NR	NR	0.410	NA	NA
OKMN-SB-AS535-0-0000 (C6225093 Spk E, 2 ppb Spike)	2	5.51	NA	NA	2.02	3.07	53	2.69	3.56	
OKMN-SB-AS835-0-0000 (C0225093 Spk F, 200 ppb Spike)	200	5.51	93.6	44	2.02	NA	NA	2.69	NA	44 NA
CKMN-SB-ASB35-0-0015 (C0225094 Spk G, 2 pp5 Spike)	2	NR	NR	NR	6.48	NA	NA			
OKMN-SB-ASB35-0-0015 C0225094 Spk H, 200 ppb Spike)	200	NR	NR	NR	6.48	104	49	6.61 6.61	NA 99.8	NA 47

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Not detected at or above the acceptable LOO reported on Table III.
 NR = Not reported due to quality control failure.
 RE = Re-attraction required at a higher fortification level; size Table XIV for extraction results.
 NR = Not reported the regulated matching with a set of the and ogenous concentration in the sample. 2 right spake relevant for 0.2 right or less than 4 right endogenous level in the sample.
 Not set of this summary table phone relevant for 4.0 right or less than 40 right endogenous level in the sample.
 Note: Since this summary table phone rounded results, recovery values may vary slightly from the values in the raw date.

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		C10 Acid PFDA Perfluorodecanoic Acid				1 Acid PFUn roundecanoid		C12 Acid PFDoA Perfluorododecanoic Acid			
Sample Description	Amount Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)		Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	
CKMN-SB-ASB35-0-0035 (C0225095 Spk C, 2 ppb Spike)	2	NR	NR	NR	5.73	NA	NA	22.5	NA	NA	
OKMN-SB-ASB35-0-0035 (Ca225095 Spk 0, 200 ppb Spike)	200	NR	NR	NR	5.73	87.0	41	22.5	167	72	
OKMN-SB-ASE35-DB-0035 (C0225095 \$pk £, 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	11.7	NA	NA	
OKMN-SB-ASB35-DB-C035 (C0225996 Spix F, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	11.7	149	69	
OKMN-SB-ASB35-0-0055 (C0225097 Spx G, 2 ppb Spike)	2	343	NA	NA	24.8	NA	NA	30,5	NA	NA	
OKMN-SB-ASB35-0-0055 (C0225097 Spk H, 200 ppb Spike)	200	343	499	78	24.8	116	46	30.5	160	65	
OKMN-SB-ASB35-0-0085 (C0225098 Spk C, 2 ppb Spike)	2	227	NA	NA	0.237	1.35	56	NC	1.16	58	
OKMN-SB-ASB35-0-0085 (C0225096 Spk D, 200 ppb Spike)	200	227	307	40	0.237	NA	NA	ND	NA	NA	
OKMN-SB-ASB36-0-0000 (C0225099 Spk E, 2 ppb Spike)	2	18.4	NA	NA	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB36-0-0000 (C0225099 Spk F, 200 ppb Spike)	200	18.4	130	56	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB32-0-0075 (C0225100 Spk G, 2 ppb Spike)	2	0.802	2.11	65	ND	1,24	62	NO	4.00		
OKMN-S8-AS832-0-0075 (C0225100 Spk H, 200 ppb Spike)	200	0.802	NA	NÁ	ND	NA	NA	ND ND	1.09 NA	55 NA	
OKMN-SB-ASB33-0-0000 (C0225102 Spk C, 2 ppb Spike)	2	0.538	1.49	48	0.424						
OKMN-SB-AS833-0-0000 (00225102 Spk D, 200 ppb Spike)	200	0.538	NA	40 NA	0.424	1.48 NA	53 NA	0.600	1.59 NA	50 NA	
OKMN-SB-ASB33-0-0016 (C0225103 Spk E, 2 ppb Spike)	2	13,0	NA	NA							
OKMN-SB-ASB33-0-0015 (C0225103 Spk F, 200 ppb Spike)	200	13.0	108	48	NR	NR NR	NR	NR NR	NR NR	NR	
OKMN-SB-ASB33-0-0035											
(C9225104 Spk G, 2 ppb Spike) OKMN-SB-ASB33-0-0035 (C0225104 Spk H, 200 ppb Spike)	2 200	11.2	NA 98.6	NA	NR NR	NR NR	NR NR	NR NR	NR NR	NR	
OKMN-SB-ASB33-DB-0035										NR	
(C0225105 Spk C, 2 ppb Spike) OKMN-SB-ASB33-DB-0035 (C0225105 Spk D, 200 ppb Spike)	2 200	9.72 9.72	NA 139	NA 65	NR		NR	NR	NR	NR	
OKMN-SB-ASB33-0-0055									NR	NR	
(C0225106 Spk E. 2 ppb Spike) OKMN-SB-ASB33-0-0055	2	18.7	NA	NA	NR	NR	NR	NR	NR	NR	
(C6225106 Spk F. 200 ppb Spike) OKMN-SB-ASB33-0-0065	200	18,7	138	60	NR	NR	NR	NR	NR	NR	
(C0225107 Spk G, 2 ppb Spike) OKMN-SB-ASB33-0-0085	2	31.9	NA	NA	3.99	5.54	78	3.94	5.32	69	
(C0225107 Spk H, 200 ppb Spike)	200	31.9	165	67	3.99	NA	NA	3.94	NA	NA	

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ND = NDI detected at or above the acceptable LOQ reported on Table III.
 NR = Not reported due to quality control failure.
 NA = NDI applicable, mains spike level outside the relevant range for the endogenous concentration in the sample. 2 rg/g spike relevant for 0.2 rg/g to less than 4 rg/g endogenous level in the sample and 200 rg/g spike relevant for 0.2 rg/g to less than 4 rg/g endogenous level in the sample.
 Note: Since this summary table shows rounded results, recovery values may very sightly from the values in the raw data.

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		Ct0 Acid PFDA Perfluorodecanoic Acid				1 Acid PFUni roundecanoid		C12 Acid PFDoA Perfluorododecanoic Acid			
	Amount	Amt Found	Amount		Amt Found	Amount		Amt Found	Amount		
Sample	Spiked	in Sample	Recovered	Recovery	in Sample	Recovered	Recovery	in Sample	Recovered	Recovery	
Description	(ng/g)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)		(ng/g)	(ng/g)	(%)	
OKMN-SB-ASB34-0-0000 (C0225108 Spk C, 2 ppb Spike)	2	0.529	1.43	45	0.476	1.40	46	0.873	1.70	41	
OKMN-SB-ASB34-0-0000 (C0225108 Spk D, 200 ppb Spike)	200	0.529	NA	NA	0.476	NA	NA	0.873	NA	NA	
ОКМN-SB-ASB34-0-0015 (C0225199 Spk €, 2 ppb Spike)	2	8.85	NA	NA	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB34-0-0015 (C0225109 Spk F, 200 ppb Spike)	200	8.85	98.9	45	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB31-0-0000 (C0225110 Spk G, 2 ppb Spike)	2	0.237	1.23	50	0.212	1.26	52	0.328	1.39	53	
OKMN-SB-ASB31-0-0000 (C0225110 Spk H, 200 ppb Spike)	200	0.237	NA	NA	0.212	NA	NA	0.328	NA	NA	
OKMN-SB-ASB31-0-0015 (C0225111 Spk C, 2 ppb Spike)	2	4.00	6.90	145	1.57	2.44	44	NR	NR	NR	
OKMN-SB-ASB31-0-0015 (C0225111 Spk D, 200 ppb Spike)	200	4.00	NA	NA	1.57	NA	NA	NR	NR	NR	
OKMN-SB-ASB31-0-0035 (C0225112 Spk E, 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	21.0	NA	NA	
OKMN-SB-ASB31-0-0035 (C0225112 Spk F, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	21.0	100	40	
OKMN-SB-ASB31-0-0055 (C0225113 Spk G. 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB31-0-0055 (C0225113 Spk H, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB31-0-0070 (C0225114 Spk C, 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB31-0-0070 (C6225114 Spk D, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB32-0-0000 (C0225115 Spk E, 2 ppb Spika)	2	2.43	3.38	48	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB32-0-0000 (C0225115 Spik F, 200 ppb Spike)	200	2.43	NA	NA	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB32-0-0015 (C\$22511€ Spk G, 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	9.32	NA	NA	
OKMN-SB-ASB32-0-0015 (C0225116 Spk H, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	9.32	113	52	
OKMN-SB-ASB32-DB-0015 (C0225117 Spk C, 2 ppb Spike)	2	104	NA	NA	7.86	NA	NA	9.12	NA	NA	
OKMN-SB-ASB32-DB-0015 (C0225117 Spk D, 200 ppb Spike)	200	104	267	82	7.86	184	88	9.12	199	95	
OKMN-SB-ASB32-0-0035 (C0225118 Spk E, 2 ppb Spike)	2	132	NA	NA	7.30	NA	NA	7.35	NA	NA	
OKMN-SB-ASB32-0-0035 (C0225118 Spk F, 200 ppb Spike)	200	132	277	73	7.30	165	79	7.35	183	88	
OKMN-SB-ASB32-0-0055 (C0225119 Spk G, 2 ppb Spike)	2	112	NA	NA	6.29	NA	NA	7.76	NA	NA	
OKMN-SB-AS832-0-0055 (C0225119 Spk H, 200 ppb Spike)	200	112	276	82	6.29	167	80	7.76	174	83	
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NR = Not reported due to quality control failure. NA = Not applicable; matrix splite level outside the relevant range for the endogenous concentration in the sample. 2 ng/g splite relevant for 0.2 ng/g to less than 4 ng/g endogenous level in the sample and 200 ng/g splite relevant for 0.2 ng/g to less than 4 ng/g endogenous level in the sample and 200 ng/g splite relevant for 0.2 ng/g to less than 4 ng/g endogenous level in the sample and 200 ng/g splite relevant for 1.0 ng/g to less than 4 ng/g endogenous level in the sample. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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		Perflu	HI Acid PFDA prodecanoic			1 Acid PFUn roundecanoi		C12 Acid PFDoA Perfluorododecanoic Acid			
Samel-	Amount	Amt Found	Amount	Ö.	Amt Found	Amount	0	Amt Found	Amount		
Sample Description	Spiked (ng/g)	in Sample (ng/g)	Recovered (ng/g)	Recovery (%)	in Sample (ng/g)	Recovered (ng/g)	Recovery (%)	in Sample (ng/g)	Recovered (ng/g)	Recovery (%)	
OKMN-SB-ASB39-0-0035 (C0225120 Spk C, 2 ppb Spike)	2	23.8	NA	NA	4.11	NA	NA	6.10	NA	NA	
OKMN-SB-ASB39-0-0035 (C0225120 Spk D, 200 ppb Spike)	200	23.8	233	105	4.11	182	89	6.10	217	105	
ОКМN-SB-ASB39-0-0055 (C0225121 Spk E, 2 эрь Spike)	2	36.3	NA	NA	4.35	NA	NA	5.15	NA	NA	
OKMN-SB-ASB39-0-0055 (C6225121 Spk F, 200 ppt Spike)	200	36.3	238	101	4.35	157	76	5.15	170	82	
OKMN-SS-ASB39-0-0070 (C0225122 Spk G, 2 ppb Spike)	2	28.1	NA	NA	2.04	3.61	79	2.52	4,77	113	
CKMN-SB-ASB39-0-0070 (C0225122 Spk H, 209 ppb Spike)	200	26.1	195	84	2.04	NA	NA	2.52	NA	NA	
OKMN-SB-ASB40-0-0000 (C0225123 Spk C, 2 ppb Spike)	2	0.736	2.83	105	ND	2.30	115	ND	2.72	136	
OKMN-SE-ASB40-0-0000 (C0225123 Spk 0, 200 ppb Spike)	200	0.736	NA	NA	ND	NA	NA	NC	NA	NA	
OKMN-SE-AS340-0-0015 (C0225124 Spk E, 2 ppb Spike)	2	0.826	2.87	102	0.191	2,14	97	ND	2.28	114	
OKMN-SB-AS340-0-0015 (C0225124 Spk F, 200 ppb Spike)	200	0.825	NA	NA	0.191	NA	NA	ND	NA	NA	
OKMN-SB-ASB40-0-0035 (C0225125 Spk G, 2 ppb Spike)	2	1.17	3.27	105	ND	2.47	124	ND	1.92	96	
OKMN-SS-ASB40-0-0035 (C0225125 Spk H, 200 ppb Spike)	200	1.17	NA	NA	ND	NA	NA	ND	NA	NA	
OKMN-SB-ASB40-0-0055 (C0225126 Spk C, 2 ppb Spike)	2	NR	NR	NR	ND	2.37	119	ND	2.94	147	
OKMN-S8-ASB40-0-0055 (00225126 Spk D, 200 ppb Spike)	200	NR	NR	NR	ND	NA	NA	ND	NA	NA	
OKMN-SB-ASB40-0-0090 (C0225127 Spike, 2 ppb Spike)	2	ND	2.26	113	ND	2.21	111	ND	2.19	110	
OKMN-SB-ASB40-0-0090 (C0225127 Spk F, 290 ppb Spike)	200	ND	NA	NA	ND	NA	NA	ND	NA	NA	
OKMN-SB-ASB41-0-0015 (C0225128 Spk G, 2 ppb Spike)	2	9.01	NA	NA	0.397	2.45	103	0.213	2.60	119	
OKMN-SB-ASB41-0-0015 (00225128 Spk H, 200 ppb Spike)	200	9.01	194	92	0.397	NA	NA	0.213	NA	NA	
OKMN-SB-ASB41-0-0035 (C0225129 Spk C, 2 ppb Spike)	2	34.1	NA	NA	2.65	4,44	90	1.83	3.78	98	
OKMN-SB-ASB41-0-0035 (C0226129 Spk 0, 200 ppb Spike)	200	34.1	237	101	2.65	NA	NA	1.83	NA	NA	
OKMN-SB-ASB41-0-0055 (C0225130 Spk E, 2 ppb Spike)	2	31.1	NA	NA	2.32	4.14	91	NR	NR	NR	
OKMN-SB-ASB41-0-0055 (C0225130 Spk F, 200 ppb Spike)	200	31.1	216	92	2.32	NA	NA	NR	NR	NR	
OKMN-SB-ASB41-0-0090 (Ce225131 Spk G, 2 ppb Spike)	2	ND	2.15	108	ND	1.85	93	ND	1.78	69	
OKMN-SB-ASB41-0-0090 (C0225131 Spk H, 200 ppb Spike)	200	ND	NA	NA	ND	NA	NA	ND	NA	NA	

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ND = Not detected at or above the acceptable LOG reported on Table III. NR = Not reported due to quefty control failure. NA = Not spplicable; matrix spike level outside the relevant range for the endogenous concentration in the sample. Sample and 200 rg/g spike relevant for 4.0 rg/g to less than 400 rg/g endogenous isvel in the sample. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the rew data.

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			10 Acid PFDA orodecanoic			1 Acid PFUn roundecanois		C12 Acid PFDoA Perfluorododecanoic Acid			
Sample Description	Amount Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recover (%)	
OKMN-SB-ASB41-DB-0090								in the second	an a		
(C022513Z Spk C, 2 ppb Spike)	2	ND	2.26	113	ND	1.99	100	ND	2.10	105	
OKMN-SB-ASB41-DB-0090	000										
(C0225132 Spk D, 208 ppb Spike)	200	ND	NA	NA	NÐ	NA	NA	ND	NA	NA	
OKMN-SB-ASB42-0-0000 (C0225133 Spit &, 2 ppb Spike)	2	ND	1.73	87	ND	0.40	105				
OKMN-S8-ASB42-0-0000	2		1.75	0/	. (WD	2.10	106	ND	2.39	120	
(C0225133 Spk F, 200 ppb Spike)	200	ND	NA	NA	ND	NA	NA	ND	NA	NA	
OKMN-SB-ASB42-0-0015											
(C0225134 Spk G, 2 ppb Splke)	2	0.210	1.93	86	ND	2.05	103	ND	2.36	118	
OKMN-SB-ASB42-0-0015											
(C0225134 Spk H, 200 ppb Spike)	200	0.210	NA	NA	ND	NA	NA	ND	NA	NA	
CKMN-SB-ASB42-0-0035		0.000	9.50		ND						
(C0225135 Spk C, 2 ppb Splke) OKMN-SB-ASB42-0-0035	2	0.299	2.59	115	ND	2.36	118	0.232	2.38	107	
(C0225135 Spk D, 200 ppb Spike)	200	0.299	NA	NA	ND	NA	NA	0.232	NA	NA	
CKMN-SB-ASB42-0-0055											
(C0225136 Spk E, 2 ppb Spika)	2	0.796	3.98	159	ND	2.18	109	0.202	2.41	110	
OKMN-SB-ASB42-0-0055											
(C0225136 Spk F, 200 ppb Spike)	200	0.796	NA	NA	ND	NA	NA	0.202	NA	NA	
OKMN-SB-ASB42-0-0070											
(C0225137 Spk G, Z ppb Spike)	2	0.396	2.49	105	ND	2.29	⊤15	ND	2.21	111	
OKMN-SB-AS842-0-0070 (C0225137 Spk H, 200 ppb Spike)	200	0.396	NA	NA	ND	NA	NA	ND	NA	NA	
OKMN-SB-ASB43-0-0015											
(C0225139 Spk C. 2 ppb Spike)	2	0.601	2.77	108	ND	2.54	127	0.365	2.69	116	
OKMN-SB-AS843-0-0015											
C0225139 Spk 0, 200 ppb Spike)	200	0.601	NA	NA	ND	NA.	NA	0.365	NA	NA	
OKMN-SB-ASB43-0-0035											
(C3225140 Spk E, 2 ppb Spike)	2	10.0	NA	NA	2.65	4.10	73	3.72	4.83	56	
OKMN-S8-AS843-0-0035 (00225140 Spk F, 200 ppb Spike)	200	10.0	192	91	2.65	NA	NA	3.72	NA	NA	
OKMN-SB-ASB43-0-0055				Ē							
(C0225141 Spk G, 2 ppb Spike)	2	10.6	NA	NA	2.69	3.91	61	3.09	4.53	72	
OKMN-SB-AS843-0-0055							1				
C0225141 Spk H; 200 ppb Splke)	200	10.6	166	78	2.69	NA	NA	3.09	NA	NA	
OKMN-SB-AS843-0-0090											
(C0225142 Spk C, 2 ppb Spike)	2	0.187	2.49	115	ND	2.12	106	ND	2.49	125	
OKMN-SB-ASB43-0-0090 (0225142 Spk 0, 200 ppb Spike)	200	0.187	NA	NA	ND	NA	NA	ND	NA	NA	
	L		·								
			Average:	75		Average:	75		Average:	77	
		Standa	rd Deviation:	28	Standa	Standard Deviation: 26		Standard Deviation:		29	

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NR = Not reported due to quality control failure. NA = Not applicable; matrix splike level outside the relevant range for the endogenous concentration in the sample. 2 ng/g spike relevant for 0.2 ng/g to test than 4 ng/g endogenous level in the sample and 200 ng/g spike relevant for 0.0 ng/g to test than 4 ng/g endogenous level in the sample and 200 ng/g spike relevant for 4.0 ng/g to test than 4 ng/g endogenous level in the sample. Not applicable; matrix splike relevant for 4.0 ng/g to test than 4 ng/g endogenous level in the sample. Not applicable; matrix splike relevant for 4.0 ng/g to test than 4.00 ng/g ondogenous level in the sample. Not applicable; matrix splike relevant for 4.0 ng/g to test than 4.00 ng/g ondogenous level in the sample. Not applicable; matrix splike relevant for 4.0 ng/g to test than 4.00 ng/g ondogenous level in the sample. Not applicable; matrix splike relevant for 4.0 ng/g to test than 4.00 ng/g ondogenous level in the sample.

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A	Amount				Perfluor	ohexanesulf	onate	C8 Sulfonate PFOS Perfluorooctanesulfonate			
	Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	
OKMN-S8-ASB37-0-0055 (C9225070 Spk C, 2 ppb Spike)	2	1.68	4.50	141	7.18	NA	NA	15200	RE	RE	
OKMN-SB-ASB37-0-0055 (C0225070 Spk D, 200 ppb Spike)	200	1.68	NA	NA	7.18	102	47	15200	RE	RE	
OKMN-S8-AS837-0-0075 (C0226071 Spk E, 2 ppb Spike)	2	0.1B2	1.19	50	0.614	1.56	47	622	RE	RE	
OKMN-SB-ASB37-0-0075 (C0225071 Spk F, 200 ppb Spike)	200	0.182	NA	NA	0.614	NA	NA	622	RE	RE	
OKMN-SB-ASB38-0-0000 (C0225072 Spk G, 2 ppb Spike)	2	0.536	1.57	52	1.76	2.70	62	318	NA	NA	
OKMN-SB-ASB38-0-0000 (C0225072 Spk H, 200 ppb Spike)	200	0.536	NA	NA	1.76	NA	NA	318	451	67	
OKMN-SE-ASB38-0-0015 (C9225073 Spit C. 2 ppb Spike)	2	0.720	1.66	47	5.45	NA	NA	878	RE	RE	
OKMN-SB-ASB38-0-0015 (C0225673 Spk D, 205 ppb Spike)	200	0.720	NA	NA	5.45	103	49	878	RE	RE	
OKMN-SB-AS838-0-0035 (03225074Spk E, 2 ppb Spike)	2	1.62	3.52	86	8.05	NA	NA	1010	RE	RE	
OKMN-SB-ASB38-0-0035 (C0225074 Spk F, 200 ppb Spike)	200	1.82	NA	NA	8.05	114	53	1010	RE	RE	
OKMN-SS-ASB38-DB-0035 (C0225075 Spk G, 2 ppb Spike)	2	1.81	2.96	58	8.55	NA	NA	1270	RE	RE	
OKMN-SB-ASB38-DB-0035 (C0225075 8pk H, 200 ppb Spike)	200	1.81	NA	NA	6.55	118	54	1270	RE	RE	
OKMN-SB-ASB38-0-0065 (C0225076 Spk C, 2 ppb Spike)	2	2.35	3.32	49	9.60	NA	NA	1490	RE	RE	
OKMN-SB-ASB38-0-0055 (C0225076 Spk D, 200 ppb Spike)	200	2.35	NA	NA	<u> </u>	182	46	1490	RE	RE	
OKMN-SB-ASB38-0-0080 (C0225077 Spk E, 2 ppb Spike)	2	1.61	2.47	43	NR	NR	NR	NR	NR	NR	
ОКМN-SB-AS538-0-0080 (C0225077 Spk F, 200 ppb Spike)	200	1.61	NA	NA	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB39-0-0015 (00225078 Spk G, 2 ppb Spike)	2	8.55	NA	NA	68.7	NA	NA	6000	RE	RE	
OKMN-SB-ASB39-0-0015 (C0225078 Spk H, 200 ppb Spike)	200	8.55	109	50	68.7	169	60	6000	RE	RE	
OKM/N-SB-ASB39-DB-0015 (C0225079 Spk C, 2 ppb Spike)	2	10.7	NA	NA	82.8	NA	NA	5350	RE	RE	
OKMN-SB-ASB39-DB-0015 (C0225079 Spk D, 200 ppb Spike)	200	10.7	116	62	82.8	171	44	6350	RE	RE	
OKMN-SB-ASB36-0-0015 (C0225060 Spik E, 2 ppb Spike)	2	6.86	NA	NA	58.3	NA	NA	NR	NR	NR	
OKMN-SB-ASB38-0-0015 (C0225080 Spik F, 200 ppb Spike)	200	6.85	103	48	58.3	148	45	NR	NR	NR	
OKMN-SB-ASB36-DB-0015 (C0225081 Spk G, 2 ppb Spike)	2	8.68	NA	NA	62 7	NA	NA	21600	RE	RE	
OKMN-SB-ASB36-DB-0015 (C0225081 Spk H, 200 ppb Spike)	200	8.68	110	51	62.7	143	40	21600	RE	RE	

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NR = Nct reported due to quality control failure. RE = Re-extraction required at a higher fanilication level; see (able XIV for extraction results.

Not applicable; maintains are represented and and the relevant range of the endogenous constructor in the sample. 2 m/g spike relevant for 0.2 m/g to tess than 4 m/g endogenous level in the sample and 200 m/g spike relevant for 0.2 m/g to tess than 4 m/g endogenous level in the sample and 200 m/g spike relevant for 4.0 m/g to tess than 400 m/g endogenous level in the sample.
 Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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						ulfonate PFI ohexanesulf		C8 Sulfonate PFOS Perfluorooctanesulfonate			
Sample Description	Amount Spiked (ng/g)				Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	
OKMN-SB-ASB36-0-0030 (C0225082 Spk C, 2 ppb Spike)	2	22.6	NA	NA	NR	NR	NR	34300	RE	RE	
OKMN-SB-ASB36-0-0030 (C0225082 \$pk D, 209 ppb Spike)	200	22.6	113	45	NR	NR	NR	34300	RE	RE	
OKMN-SB-ASB36-0-0055 (C0225083 Spk E, 2 ppb Spike)	2	20.2	NA	NA	NR	NR	NR	10300	RE	RE	
OKMN-SB-ASE36-0-0055 (C0225083 \$pk F, 200 ppb Spike)	200	20.2	115	47	NR	NR	NR	10300	RE	RE	
OKMN-SB-ASB36-0-0095 (C0225064 Spk C, 2 ppb Spike)	2	15.2	NA	NA	10.5	NA	NA	79.3	NA	NA	
OKMN-SB-ASB36-0-0095 (C0225084 Spk H, 200 ppb Spike)	200	15.2	121	53	10.6	132	61	70.3	267	94	
OKMN-SB-ASB37-0-0000 (C0225086 Spk C, 2 ppb Spike)	2	0.368	1.50	57	2 11	5.16	153	NR	NR	NR	
OKMN-SB-AS837-0-0000 (C0225086 Spk D, 200 ppb Spike)	200	0,368	NA	NA	211	NA	NA	NR	NR	NR	
OKMN-SB-AS837-0-0015 (C0225087 Spk E, 2 ppb Spike)	2	2.32	3.23	46	15.1	NA	NA	5080	RE	RE	
OKMN-SB-AS837-0-0015 (C0225087 Spk F, 200 ppb Spike)	200	2.32	NA	NIA	15.1	114	49	6080	RE	RE	
OKMN-SB-ASB37-0-0035 (C0225088 Spk G, 2 pp5 Spike)	2	0.835	2.65	91	7.12	NA	NA	2550	RE	RE	
OKMN-SB-ASB37-0-0035 (C0225088 Spk H, 200 ppb Spike)	200	0.835	, NA	NA	7.12	102	47	2550	RE	RE	
OKMN-\$8-A\$837-D8-0036 (C6225089 Spk C, 2 ppb Spike)	2	1.04	1.91	44	9.67	NA	NA	2930	RE	RE	
OKMN-S8-AS837-D8-0035 (C0225089 Spk D, 200 ppb Spike)	200	1.04	NA	NA	9.67	125	58	2930	RE	RE	
OKMN-SB-ASB34-0-0035 (C0225090 Spk E, 2 ppb Spike)	2	7.80	NA	NA	128	NA	NA	7840	RE	RE	
OKMN-SB-ASB34-0-0035 (C0225090 Spk F, 200 ppb Spike)	200	7.80	103	48	128	306	89	7840	RE	RE	
ОКМN-SB-ASB34-0-0055 (C0225091 Spk G, 2 ppb Spike)	2	23.9	NA	NA	945	RE	RE	63200	RE	RE	
OKMN-S8-ASE34-0-0055 (C0225091 Spk H, 200 ppb Spike)	200	23.9	120	48	945	RE	RE	63200	RE	RE	
OKMN-SB-ASB34-0-0085 (C0225092 Spk C, 2 ppb Spike)	, 2	162	NA	NA	4060	RE	RE	12800	RE	RE	
OKMN-SB-ASB34-0-0085 (C0225092 Spk D, 200 ppb Spike)	200	162	261	50	4060	RE	RE	12800	RE	RE	
OKMIN-SB-ASB35-0-0000 (C0225093 Spk E, 2 ppb Spike)	2	0.496	1.85	68	NR	NR	NR	205	NA	NA	
OKMN-SB-ASB35-0-0000 (C0225093 Spk F, 200 ppb Spike)	200	0.496	NA	NA	NR	NR	NR	205	288	42	
OKMN-SB-ASB35-0-0015 (C0225094 Spk G, 2 ppb Spike)	2	11.9	NA	NA	NR	NR	NR	8610	RE	RE	
OKMN-SB-ASB36-0-0015 (C0225094 Spk H, 200 ppb Spike)	200	11.9	103	46	NR	NR	NR	8510	RE	RE	
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NR = Not reported due to quality control failure.
 RE = Re-extraction required as a higher fortification level; see Yable XIV for extraction results.
 NA = NOt applicable, matrix spike level outside the relevant range for the endogenous concentration in the sample. 2 rgrg spike relevant for 0.2 rgrg to less than 4 rgrg endogenous level in the sample and 200 rgrg byte relevant for 0.2 rgrg to less than 4 rgrg endogenous level in the sample.
 Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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	· · · · · ·					iulfonate PFI rohexanesulf			Sulfonate PF(prooctanesulf	
Sample Description	Amount Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)
OKMN-SB-ASB35-0-0035 (C0225095 Spk C, 2 ppb Spike)	2	21.2	NA	NA	₩R	NR	NR	29800	RE	RE
OKMN-SB-ASB35-0-0035 (C0225095 Spk D, 200 ppb Spike)	200	21.2	112	45	NR	NR	NR	29806	RE	RE
OKMN-SB-AS835-DB-0035 (C0225096 Spk E, 2 ppb Spike)	2	18.8	NA	NA	107	NA	NA	26100	RE	RE
ÖKMN-SB-ASB35-DB-0035 (C0225096 \$pk ₹, 200 ppb Spike)	200	18.8	109	45	107	197	45	26100	RË	RE
OKMN-SB-ASB36+0-0065 (C0225097 Spk G, 2 ppb Spike)	2	49.5	NA	NA	409	RE	RE	24500	RE	RE
OKMN-SB-ASB35-0-0055 (C6225097 Spk H, 209 ppb Spike)	200	49.5	165	58	409	RE	RE	24500	RE	RE
OKMN-SB-ASB35-0-0085 (C0225098 Spk C, 2 ppb Spike)	2	83,4	NA	NA	70.8	NA	NA	NR	NR	NR
OKMN-SB-ASB35-0-0085 (C6225098 Spk D, 200 ppb Spike)	200	83.4	169	43	70.8	161	45	NR	NR	NR
OKMN-SB-ASB36-0-0000. (C0225099 Spk E, 2 ppb Spike)	2	0.360	1.29	47	1.97	3.64	84	1210	RE	RE
OKMN-SB-ASB36-0-0000 (C0225099 Spk F, 200 ppb Spike)	200	0.360	NA	NA	1.97	NA	NA	1210	RE	RE
OKMN-SB-ASB32-0-0075 (C0225100 Spk G, 2 ppb Spike)	2	NR	NR	NR	: :89	NA	NA	NR	NR	NR
OKMN-SB-ASB32-0-0075 (C0225100 Spt H, 200 ppb Spike)	200	NR	NR	NR	:8 9	305	58	NR	NR	NR
OKMN-SB-ASB33-0-0000 (C0225102 Spk C, 2 ppb Spike)	2	NR	NR	NR	0,557	2.17	81	117	NA	NA
OKMN-SB-ASB33-0-0000 (C0225102 Spk D, 200 ppb Spike)	200	NR	NR	NR	0.557	NA	NA	117	257	70
OKMN-SB-ASB33-0-0015 (C0225103 Spk E, 2 ppb Spike)	2	5.31	NA	NA	NR	NR	NR	4070	RE	RE
OKMN-SB-ASB33-0-0015 (C6225163 Spk F, 200 ppb Spike)	200	5.31	86.7	41	NR	NR	NR	4070	RE	RÉ
OKMN-SB-ASB33-0-0035 (C0225104 Spk G, 2 ppb Spike)	2	3.43	4.79	68	NR	NR	NR	3290	RE	RE
OKMN-SB-ASB33-0-0035 (C0225104 Spk H, 200 ppb Spike)	200	3.43	NA	NA	NR	NR	NR	3290	RE	RE
OKMN-SB-ASB33-DB-0035 (C0225105 Spk C, 2 ppb Spike)	2	NR	NR	NR	46.4	NA	NA	4610	RE	RE
OKMN-SB-ASB33-DB-0035 (C0225105 Spk D, 200 ppb Spike)	200	NR	NŔ	NR	46.4	180	67	4610	RE	RE
OKMN-SB-ASB33-0-0055 (C0225106 Spk E, 2 ppb Spike)	2	15.4	NA	NA	167	NA	NA	4820	RE	RE
OKMN-SB-AS633-0-0055 (C0225106 Spk F, 200 ppb Spike)	200	15.4	117	51	167	339	86	4820	RE	RE
OKMN-SB-ASB33-0-0085 (C0225107 Spk G, 2 ppb Spike)	2	NR	NR	NR	1070	RE	RE	22600	RE	RE
OKMN-SB-AS833-0-0085 (C0225107 Spk H, 200 ppb Spike)	200	NR	NR	NR	1070	RE	RE	22600	RE	RE
(C0225106 Spk F, 200 ppb Spike) OKIMN-SB-ASB33-0-0085 (C0225107 Spk G, 2 ppb Spike) OKIMN-SB-ASB33-0-0085	2	NR	NR	NR	1070	RE	RE	22600	RE	RE

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NR = Not reported due to quality control failure. RE = Re-extraction required at a higher tonification level, see Table XIV for excraction assults. NA = Not applicable, marks spike tevent for 0.2 right clears the endogenous concentration in the sample. 2 right spike relevant for 0.2 right to less than 4 right endogenous level in the sample and 200 right pack relevant rol 0.0 right spike relevant rol.0 right to less than 4 right endogenous level in the sample and 200 right spike relevant rol.0 right to less than 400 right endogenous level in the sample. Note: Since this summary table shows rounded results, recovery values may vary slightly from the Values in the raw data.

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						Sulfonate PFH rohexanesulf			Sulfonate PF prooctanesul	
Sample Description	Amount Spiked (ng/g)	Amt Found in Sample , (ng/g)	Arnount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)		Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)
OKMN-SB-ASB34-0-0000 (C0225108 Spk C, 2 ppb Spike)	2	ND	1.00	50	0.412	1.52	65	NR	NR	NR
OKMN-SB-ASB34-0-0000 (C0225108 Spk D, 200 ppb Spike)	200	ND	NA	NA	0.412	NA	NA	NR	NR	NR
CKMN-SB-ASB34-0-0015 (C0225103 Spk E, 2 ppb Spike)	2	NR	NR	NR	20.4	NA	NA	5010	RE	RE
OKMN-SB-ASB34-0-0015 {C0225109 Spk F. 200 ppb Spike}	200	NR	NR	NR	20.4	120	50	5010	RE	RE
OKMN-SB-ASB31-0-0000 (C0225110 Spk G, 2 ppb Spike)	2	NR	NR	NR	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB31-0-0000 (C0225110 Spik H, 200 ppb Spike)	200	NR	NR	NR	NR	NR	NR	NR	NR	NR
OKMN-SB-ASB31-0-0015 (C0225111 Spk C, 2 ppb Spike)	2	5.89	NA	NA	NR	NR	NR	1880	RE	RE
OKMIN-SB-ASB31-0-0015 (Ce226111 Spk D, 200 ppb Spike)	200	5.89	111	53	NR	NR	NR	1880	RE	RE
CKMN-SB-ASB31-0-0(:35 (C0225112 Spk E, 2 ppb Spike)	2	18.2	NA	NA	827	RE	RE	57500	RE	
OKMN-SB-ASB31-0-0035 (C0225112 Spk F, 208 ppb Spike)	200	18.2	172	77	827	RE	RE	57500	RE	RE
OKMN-SB-ASB31-0-0055 (C0225113 Spk G, 2 ppb Spike)	2	17.6	NA	NA	1120					
OKMN-SB-ASE31-0-0055 (C0225113 Spk H, 200 ppb Spike)	200	17.6	128	55	1120	RE	RE	38300	RE	RE
O≺MN-SB-ASB31-0-0070 (C0225114 Spk C, 2 ppb Spike)	2	33.5	NA	NA	NR					
OKMN-SB-ASB31-0-0070 (C0225114 Spk D, 200 ppb Spike)	200	33.5	155	61	NR	NR NR	NR NR	58800 58800	RE	RE
OKMN-SB-ASB32-0-0000 (C0225115 Spk E, 2 ppb Spike)	2	2.37	2 90		6.00					
OKMN-SB-ASB32-0-0000 (C0225115 Spk F, 200 ppb Spike)	200	2.37	3.30 NA	47 NA	8.02 8.02	NA 87.9	NA 40	1110	RE	RE
OKMIN-SB-ASB32-0-0015										RE
(C0225116 Spk G, 2 ppb Spike) OKMN-SB-ASB32-0-0015 (C0225116 Spk H, 200 ppb Spike)	2 200	63.1 63.1	NA 149	NA 43	876 876	RE	RE	34500	RE	RE
OKMN-SB-ASB32-DB-0015							RE	34500	RE	RE
(C0225117 Spk C, Z ppb Spike) OKMN-SB-ASB32-DB-0015 (C0225117 Spk D, 200 ppb Spike)	2 200	81,1 81,1	NA	NA	1100	RE	RE	26600	RE	RE
OKMN-SB-ASB32-0-0035			225	72	1100	RE	RE	26500	RE	ŔE
(Ct225118 Spk £, 2 ppb Spike) OKMN-SB-ASB32-0-0035	2	79.1	NA	NA	NR	NR	NR	101000	RE	R£
(C0225118 Spk F, 200 ppb Spike) OKMN-SB-ASB32-0-0055	200	79.1	313	117	NR	NR	NR	101000	RE	RE
(C0225119 Spk G, 2 ppb Spike) OKMN-SB-ASB32-0-0055	2	89.1	NA	NA	1090	RĘ	RE	NR	NR	NR
(C0225119 Spk H, 200 ppb Spike)	200	89.1	239	75	1090	RE	RE	NR	NR	NR

ND = Not detected at or above the acceptable LOQ reported on Table IV.
 NR = Not reported due to quality control riteria.
 RE = Re-extraction required at a higher fortification invel, see Table XIV for extraction results.
 NA = Not applicable; matrix spike level outside the relevant range for the andogenous concentration in the sample. 2 ray's spike relevant for 0.2 ray's to less than 4 ray's endogenous level in the sample and 200 ray's pike relevant for 4.0 ray's endogenous level in the sample.
 Note: Since this summary table shows rounded results, roopvery values may vary slightly from the values in the raw deta.

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						ulfonate PFI rohexanesulf		C8 Sulfonate PFOS Perfluorooctanesulfonate			
Sámple Description	Amount Spiked (ng/g)			Recovery (%)	Amt Found in Sample (ng/g)	Amount	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	
OKMN-SB-ASB39-0-0035 (C0225128 Spk C, 2 ppb Spike)	2	9.57	NA	NA	166	NA	NA	12100	RE	RE	
CKMN-SB-ASB39-0-0035 (C0225120 Spk D, 200 ppb Spike)	200	9.57	182	86	156	347	96	12100	RE	RE	
CKWN-SB-AS839-0-0055 (C0225121 Spk E, 2 ppb Spike)	2	20.4	NA	NA	NR	NR	NR	NR	NR	NR	
CKMN-SB-ASB39-0-0055 (C6225121 Spik F, 200 ppb Spike)	200	20.4	193	86	NR	NR	NR	NR	NR	NR	
OKMN-SB-ASB39-0-0070 (C0225122 Spk G, 2 ppb Spike)	2	12.2	NA	NA	188	NA	NA	NR	NR	NR	
OKMN-SB-ASB39-0-0070 (C0225122 Spk H, 200 ppb Spike)	.200	12.2	182	85	188	360	85	NR	NR	NR	
OKMN-SB-AS840-0-0000 (00225123 Spit C, 2 ppb Spite)	2	0.238	2.29	103	ND	2.58	129	173	NA	NA	
OKMN-SB-ASB40-0-0000 (C0225123 Spk b, 200 ppb Spike)	200	0.238	NA	NA	ND	2.35 NA	NA	173	394	111	
OKMN-SB-ASB40-0-0015	2	0.452									
(C0225124 Spk 8, 2 ppb Splka) OKMN-SB-AS540-0-0015 (C0225124 Spk F, 200 ppb Splka)	∠ 200	0.452	1.96 NA	75 NA	0.777	2.97	\$10	185	NA	NA	
OKMN-SB-AS840-0-0035					0.777	NA	NA	185	429	122	
(C9225125 Spk G, 2 ppb Splke) OKMN-SB-ASB40-0-0035 (C0225125 Spk H, 200 ppb Spike)	2 200	0.451 0.451	2.58	106	2.05	3.50	73	339	NA	NA	
OKMN-SB-ASB40-0-0055		0.451	NA	NA	2.05	NA	NA	339	456	59	
(C0225126 Spk C, 2 ppb Spike) OKMN-SB-ASB40-0-0055	2	0.483	2.30	91	0.908	3.69	139	120	NA	NA	
(C0225126 Spk D, 200 ppb Spike) OKMN-SB-A5B40-0-0090	200	0.483	NA	NA	0.908	NA	NA,	120	290	85	
(C0225127 Spk E, 2 ppb Spike) OKMN-SB-ASB40-0-0090	2	0.453	1.65	60	0.686	2.60	96	33.4	NA	NA	
(C0225127 Spk F, 260 ppb Spike)	200	0.453	NA	NA	0.686	NA	NA	33.4	216	91	
OKMIN-SB-ASB41-0-0015 (C0225128 Spk G, 2 ppb Spike) OKMN-SB-ASB41-0-0015	2	6.30	NA	NA	66.4	NA	NA	5180	RE	RE	
(C0225128 Spk H, 200 ppb Spike)	200	6.30	186	90	66.4	240	87	5180	RE	RE	
OKMN-SB-ASB41-0-0035 (C9225129 Spik C, 2 ppb Spike)	2	10.1	NA	NA	27.5	NA	NA	1520	RE	RE	
OKMN-SB-ASB41-0-0035 (C0225129 Spk D, 200 ppb Spike)	200	10.1	195	92	27.5	240	106	1520	RE	RE	
OKMN-SB-ASB41-0-0055 (C0225130 Spk E, 2 ppb Spike)	2	6.86	NA	NA	27.0	NA	NA	2150	RE	RE	
OKMN-SB-A3841-0-0055 (C0225130 Spk F, 208 ppb Spike)	200	6.86	194	94	27.0	263	118	2150	RE	RE	
OKMN-SB-ASS41-0-0090 (C#225131 Spk G, 2 ppb Spike)	2	3.70	5.96	113	3.44	ő.82	119	18.2	NA	NA	
OKMN-SB-ASB41-0-0090 (C0225131 Spk H, 200 ppb Spike)	200	3.70	NA	NA	3 44	NA	NA	18.2	214	98	

ND × Not detected at or above the acceptable LOG reported an Table IV. NR × Not reported due to quely control (alure. RE = Re-excitation required at a higher forstication level; see Table XIV for extraction assults. NA = Not applicable, matrix spike level outside the relevant range for the endogenous concentration in the sample. 2 ng/g spike relevant for 0.2 ng/g to less than 4 ng/g endogenous level in the sample and 200 ng/g spike relevant for 4.0 ng/g to less than 400 ng/g endogenous level in the sample. Note: Since this summary table shows rounded assults, recovery values may vary slightly from the values in the raw data.

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					ulfonate PFI ohexanesulf			Sulfonate PF(prooctanesulf		
Sample	Amount Spiked	in Sample	Recovered	Recovery	Amt Found in Sample	Amount Recovered	Recovery	Amt Found in Sample	Amount Recovered	Recovery
Description	(ng/g)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)
OKMN-SB-ASB41-DB-0090 (C0225132 Spk C, 2 ppb Spike)	2	3.64	5.14	75	3.28	4.84	78	20.2	NA	NA
OKMN-SB-ASB41-DB-6090 (C0225132 Spk D, 200 ppb Spike)	200	3.64	NA	NA	3.28	NA	NA	20.2	216	98
OKMN-SB-ASB42-0-0000 (C0225133 Spk E. 2 ppb Spike)	2	ND	2.67	104	ND	1.76	88	21.3	NA	NA
OKMN-SB-ASB42-0-0000 (C0225133 Spk F, 200 ppb Spike)	200	ND	NA	NA	ND	NA	NA	21.3	223	101
OKMN-SB-ASB42-0-0015 (C0225134 Spk G, 2 ppb Spike)	ź	0.261	2.36	105	ND	2.29	115	54,9	NA	NA
OKMN-SB-ASB42-0-0015 (C0225134 Spk H, 200 ppb Splke)	200	0.261	NA	NA	ND	NA	NA	54.9	267	106
OKMN-SB-ASB42-0-0035 (C0225135 Spk C, 2 ppb Spike)	2	3.93	5.25	66	10.8	NA	NA	158	NA	NA
OKMN-SB-ASB42-0-0035 (C0225135 Spk D, 200 ppb Spike)	200	3.93	NA	NA	10.8	201	95	158	399	121
OKMN-SB-ASB42-0-0055 (C022513& Spk E, 2 ppb Spike)	2	4.25	NA	NA	15.2	NA	NA	NR	NR	NR
OKMN-SB-ASB42-0-0055 (C0225136 Spk F. 200 ppb Spike)	200	4 25	182	89	15.2	213	99	NR	NR	NR
OKMN-SS-ASB42-0-0070 (C0225137 Spk G, 2 ppb Spike)	2	3.69	5.51	91	4.60	NA	NA	67.3	NA	NA
OXMN-SB-AS842-0-0070 (C0225137 Spk H, 200 ppb Spike)	200	3.69	NA	NA	4.60	182	89	67.3	227	80
OKMN-SB-ASB43-0-0015 (C9225139 Spk C, 2 ppb Spike)	2	3.92	4.97	53	12.9	NA	NA	190	NA	NA
OKMN-SB-ASB43-0-0015 (C0225139 Spk 9, 200 ppb Spike)	200	3.92	NA	NA	12.9	181	84	190	352	81
OKMN-S8-ASB43-0-0035 (C6225140 Spk E, 2 ppb Spike)	2	6.03	NA	NA	93.7	NA	NA	3510	RE	RE
OKMN-SB-ASB43-0-0035 (C0225140 Spk F, 200 ppb Spike)	200	6.03	208	101	93.7	292	99	3510	RE	RE
OKMN-SB-ASB43-0-0055 (C0225141 Spk G, 2 ppb Spike)	2	14.1	NA	NA	173	NA	NA	4760	RE	RE
OKMN-SB-ASB43-0-0055 (C0225141 Spk H, 200 pp5 Spike)	200	14.1	194	90	173	318	72	4760	RE	RE
OKMN-SB-ASB43-0-0090 (C0225142 Spk C, 2 ppb Spike)	2	7.87	NA	NA	26.6	NA	NA	NR	NR	NR
OKMN-SB-AS543-0-0090 (C0225142 Spk D, 200 ppb Spike)	200	7.87	199	96	26.6	233	103	NR	NR	NR
= Not reported due to quality control faih	are.	Standa	Average: rd Deviation;	68 24	Standa	Average: rd Deviation:	77 29	Standa	Average: ird Deviation:	89 22

Not detected at or above the acceptable LOQ reported on Table IV.
 NR = Not reported due to quality control table.
 NR = Not reported due to quality control table.
 Re = Re-extraction reguted at a higher tortification level, see Table XIV for extraction results.
 NA = Not applicable: matrix spike level outside the relevant range for the endogenous concentration in the sample. 2 rg/g spike relevant for 0.2 rg/g to less than 4 rg/g endogenous level in the sample and 200 rg/g spike relevant for 0.2 rg/g to less than 4 rg/g endogenous level in the sample.
 Note: Since this summery table shows rounded results, recovery values may vary slightly from the values in the raw data.

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Table XIII. Matrix Spike Recovery of PFBA, PFHA, PFHpA, and **PFOA** in Re-extracted Soil Samples

		ant Amt Found Amount Amt F				Acid PFH/					C8 Acid PFOA Perfluorooctanoic Acid		
	Arrisount				Amt Found	Amount	Margara Colorado	Ant Found	Amount		Ant Found	Amoant	
Sample Description	Spiked (po/o)	in Sample	Recovered		in Sample	Recovered		in Sample		Recovery	in Sample	Recovered	Recovery
	(ng/g)	(ng/g)	(eg/g)	(%)	(g\gn)	(ng/g)	(%)	(ng/g)	(ng/g)	(%)	(102/0)	(ng/g)	(%)
OKMN-S8-ASB37-0-0055 (C0225070 Spk C, 20000 ppb Spike)	20000	-	-	-		-		-		-	м.		-
OKMN-SB-ASB37-0-0075 (C0225871 Spk D, 869 ppb Spike)	800	v	-		-		-	-	-	* ;		-	
OKMN-SB-ASB38-0-0015 (C0225973 Spk E, 2000 ppb Spike)	2000	÷	-	-	-		-	-		-	*		-
OKMN-SB-ASB3B-0-0035 (C0225074 Spk F, 2000 ppb Spike)	2000	-	-		-		-	-	-	-	-		-
OKMN-SB-ASB38-DB-0035 (C0225875 Spk G, 2003 ppb Spike)	. 2000	•	-		-	-	-	-	-		-	-	-
OKMN-SB-ASB38-0-0035 (C0223076 Spk H, 2000 ppb Spike)	2000	-	-	-	w	-	-	-	-	-	-	-	-
OKMN-SB-ASB39-0-0015 (C0225078 Spk i, 800 ppb Spike)	800	-			-	-	-	-	-	-	418	1160	93
OKMN-SB-ASB39-0-0015 (C0223678 Spk J, 8000 ppb Spike)	8000	-	-		-		-	-	-	-	-	-	-
OKMN-SB-ASB39-DB-0015 (C0225079 Spk K, 600 ppb Spike)	800	-	-	-	-		-		-		452	1300	106
OKMN-SB-A\$839-DB-0015 (C0225079 Spk 1., 8000 ppb Spike)	8000	-	-		-	-	-	-	•		-	-	
OKMN-SB-ASB36-0-0015 (Ce22508e Spit M, 2000 pph Spitke) OKMN-SB-ASB36-0-0015	2000	•	-		-	-	-	-	-	-	997	2550	78
(C0225380 Spk N, 2008 pph Spike) OKMN-SB-ASB36-DB-0015	20000	-		-	·	-	-	-	-	-	-	-	-
(C0225081 Spk C, 2000 ppb Spike) OKMN-SB-AS936-DB-0015	2000	-	•	-	*	-	-	-	-	.	959	3940	149
(C0225081 Spk D, 20000 ppb Splke) OKMN-SB-ASB36-0-0030	20000	-	-		-	-	-	-		-	-	-	-
(00225082 Spk E, 2900 ppb 8pike) OKMN-SB-ASB36-0-0030	2000	-			-	-	-		-	*	1500	3390	95
(C0225082 Spk F, 40000 ppb Spike) OKMN-SB-ASB36-0-0055	40000	-	u	-	-	-	-	-	-	-	•		-
(C0225083 Spk G, 4060 ppb Spike) OKMN-SB-ASB36-0-0055 (C0225083 Spk H, 20000 ppb Spike)	4000	-	-	-	-	-	-	-	-	-	2450	5470	76
OKMN-SB-AS837-0-0015 (C0225667 Spit I, 8000 ppb Spike)	8000		-		_		-	-	•	-	-	-	-
OKMN-SB-ASB37-0-0035 (C0225088 Spk J, 4000 ppb Spike)	4000	_	•		_		-	-		-	-	-	•
OKMN-SB-ASB37-DB-0035 (C0225089 Spk K, 4000 ppb Spike)	4000	_			-	-	-	*	-	-	•	-	-
OKMN-SB-ASB34-0-0035 (C0225090 Spk t, 2006 ppb Spke)	2000	-	-	-	-	-	-	-	-	-	•	-	*
CEX22000 Spit L, 2000 pps Spika) OKMN-SB-ASB34-0-0035 (S8225090 Spik M, 8000 ppb Spika)	8000		-		-		-	-	•		NR	NR	NR
<u> </u>				<u> </u>			<u></u> {					-	-

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NR = Not reported due to quality control failure. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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Table XIII. Matrix Spike Recovery of PFBA, PFHA, PFHpA, and **PFOA** in Re-extracted Soil Samples (continued)

		Perfluorobutanoic Acid Perflu nt Amt Found Amount Anst Found				Acid PFHJ		Ant Found Amount			CI Acid PFOA Perfluorooctanoic Acid		
Sample Description	Amount Spiked (ng/g)			Recovery (%)	Anst Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)				Amt Found in Sample (ng/g)	Arnount Recovered (ng/g)	Recovery (%)
OKMN-SB-ASB34-0-0055 (C0225091 Spk C, 2000 ppb Spike)	2000	-	-			-	-			-	-		
OKMN-SB-AS834-0-0055 (C9225091 Spk 0, 8090 ppb Spike)	8000		-	-	-	-	-	-	-		4230	16400	152
OKMN-SB-ASB34-0-0055 (C0225091 Spk E, 40000 ppb Spike)	40000	-		-	-	-	-	•		-	-	-	-
OKMN-SB-ASB34-0-0085 (C0225992 Spk F, 2600 ppb Spike)	2000	1160	2870	86	730	2480	88	884	2720	92	-	-	-
OKMN-SB-ASB34-0-0085 (C6225652 Sck G, 3060 ppb Spike)	8000	-	-		-	-	-			-	-		-
OKMN-SB-ASB34-0-0085 (C0225092 Spik H, 20030 ppb Spike)	20030	-	-		-	-	-	-	-	-	13100	35700	113
OKMN-SB-ASB35-0-0015 (C0225094 Spk I, 2050 ppb Splke)	2000	-	-	-	-	-		-	-	-	884	2700	91
OKMN-SB-AS835-0-0015 (C6225094 Spk J, 20000 ppb Spike)	20000	-	-	-	-		-	-	-		-	-	-
OKMN-SE-ASB35-0-0035 (C9225095 Spk K, 4060 ppb Spike)	4000	-	-	-	v	-	-	÷	-	-	2770	6210	86
OKMN-SS-ASB35-0-0035 (C0225665 Spk L, 40000 ppb Spike)	40000	-	-		-			-	-	-	-	-	-
OKMN-SB-ASB35-DB-0035 (C0225096 Spk M, 4000 ppb Spike)	4000	-			-	*	-	-	-	-	NR	NR	NR
OKMN-SB-ASB35-DB-0035 (C0225096 Spk N, 40900 ppb Splke)	40000		-					-	-	-	*	-	-
OKMN-SB-ASB35-0-0055 (C0225897 Spk C, 2000 ppb Spike)	2000	-	-		619	2510	95	824	2990	108	-	-	-
OKMN-SB-AS835-0-0055 (08225097 Spk D, 20000 ppb Spike)	20000	-	-	-	-		-	-	-	-	12000	34700	114
OKMN-SB-ASB35-0-0085 (C0225098 Spk E, 4008 pp> Spike)	4000	-	-	-	999	4160	79	1080	4290	80	3300	4980	42
OKMN-SB-ASB36-0-0000 (00225999 Spk F, 2009 ppb Spike)	2000		-	-			-	-		-	-		-
OKMN-SS-ASB32-0-0075 (C0225100 Spk G, 2006 ppb Spka)	2000	1320	3000	84	538	2590	103		-	-	1820	3760	97
OKMN-SB-ASB33-0-0015 (C0225103 Spk H, 600 ppb Spike)	800		-					-		-	599	1180	73
OKMN-SB-ASB33-0-0015 (C0225103 Spk 1, 4000 ppb Spike)	4000		-		-			-	-	-		-	
OKMN-SB-AS833-0-0035 (C0225104 Spk J, 4000 ppb Spike)	4000		-	-	-	-		•	-	-		*	-
OKMN-SB-ASB33-DB-0035 (09225195 Spk K, 4980 pp5 Spike)	4000	•		-			-	-	-	-	-	-	
OKMN-S8-ASB33-0-0055 {C0225146 Spk L, 2009 ppb Spike}	2000			-	~	-	-		-		671	2390	86
OKMN-SE-ASE33-0-0085 (00225167 Spk M, 4000 pps Spike)	4000	-	-		-	-	-	-	~	1	3140	7330	105
OKMN-SE-ASE33-0-0085 (C0225107 Spk N, 20960 pp5 Spike)	20000	-		-	-		-	-	-	-		-	

NR « Not reported due to quality control failure. Note: Since this summary table shows rounded results, recovery values may vary stightly from the values in the raw data.

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Table XIII. Matrix Spike Recovery of PFBA, PFHA, PFHpA, and **PFOA in Re-extracted Soil Samples (continued)**

					Acid PFH/		C7 Acid PFHpA Perfluorobeptanoic Acid Ant Found Amount			C8 Acid PFOA Perfluorooctanoic Acid			
Sample Description	Amount Spiked (ng/g)	Amt Found in Sampis (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Ant Found in Sample (ngig)	Amount Recovered (ng/g)	Recovery (%)	Arnit Found in Sample (ng/g)	Amount Recovered (hg/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)
OKMN-S8-ASB34-0-0015 (00225109 Spk C, 8000 ppb Spike)	8000	-		-	м	-	-	-	-	÷	-	-	-
OKMN-SB-ASB31-0-0015 (C0225111 Spk D, 2000 ppb Spike)	2000	U.		-	-	-	-	-	-	-	-		
OKMN-SB-ASB31-0-0035 (C9225112 Spk 5, 2000 pph Spike)	2000	-		-	-	-	-	-	-	-	-		
OKMN-SB-ASB31-0-0035 (C0225112 Sps F, 3000 ppb Spike) OKMN-SB-ASB31-0-0035	8000	-			-	-	-	-	-	-	NR	NR	NR
(C0225112 Spk 6, 40009 ppb Spike) OKMN-SB-ASB31-0-0055	40000		-		-	*	-	-	-		-	-	•
(C0225113 Spk H, 2000 ppb Spike) OKMN-SB-ASB31-0-0055	2000	-	-		-	-	-	-	•	-	~	-	
(C0225113 Spk I, 8000 ppb Spike) OKIMN-SB-ASB31-0-0055 (C0225113 Spk J, 69000 ppb Spike)	8000 40000	-	•	-	-	*	-	-	•	-	5490	10400	61
OKMN-SB-ASB31-0-0070 (C0225114 Spk K, 2000 ppb Spike)	2000	•		_	•			-					
OKMN-SB-ASB31-0-0070 (00225114 Spk L, 8000 ppb Spike)	8000	•		-	-	*	-	-	-	-	8360	16400	101
OKMN-SB-ASB31-0-0070 (C0225 ⁵ 14 Spk M, 40000 ppb Spike)	40000	•	-	-	-			-	-		-	a.	-
OKMN-SB-ASB32-0-0000 (00225115 Spk N, 2000 ppb Spike)	2000	•	-			-	-	-	-	-	-	-	-
OKMN-SB-ASB32-0-0015 (C9225116 Spk C, 2009 ppb Spike) OKMN-SB-ASB32-0-0015	2000	-		-	*	-		-		+	-	-	-
(C0223116 Spk D, 6900 ppb Spike) OKMN-SB-ASB32-0-0015	8000	•	-	-	-	-	-	-	-	-	4130	15500	142
(C0225118 Spk E, 40003 ppb Spike) OKMV-SB-ASB32-DB-0015	40000	-	•	-	*	-	-	-	-	*	-	-	•
(C0225117 Spk F, 2000 ppb Spike) OKMN-SS-ASB32-DB-0015 (C0225117 Spk G, 29000 ppb Spike)	2000 20000	-	-	-	-	-			-	-	3170	-	121
OKMN-SB-ASB32-0-0035 (C0225118 Spk H, 2000 ppb Spike)	2000	759	2060	65	· _	-	-	-		.			
OKMN-SB-ASB32-0-0035 (C0225118 Spk I, 20096 ppb Spike)	20000	-	-	-	~	-	-	-	u	-	11000	30600	98
OKMN-SB-AS832-0-0035 (C0225116 Spk J, \$6000 ppb Spike)	80008	-	-	-	-	-	-	-	*	-	-	-	-
OKMN-SB-ASB32-0-0065 (C0225119 Spk K, 2000 ppb. Spike) OKMN-SB-ASB32-0-0055	2000	816	1900	54	-	-	-	-	-	-		-	-
(C0225119 Spk L, 8000 ppb Spike) OKMN-SB-ASB32-0-0055	8000 40000	-		-		-	-	-	-		5050	14500	118
(C0225119 Spk M, 40000 ppb Spike) OKMN-SB-ASB39-0-0035	2000	•	~	-	-	-		-	-	-	•		•
(C0225120 Spk N, 2000 ppb Spike) OKMN-SB-ASB39-0-0035 (C0225120 Spk 0, 20000 ppb Spike)	20000	-	-	-	- +		-	-	-	-	931	3690	138
	20000	-	-	-	*	-	- [-	-	÷	-	-	-

NR = Not reported due to quality control failure. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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			C4 Acid PFBA Perfluorobutanoic Acid Amt Found Amount 4			Acid PFH.	-	C7 Acid PFHpA Perfluoroheptanoic Acid			C8 Acid PFOA Perfluorooctanoic Acid		
Sample Description	Arnount Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Rocoverod (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amoust Recevered (ng/g)	Recovery {%}
OKMN-SB-ASB39-0-0055 (C0225121 Spk C, 2000 ppb Spike)	2000	-		-	-	-	-		AL.	*	1260	4440	159
OKMN-SB-ASB39-0-0055 (C0225121 Spk D, 20000 ppb Spike)	20000	-	-	-		-	-	-	-	-	•	-	-
QKMN-\$B-A\$839-0-0070 (C0225122 Spk E, 800 ppb Spike)	800	-		-	-	-	-	-	-		855	1850	124
OKMN-SB-ASB39-0-0070 (C8225122 Spk F, 4000 ppb Spike)	4000			-	-	•	-	-	•	÷		-	
OKMN-SB-ASB41-0-0015 (C0225128 Spk G, 800 pph Spike)	800	-		*		*	-	-	-	-	594	1600	126
OKMN-SB-ASB41-0-0015 (C0225128 Spk H, 8000 ppb Spike)	9000	-	-	-	-	-	-	-	-	-	-	-	-
OKMN-SB-ASB41-0-0035 (C0225129 Spk i, 800 ppb Spike)	800	-					-	-	•		651	1270	77
OKMN-SB-ASB41-0-0055 (C0225130 Spk J, 800 ppb Spiks)	800	-	•	÷	*	-	-	-	-	-	511	1300	99
OKMN-SB ASB41-0-0055 (C0225130 Spk K, 2000 ppb Spike)	2000		-	-	-	-		-	-	-	-	-	
OKMN-SB-ASB43-0-0035 (C6225148 Spk L, 808 ppb Spike)	800	-	-	-	-	-		-	-		432	1500	134
OKMN-SB-ASB43-0-0035 (C0225148 Spk M, 4980 ppb Spike)	4000	· ·		•	· •	-	-	-	-	-	-		-
OKMN-SB-ASB43-0-0055 (C0225141 Spk N, 800 ppb Spike)	806		-			-	-		-	-	865	1470	76
OKMN-SB-ASB43-0-0055 (C9225141 Spk O, 8090 ppb Spike)	8000	·	-	-		•	-	-			-	-	-
	*******	Standar	Average: d Deviation:		Standar	Average d Deviation		Standar	Average: d Deviation:		Standa	Average: rd Deviation:	

Table XIII. Matrix Spike Recovery of PFBA, PFHA, PFHpA, and **PFOA in Re-extracted Soil Samples (continued)**

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NR = Not reported due to qualify control failure. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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Table XIV. Matrix Spike Recovery of PFDA, PFHS, and PFOS in **Re-extracted Soil Samples**

		C10 Acid PFDA Perfluorodecaneic Acid unt Ami Found Amount				iulfonate PFI ohexanesulf		C8 Sulfonate PFOS Perfluorooctanesulfonate			
Sample Description	Amount Spiked (ng/g)	and the second se	and the second se	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	
CKMN-SB-ASB37-0-0055 (C0225070 Spk C, 20000 ppb Spike)	20000	-	-	ł	~	-	-	15200	32000	84	
CKMN-S8-ASB37-0-0075 (C0225071 Spk D, 600 ppb Spike)	800	-		-	-	-	-	622	1300	85	
OKMN-SB-ASB38-0-0015 (C0225073 Spk E, 2000 ppb Spike)	2000		-	-	-	-	-	878	3130	113	
QKMN-SB-ASB38-0-0035 (C8225074 Spk F, 2000 ppb Spike)	2000	-	-	-	-	*	÷	1010	3270	113	
OKMN-SB-ASB38-DB-0035 (C0225075 Spk G, 2000 ppb Spike)	2000	-	-	•		-	-	1270	3330	103	
OKMN-SB-ASB38-0-0035 (C0225076 Spk H, 2000 ppb Spike)	2000	-	-	-	+	-	-	1490	3620	107	
OKMN-SB-ASB39-0-0015 (C0225078 Spk I, 800 ppb Spike) OKMN-SB-ASB39-0-0015	800	-	-	~	-	-	-	-			
(C6225078 Spk J, 8000 ppb Spike) OKMN-SB-ASB39-DB-0015	3000	-	-	-	-	-	-	6000	12500	81	
(C0225079 Spk K, 800 ppb Spike) OKMN-SB-ASB39-DB-0015	800	-	-	-	м	•	-	-	-	-	
(C6225079 Spk L, 8090 ppb Spike) OKMN-SB-ASB36-0-0015	9000	-	-	-	-		•	5350	13900	107	
(C0226088 Spk M, 2009 ppb Spike) OKMN:SB-ASB36-0-0015	2000	-	-			-	-	-	-	-	
(C0225080 Spk N, 20000 ppb Spike) OKMN-SB-ASB36-DB-0015	20000			-	-	-	-	NR	NR	NR	
(C0225081 Spk C, 2000 ppb Spike) OKMN-SB-ASB36-DB-0015 (C0225081 Spk D, 20000 ppb Spike)	2000	-	-		-	-	-	- 21800	- 44600	- 115	
OKMN-SB-ASB36-0-0030 (C0225052 Spk E, 2000 ppb Spike)	2000	1140	2950	91			_		_	_	
OKMN-SB-ASB36-0-0030 (C0225962 Spk F, 40000 ppb Spike)	40000	-	-	<u>-</u>	-	-		34300	78400	110	
OKMN-SB-A\$B36-0-0055 (C9225043 Spk G, 4060 ppb \$pike)	4000		u	-	-	-	-	-	-	-	
OKMN-SB-ASB36-0-0055 (C0225083 Spk H, 20000 ppb Spike)	20000	-	-	-	-	-	-	10300	30700	102	
OKMN-SB-ASB37-0-0015 (C0225687 Spk1, 4006 ppb Spike)	8000	-	-	-	+	-	-	5080	13800	109	
OKMN-SB-ASB37-0-0035 (C0225088 Spk J, 4000 ppb Spike)	4000		-	-	-	•	-	2550	6800	106 [.]	
ОКМN-SB-ASB37-DB-0035 (C0225089 Spik K, 4900 ррб Spike)	4000	-	-	-	-			2930	8710	145	
OKMN-SB-AS834-0-0035 (C0225090 Spk L, 2000 ppb Spike)	2009	-	•	-		-		-	-	-	
OKMN-SB-ASB34-0-0035 (C0225090 Spk M, 8000 ppb Splke)	6000	-	-	-	-			7840	16900	113	

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NR = Not reported due to quality control failure. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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Table XIV. Matrix Spike Recovery of PFDA, PFHS, and PFOS in **Re-extracted Soil Samples (continued)**

		C10 Acid PFDA Perfluorodecanoic Acid ount Amt Found Amount				utfonate PFI ohexanesulf		C8 Sulfonate PFOS Perfluorooctanesulfonate			
Sample Description	Amount Spiked (ng/g)		the second s	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	
OKMN-SB-ASB34-0-0055 (C0225991 Spk C, 2003 ppb Spike)	2000	÷	*	,	945	3100	108	-	-		
OKMN-SB-ASB34-0-0055 (C0225091 Spk D, \$000 ppb Spike)	8000	-	-	-		-	-		-	-	
OKMN-SB-ASB34-0-0055 (C0225091 Spk E, 40000 ppb Spike)	40000	-	-		-	-	-	63200	117000	135	
OKMN-SB-ASB34-0-0085 (C0225092 Spk F, 2060 ppb Spike)	2000	-	-		-		-	-	-	-	
OKMN-SB-ASB34-0-0085 (C0225092 Spk G, \$000 ppb Spike)	6000	-		÷	4060	11200	89	-	-	-	
OKMN-SB-ASB34-0-0085 (C0225092 Spit H, 20000 ppb Spite)	20000	-		-	-	-	-	12800	38000	126	
OKMN-SB-ASB35-0-0015 (C0226094 Spk I, 2000 ppb Spike)	2000	-	-		-	-	-	-	-	-	
OKMN-SB-ASB35-0-0015 (C0225094 Spk J, 20000 ppb Spike)	20000	-	-	-	-	-	-	8510	30200	108	
OKMN-SB-ASB36-0-0035 (C0225095 Spik K, 4600 ppb Spike)	4000	-	-	-	-	-	-	-	-	-	
OKMN-S8-ASB35-0-0035 (C0225095 Spk L, 40000 ppb Spike)	40000	-	-	-	-	-	-	29800	78300	121	
OKMN-SB-ASB35-DB-0035 (C0225095 Spk M, 4000 ppb Spike)	4000	-	-	-	-	-	-	-	-	-	
OKMN-SB-ASB35-DB-0035 (C0225096 Spk N, 40000 ppb Spike)	40000	÷	*	-	-	-	-	26100	70900	112	
OKMN-SB-ASB35-0-0055 (C0225097 Spik C, 2000 ppb Spike)	2000	*	*		409	2730	116	-	-	-	
OKMN-SB-ASB35-0-0055 (C0225097 Spk D, 20600 pp5 Spike)	20000	-	-	-	-	-	-	24500	47500	115	
OKMN-SB-ASB35-0-0085 (C0225098 Spk E, 4000 ppb Spike)	4000 -	-	•	÷	-	-		-	-	*	
OKMN-SB-ASB36-0-0000 (C0225099 Spk F, 2000 ppb Spike)	2000	-		-				1210	3290	104	
OKMN-SB-ASB32-0-0075 (C0225100 Spk G, 2000 ppb Spike)	2000	-	-	-	-	-	-	NR	NR	NR	
OKMN-SB-ASB33-0-0015 (C0225103 Spk H, 800 ppb Spike)	800	-	-	-	-	-	-		÷	-	
OKMN-S8-ASB33-0-0015 (C0225103 Spk I, 4000 ppb Spike)	4000	. •	-		-	-	-	4070	7410	84	
OKMN-SB-ASB33-0-0035 (C0225104 Spk J, 4000 ppb Spike)	4000		-		-	-	-	3290	9430	154	
OKMN-S8-ASB33-DB-0035 (C0225105 Spk K, 4000 ppb Spike)	4000	-		-	-	-	~	4610	7380	69	
OKMN-SB-ASB33-0-0055 (C0225106 Spk L, 2000 ppb Spike)	2000	-	-		-	-	-	4820	6020	60	
OKMN-SB-ASB33-0-0985 (C0225107 Spk M, 4000 ppb Spike)	4000	-		-	1070	5940	122	-	-	-	
OKMN-SB-ASB33-0-0085 (C0225167 Spk N, 20000 ppb Spike)	20000	-	-	-	-	-	-	22600	36600	70	

NR = Not reported due to quality control failure. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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Table XIV. Matrix Spike Recovery of PFDA, PFHS, and PFOS in **Re-extracted Soil Samples (continued)**

		C10 Acid PFDA Perfluorodecanoic Acid			ulfonate PFI ohexanesulf		C8 Sulfonate PFOS Perfluorooctanesulfonate			
Sample Description	Amount Spiked (ng/g)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)	Amt Found in Sample (ng/g)	Amount Recovered (ng/g)	Recovery (%)
OKMN-SB-ASB34-0-0015 (C0225109 Spk C, 8000 ppb Spike)	8000			-	-	-	-	5010	13700	109
OKMN-SB-AS831-0-0015 (C0225111 Spk b, 2000 ppb Spike)	2000	-	-	-	-	-	-	1880	3780	95
OKMN-SB-ASB31-0-0035 (C0225112 Spk E, 2000 ppb Spike)	2000	-		-	827	2960	107	-	~	*
OKMN-SB-ASB31-0-0035 (C0225112 Spk F, 8000 ppb Spike)	8000			-	-	-	-		-	-
OKMN-SB-AS531-0-0035 (C0225112 Spk G, 40000 ppb Spike)	40000	-	-	-	-	-	-	57500	98600	103
OKMN-SB-ASB31-0-0055 (C0225113 Spk H, 2000 ppb Spike)	2000				1120	2360	63	•	-	-
ÖKMN-SB-AS831-0-0055 (C0225113 Spk i, 8000 ppb Spike)	8000	-	-	-	-		-	-	-	-
OKMN-SB-ASB31-0-0055 (C0225113 Spk J, 40000 ppb Spike)	40000	-	-	-	-	-	-	36300	66430	70
OKMN-SB-ASB31-0-0070 (C0225114 Spt K, 2008 ppb Spike)	2000	-	-	-	NR	NR	NR		-	ar
ОКМN-SB-ASB31-0-0070 (С0225114 Spk 2, 6000 ppb Spike)	8000	•		-					-	-
OKMN-SB-ASB31-0-0070 (C0225114 Spk M, 46009 ppb Spike)	40000	-		-	-	-	-	56800	91400	82
OKMN-SB-ASB32-0-0000 (C9225115 Spk N, 2009 ppb Spike)	2000	-	-	-	-	-	-	1110	3380	114
OKMN-SB-ASB32-0-0015 (C0225118 Spk C, 2000 ppb Spike)	2000	-	-	-	876	2650	84	-	÷	-
OKMN-SB-ASB32-0-0015 (C0225116 Spk D, 8008 ppb Spike)	8000	~	-	-	~	-	-	. .	-	-
OKMN-SB-A3B32-0-0015 (C0225116 Spk E, 40000 ppb Spike)	40000	-	-	-	-	-	-	34500	64600	75
QKMN-SB-ASB32-DB-0015 (C0225117 Spk F, 2000 ppb Spike)	2000	; -	-	-	1100	3050	96	-	-	-
OKMN-SB-AS832-DB-0015 (C0225117 Spk G, 20009 ppb Spike)	20000	-	-	-	-	-	-	26500	52200	129
OKMN-SB-ASB32-0-0035 (C0225118 Spk H, 2000 ppb Spike)	2000	-	-	-	NR	NR	NR	*	*	
OKMN-SB-ASB32-0-0035 (C0225118 Spk , 20000 ppb Spike)	20000		-	-	-	-	-	-	-	-
OKMN-SE-AS832-0-0035 (C0225118 Spk J, 60000 ppb Spike)	80000	-	-	-	-	-	-	101000	142000	51
OKMN-SB-AS832-0-0055 (C0225119 Spk K, 2009 ppb Spike)	2000	-	-	-	1090	2100	51	-	-	-
OKMN-SB-AS532-0-0035 (C0225119 Spk L, 8809 ppb Spike)	8000	-	-	-	-	-	-	-	*	-
ÖKMN-SB-ASB32-0-0055 (C0225119 Sek M, 40000 ppb Spike)	40000	-		-	-	-		NR	NR	NR
OKMN-SB-ASB39-0-0035 (C0225120 Spi N, 2060 ppb Spike)	2000	-		-	-	-	-	-	-	-
OKMN-SB-ASB39-0-0035 (C0225120 Spk C, 20000 ppb Spike)	20000	-	-	-	-	-	-	12100	29600	88

NR = Not reported due to quality control failure. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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		C10 Acid PFDA Perfiuorodecanoic Acid			C6 Sulfonate PFHS Perfluorohexanesulfonate			C8 Suffonate PFOS Perfluorooctanesulfonate		
2125-247-247-247-247-247-247-247-247-247-247	Amount	Amt Found	Amount		Amt Found	Amount		Amt Found	Amount	
Sample	Spiked	in Sample	Recovered	Recovery	in Sample	Recovered	Recovery	in Sample	Recovered	Recovery
Description	(ng/g)	(ng/g)	(ng/g)	(%)	(ng/g)	{ng/g}	(%)	(ng/g)	(ng/g)	(%)
	1			~~~~~						
OKMN-SB-ASB39-0-0055										
(C0225121 Spk C, 2000 ppb Spike)	2000	-	-	•	-	-	-	-		-
OKMN-S8-ASB39-0-0055										
C0225121 Spik D, 20000 ppb Spike)	20000		-	~	"	•	-	NR	NR	NR
OKMN-SB-ASB39-0-0070	800							_		
(C0225122 Spk £, 860 ppb Spike)	800	-	-	•	-			-	-	-
OKMN-SB-ASB39-0-0070	E	1								
(C8225122 Spk F, 4889 ppb Spike)	4000		•	-	-	•	-	NR	NR	NR
OKMN-SB-ASB41-0-0015	-									
(C0225128 Spk G, 800 ppb Spike)	800		_		_	-		-		-
		-			-					
OKMN-SB-ASB41-0-0016	8000			_				5180	13700	107
(C0226128 Spk H, 8000 ppb Spike)	1 0000	-	-	-	-	-	-	5180	13700	107
OKMN-SB-ASB41-0-0035	-									
(C6225129 Spk I, 800 ppb Spike)	800	-	-		-	-		1520	2070	69
OKMN-SB-ASB41-0-0055		1								
(C0225130 Spk J, 800 ppb Spike)	800	-	-	•	۰	-	-	-	-	-
OKMN-SB-ASB41-0-0055										
(C0225130 Spk K, 2000 ppb Spike)	2000	-	-	-	-	-	-	2150	4100	98
OKMN-SB-ASB43-0-0035	1									
(C0225140 Spk L, 800 pph Spike)	800	-	-	-	-	-	-	-	-	-
OKMN-SB-ASB43-0-0035		1								
(C0225140 Spk M, 4000 ppb Spike)	4000	-	5m	-	u u	-	-	3510	9550	151
OKMN-SB-AS843-0-0056	1	1								
(C0225141 Spk N, 800 ppb Spike)	800	-	-	-		-	-	-	-	-
OKMN-SB-A\$B43-0-0055		1								
(C0225141 Spk C, 8000 ppb Spike)	8000	-		•	· ·	-	-	4760	16200	143
	4	1			L					
						Average:			Average:	
					Stand	lard Deviation:	24	Stand	lard Deviation:	24

Table XIV. Matrix Spike Recovery of PFDA, PFHS, and PFOS in **Re-extracted Soil Samples (continued)**

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NR = Not reported due to quality control failure. Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data.

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Table XV.Matrix Spike Recovery of PFBA, PFPeA, and PFHA in
Water Samples

		C4 Acid PFBA Perfluorobutanoic Acid			C5 Acid PFPeA Perfluoropentanoic Acid			C6 Acid PFHA Perfluorohexanoic Acid		
Sample Description	Amount Spiked (ng/mL)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)
ОКМN-SB-TRIP1-LS-061204 (C0225144, 0.25 ppb Spike)	0.25	ND	0.272	109	ND	0.210	64	ND	0.225	90
OKMN-SB-TRIP1-HS-061204 (C0225145, 5.0 ppb Spike)	5.0	ND	5.23	105	ND	4.96	99	ND	5.10	102
OKMN-SB-TRIP2-LS-061204 (C0225147, 0.25 ppb Spike)	0.25	ND	0.285	114	ND	0.281	112	ND	0.253	101
OKMN-SB-TRIP2-HS-061204 (C0226148, 5.0 ppb Spike)	5.0	ND	6.05	121	ND	5.07	101	ND	4.40	88
	4		Average: ard Deviation:	112	Stand	Average: lard Deviation:	99 12	Stand	Average: lard Deviation:	95 7

Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data. ND = Not detected at or above the acceptable LOQ reported on Table V.

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Table XVI. Matrix Spike Recovery of PFHpA, PFOA, and PFNA in Water Samples

		C7 Acid PFHpA Perfluoroheptanoic Acid			C8 Acid PFOA Perfluorooctanoic Acid			C9 Acid PFNA Perfluorononanoic Acid		
Sample Description	Amount Spiked (ng/mL)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)
OKMN-SB-TRIP1-LS-061204 (C0226144, 0.25 ppb Spike)	0.25	ND	0.180	72	ND	0.320	128	ND	0.220	88
OKMN-SB-TRIP1-HS-061204 (C6225145, 5.0 ppb Spike)	5.0	ND	4.35	87	ND	5.67	113	ND	5.42	108
OKMN-SB-TRIP2-LS-061204 (C0225147, 0.25 ppb Spike)	0.25	ND	0.188	75	ND	0.270	108	ND	0.257	103
OKMN-SB-TRIP2-HS-061204 (C0225148, 5.0 ppb Spike)	5.0	ND	4.70	94	ND	6.02	120	ND	4.91	98
		Siand	Average: ard Deviation:		Stand	Average: ard Deviation:	117 9	Stand	Áverage: ard Deviation:	

Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data. ND = Not detected at or above the acceptable LOQ reported on Table VI.

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Table XVII. Matrix Spike Recovery of PFDA, PFUnA, and PFDoA in Water Samples

		C10 Acid PFDA Perfluorodecanoic Acid			C11 Acid PFUnA Perfluoroundecanoic Acid			C12 Acid PFDoA Perfluorododecanoic Acid		
Sample Description	Amount Spiked (ng/mL)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mi_)	Recovery {%}	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)
OKMN-SB-TRIP1-LS-061204 (C0225144, 0.25 ppb Spike)	0.25	ND	0.236	94	ND	0.290	116	ND	0.186	74
OKMN-SB-TRIP1-HS-061204 (C0225145, 5.0 ppb Spike)	5.0	NÐ	5.11	102	ND	5.33	107	ND	5.29	106
OKMN-SB-TRIP2-LS-061204 (C6225147, 0.25 ppb Spike)	0.25	NÐ	0.316	126	ND	0.267	107	ND	0.240	96
OKMN-SB-TRIP2-HS-061204 (C0225148, 5.9 ppb Spike)	5.0	ND	5.83	117	ND	5.94	119	ND	4.79	96
	<u></u>	Stand	Average: lard Deviation:		Stand	Average: lard Deviation:		Stand	Average: ard Deviation:	93 13

Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data. ND = Not detected at or above the acceptable LOQ reported on Table VII.

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Table XVIII. Matrix Spike Recovery of PFBS, PFHS, and PFOS in Water Samples

		C4 Sulfonate PFBS Perfluorobutanesulfonate			C6 Sulfonate PFHS Perfluorohexanesulfonate			C8 Sulfonate PFOS Perfluorooctanesulfonate		
Sample Description	Amount Spiked (ng/mL)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mL)	Recovery (%)	Amt Found in Sample (ng/mL)	Amount Recovered (ng/mi.)	Recovery (%)
OKMN-S8-TRIP1-LS-061204 (C0225144, 0.25 ppb Spike)	0.25	ND	0:233	93	ND	0.280	112	ND	0.211	84
OKMN-SB-TRIP1-HS-061204 (C0225145, 5.0 ppb Spike)	5.0	ND	4.18	83	ND	5.12	102	NC	3.94	79
OKMN-S8-TRIP2-LS-061204 (C0225147, 0.25 ppb Spike)	0.25	ND	0.276	110	ND	0.260	104	ND	0.182	73
OKMN-SB-TRIP2-HS-061204 (C0225148, 5.9 ppb Spike)	5.0	ND	4.82	96	ND	5.44	109	ND	4,51	90
	1		Average: ard Deviation:		iStand	Average: ard Deviation:	107 4	Stand	Average: lard Deviation:	

Note: Since this summary table shows rounded results, recovery values may vary slightly from the values in the raw data. ND = Not detected at or above the acceptable LOQ reported on Table VIII.

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Exygen ID	Client Sample ID	Total Percent Solids (%)
C0225070	OKMN-SB-ASB37-0-0055	88.85
C0225071	OKMN-SB-ASB37-0-0075	92.63
C0225072	OKMN-SB-ASB38-0-0000	91.90
C0225073	OKMN-SB-ASB38-0-0015	90.28
C0225074	OKMN-SB-ASB38-0-0035	90.70
C0225075	OKMN-SB-ASB38-DB-0035	90.37
C0225076	OKMN-SB-ASB38-0-0055	91.16
C0225077	OKMN-SB-ASB38-0-0080	91.45
C0225078	OKMN-SB-ASB39-0-0015	93.69
C0225079	OKMN-SB-ASB39-DB-0015	93.58
C0225080	OKMN-SB-ASB36-0-0015	93.03
C0225081	OKMN-SB-ASB36-DB-0015	92.13
C0225082	OKMN-SB-ASB36-0-0030	92.17
C0225083	OKMN-SB-ASB36-0-0055	90.29
C0225084	OKMN-SB-ASB36-0-0095	89.67
C0225086	OKMN-SB-ASB37-0-0000	89.26
C0225087	OKMN-SB-ASB37-0-0015	92.06
C0225088	OKMN-SB-ASB37-0-0035	92.71
C0225089	OKMN-SB-ASB37-DB-0035	91.50
C0225090	OKMN-SB-ASB34-0-0035	90.20
C0225091	OKMN-SB-ASB34-0-0055	91.10
C0225092	OKMN-SB-ASB34-0-0085	72.66
C0225093	OKMN-SB-ASB35-0-0000	87.00
C0225094	OKMN-SB-ASB35-0-0015	92.24
C0225095	OKMN-SB-ASB35-0-0035	92.98
C0225096	OKMN-SB-ASB35-DB-0035	93.49
C0225097	OKMN-SB-ASB35-0-0055	92.01
C0225098	OKMN-SB-ASB35-0-0085	85.07
C0225099	OKMN-SB-ASB36-0-0000	82.83
C0225100	OKMN-SB-ASB32-0-0075	92.84
C0225102	OKMN-SB-ASB33-0-0000	91.02
C0225103	OKMN-SB-ASB33-0-0015	93.28
C0225104	OKMN-SB-ASB33-0-0035	90.80
C0225105	OKMN-SB-ASB33-DB-0035	91.46

Table XIX. Total Percent Solids for Soil Samples

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Table XIX. Total Percent Solids for Soil Samples (continued)

	Client	
Exygen ID	Sample ID	Total Percent Solids (%)
C0225106	OKMN-SB-ASB33-0-0055	88.77
C0225107	OKMN-SB-ASB33-0-0085	90.62
C0225108	OKMN-SB-ASB34-0-0000	90.59
C0225109	OKMN-SB-ASB34-0-0015	93.19
C0225110	OKMN-SB-ASB31-0-0000	83.81
C0225111	OKMN-SB-ASB31-0-0015	92.16
C0225112	OKMN-SB-ASB31-0-0035	90.80
C0225113	OKMN-SB-ASB31-0-0055	90.88
C0225114	OKMN-SB-ASB31-0-0070	91.58
C0225115	OKMN-SB-ASB32-0-0000	85.68
C0225116	OKMN-SB-ASB32-0-0015	93.54
C0225117	OKMN-SB-ASB32-DB-0015	93.93
C0225118	OKMN-SB-ASB32-0-0035	93.45
C0225119	OKMN-SB-ASB32-0-0055	92.51
C0225120	OKMN-SB-ASB39-0-0035	90.63
C0225121	OKMN-SB-ASB39-0-0055	89.85
C0225122	OKMN-SB-ASB39-0-0070	90.57
C0225123	OKMN-SB-ASB40-0-0000	83.06
C0225124	OKMN-SB-ASB40-0-0015	89.85
C0225125	OKMN-SB-ASB40-0-0035	90.82
C0225126	OKMN-SB-ASB40-0-0055	90.21
C0225127	OKMN-SB-ASB40-0-0090	88.24
C0225128	OKMN-SB-ASB41-0-0015	90.19
C0225129	OKMN-SB-ASB41-0-0035	90.16
C0225130	OKMN-SB-ASB41-0-0055	91.51
C0225131	OKMN-SB-ASB41-0-0090	88.38
C0225132	OKMN-SB-ASB41-DB-0090	89.18
C0225133	OKMN-SB-ASB42-0-0000	86.50
C0225134	OKMN-SB-ASB42-0-0015	91.96
C0225135	OKMN-SB-ASB42-0-0035	93.79
C0225136	OKMN-SB-ASB42-0-0055	90.56
C0225137	OKMN-SB-ASB42-0-0070	89.06
C0225139	OKMN-SB-ASB43-0-0015	91.69
C0225140	OKMN-SB-ASB43-0-0035	90.90
C0225141	OKMN-SB-ASB43-0-0055	89.60
C0225142	OKMN-SB-ASB43-0-0090	89.72

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Interim Report #4 - Analysis of Oakdale Soil and Water Samples Exygen Study No.: P0002561

FIGURES

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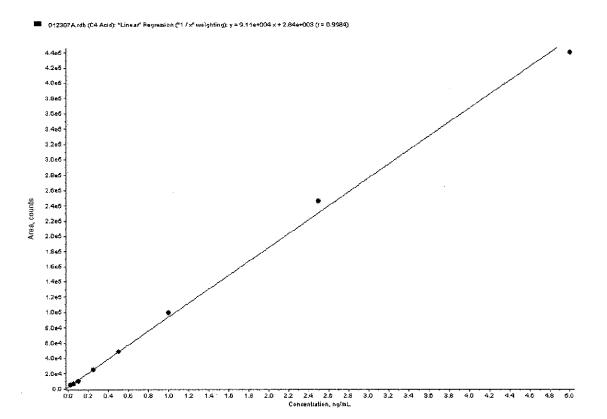
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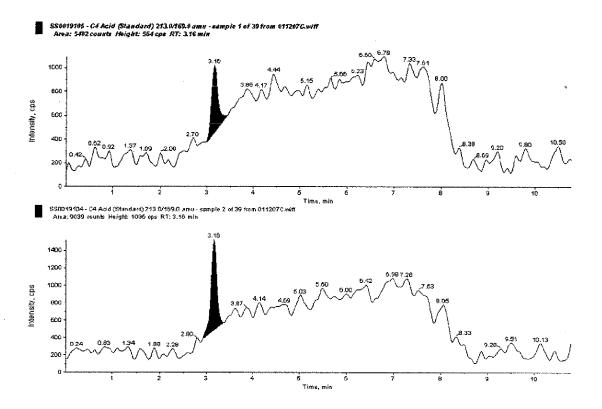
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Figure 1. Typical Non-Extracted Calibration Curve for PFBA in 50:50 Acetonitrile:Water



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Figure 2. Non-Extracted Standards of PFBA in 50:50 Acetonitrile:Water, 0.025 ng/mL and 0.05 ng/mL, Respectively

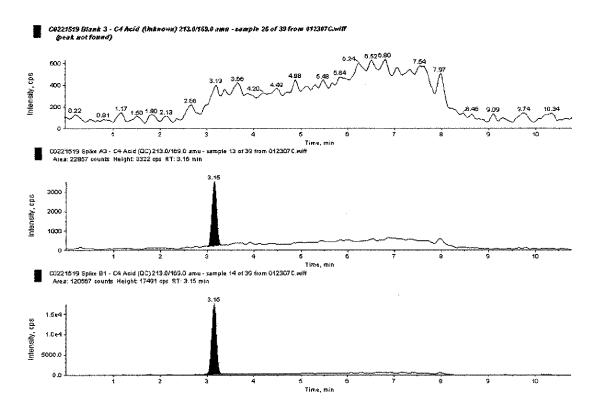


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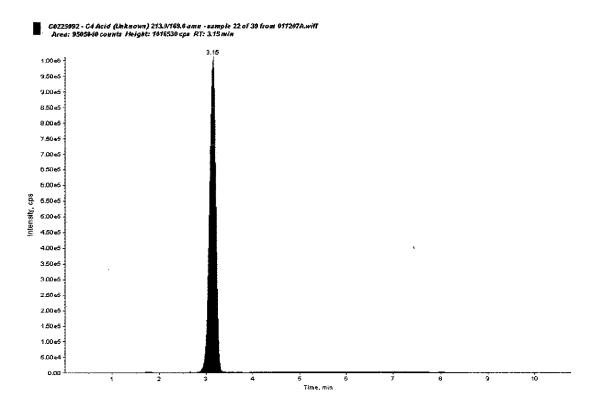
Figure 3. PFBA in a Control Blank, a 2.0 ng/g Fortified Control Spike A, and a 20 ng/g Fortified Control Spike B, Respectively



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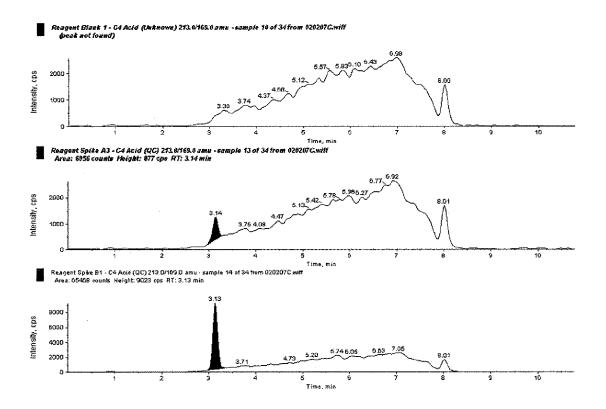
Interim Report #4 - Analysis of Oakdale Soil and Water Samples Exygen Study No.: P0002561

Figure 4. Chromatogram Representing a Soil Sample Analyzed for PFBA (Exygen ID: C0225092, Data Set: 011207A)



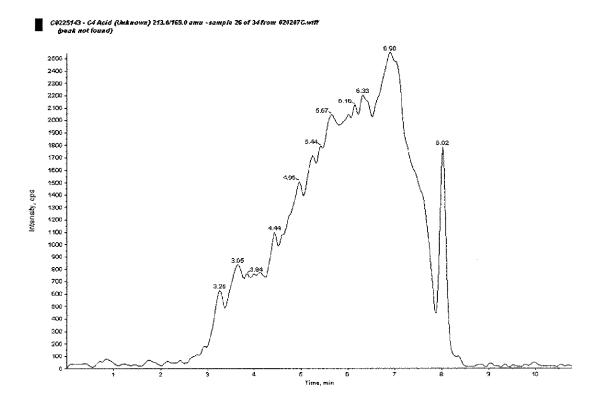
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Figure 5. PFBA in a Reagent Blank, a 0.25 ng/mL Fortified Reagent Spike A, and a 2.5 ng/mL Fortified Reagent Spike B, Respectively



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Figure 6. Chromatogram Representing a Water Sample Analyzed for PFBA (Exygen ID: C0225143, Data Set: 020207C)

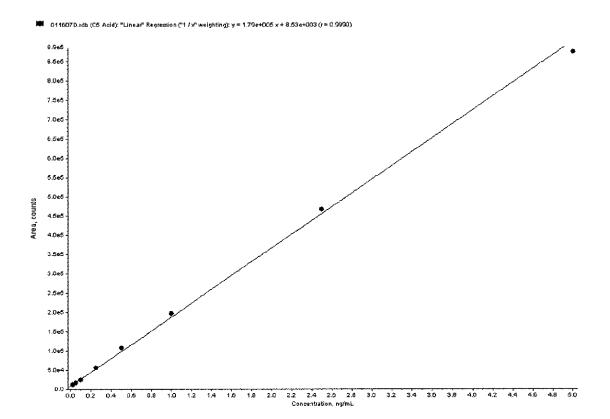


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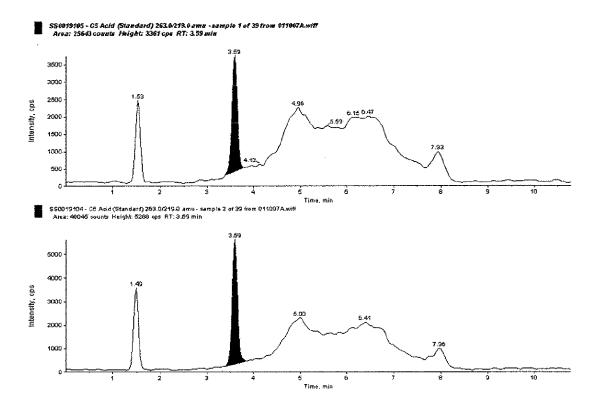
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Figure 7. Typical Non-Extracted Calibration Curve for PFPeA in 50:50 Acetonitrile:Water



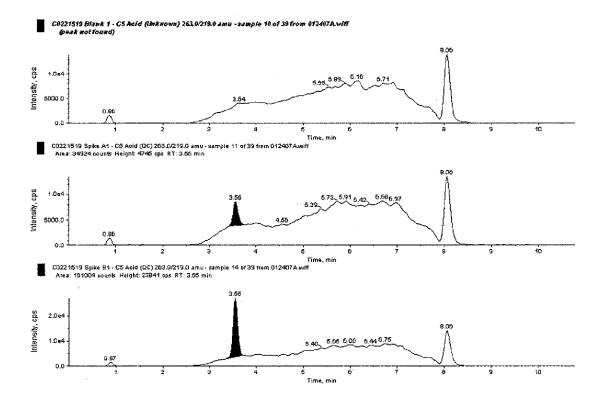
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Figure 8. Non-Extracted Standards of PFPeA in 50:50 Acetonitrile:Water, 0.025 ng/mL and 0.05 ng/mL, Respectively



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Figure 9. PFPeA in a Control Blank, a 2.0 ng/g Fortified Control Spike A, and a 20 ng/g Fortified Control Spike B, Respectively



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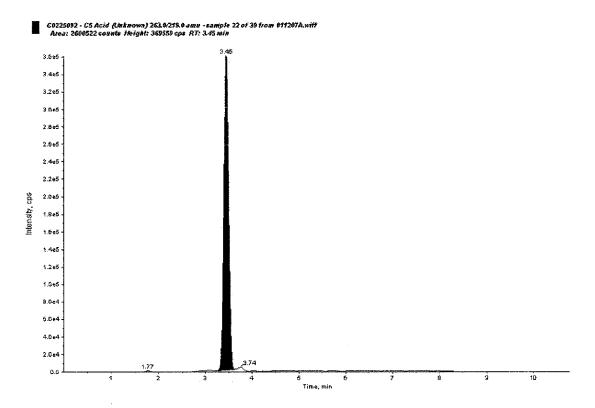
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Interim Report #4 - Analysis of Oakdale Soil and Water Samples Exygen Study No.: P0002561

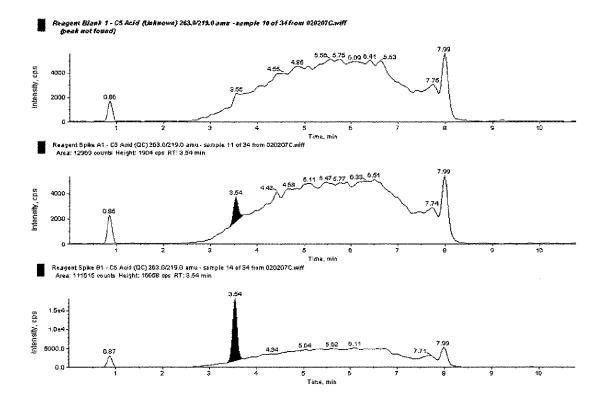
Figure 10. Chromatogram Representing a Soil Sample Analyzed for PFPeA (Exygen ID: C0225092, Data Set: 011207A)



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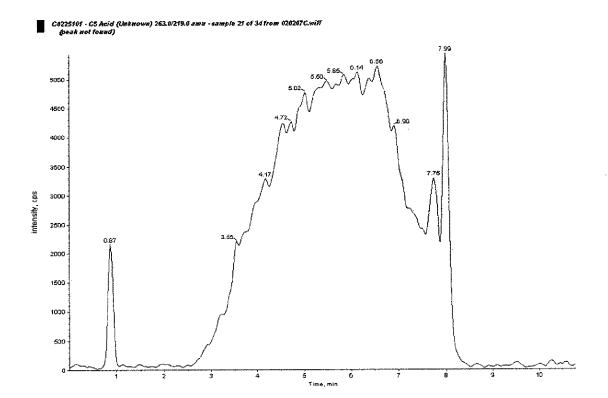
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Figure 11. PFPeA in a Reagent Blank, a 0.25 ng/mL Fortified Reagent Spike A, and a 2.5 ng/mL Fortified Reagent Spike B, Respectively



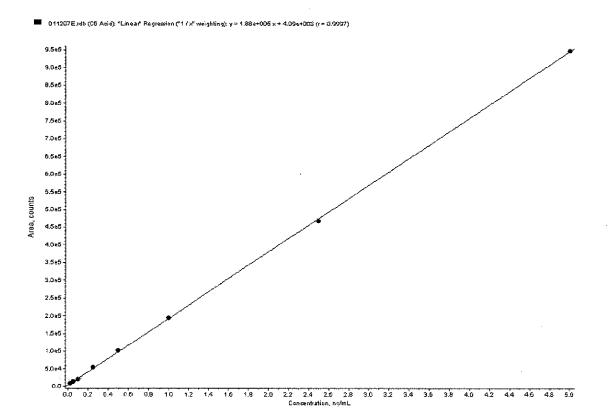
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Figure 12. Chromatogram Representing a Water Sample Analyzed for PFPeA (Exygen ID: C0225101, Data Set: 020207C)



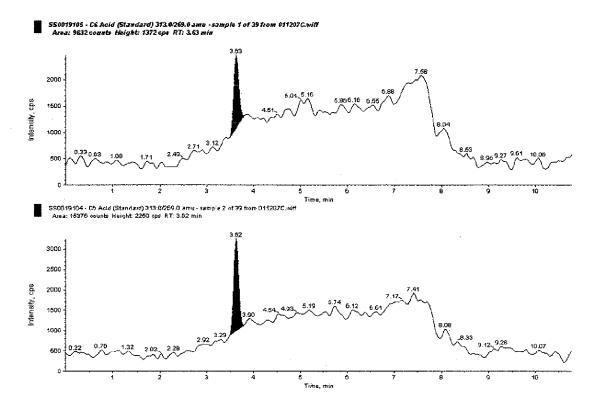
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Figure 13. Typical Non-Extracted Calibration Curve for PFHA in 50:50 Acetonitrile:Water



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Figure 14. Non-Extracted Standards of PFHA in 50:50 Acetonitrile:Water, 0.025 ng/mL and 0.05 ng/mL, Respectively



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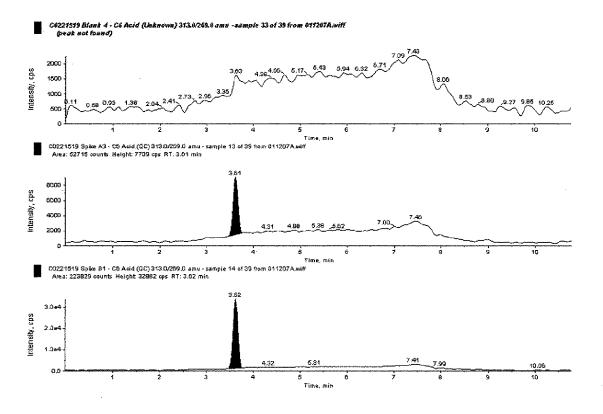
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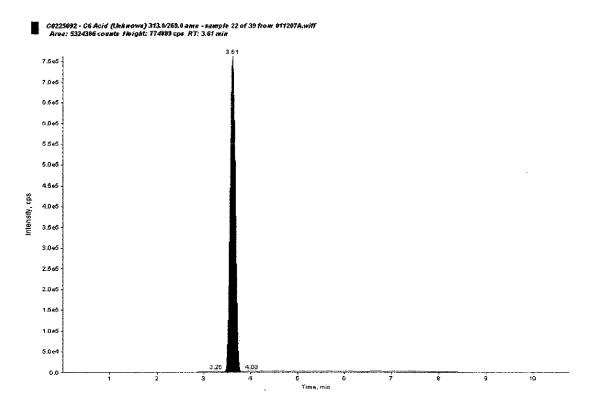
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Figure 15. PFHA in a Control Blank, a 2.0 ng/g Fortified Control Spike A, and a 20 ng/g Fortified Control Spike B, Respectively



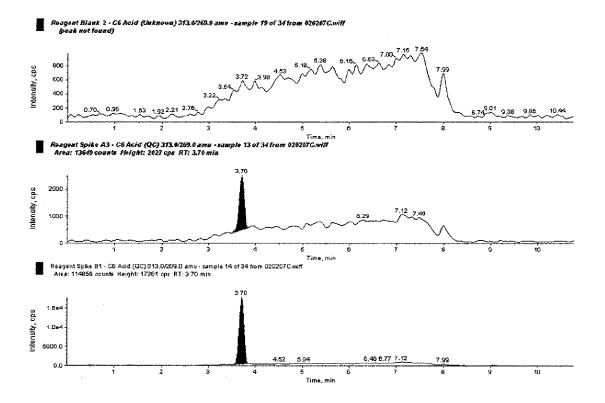
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Figure 16. Chromatogram Representing a Soil Sample Analyzed for PFHA (Exygen ID: C0225092, Data Set: 011207A)



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Figure 17. PFHA in a Reagent Blank, a 0.25 ng/mL Fortified Reagent Spike A, and a 2.5 ng/mL Fortified Reagent Spike B, Respectively



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APPENDIX C FC ANALYTICAL DATA SUMMARY AND LABORATORY ANALYTICAL DATA PACKAGES

	AVG PERA	Avn DEDAA			Oakdale. MN	e.MN						
Sample ID	(5/6u 'qdd)	(b)bu 'qdd)	Avg PFHA (ppb, ng/g)	Avg PFHpA (ppb, ng/g)	Avg PFOA (ppb. no/a)	Avg PFNA	Avg PFDA	Avg PFUnA	Avg PFDoA	Avg PFBS	Avg PFHS	Ave PFOS
OKMN-SB-ASB31-0-0000	12 Seight	Dry Weight	Dry Weight	Dry Weight	Dry Weight	Dry Weight	(ppu, ng/g) Dry Weight	(ppb, ng/g) Drv Wainht	(ppb, ng/g)	(ppb, ng/g)	(bbp, ng/g)	(bbh, ng/g)
OKMN-SB-ASB31-0-0015	NR	NN 7	YN C	0.750	6.35	Q	0.284	0.270	1 302	Ury weight	Dry Weight	Dry Weigh
OKMN-SB-ASB31-0-0035	219	av	13.9	10.3	RR	0.798	4.34	171	ND	YN AN	AR .	ЯN
OKMN-SB-ASB31-0-0055	227	87.0		ž	AN	AR	NR	NR	23.1	0.09	NR	2038
OKMN-SB-ASB31-0-0070	337	NR	SIN	ž	6040	NR	NR	an	- dN	40.4	581	63350
OKMN-SB-ASB32-0-0000	NR	5.45	E C	NR.	9130	NR	NR	NR NR		19.4	1232	42200
OKMN-SB-ASB32-0-0015	NR	dN		HN I	19.0	ЯÑ	2.84	NR		30.7	NR	64200
OKMN-SB-ASB32-0-0035	812	155	Y C	Щ	4420	NR	NR	an an	NN 0	2.11	9.35	1300
OKMN-SB-ASB32-0-0055	883	170	¥.	267	11800	NR	142	7 81	2.30	0/.0	935	37300
OKMN-SB-ASB32-0-0075	1420	0/1	YS SE	ЯN	5460	NR	122	6.80	10,1	84.7	R	108000
OKMN-SB-ASB32-DB-0015	202		080	186	1960	NR	0.864	S CIN	0.00	96.1	1180	NR
OKMN-SB-ASB33-0-0000	7 46	LO.A	164	160	3380	7.95	111	8 2.7		H	204	NR
OKMN-SB-ASB33-0-0015	10.8	AF AF	1.38	0.611	4.29	0.220	0.591	0.466	0.550	7.00	1174	28300
OKMN-SB-ASB33-0-0035	13.1	66.9	67.6	15.0	642	NR	14.0	NR	an	YN (0.612	129
OKMN-SB-ASB33-0-0055	AN N	× 66	4.01	14.0	R	NR	12.3	AN		0/.0	NK	4865
OKMN-SB-ASB33-0-0085	NR	20 A	YN CH	46.7	755	R	21.1	NR I	AN AN	3./8	RN .	3630
OKMN-SB-ASB33-DB-0036	10.1	7 59	0000	NK S	3470	ЯN	35.2	4.40	4 35	6.71 MD	188	5430
OKMN-SB-ASB34-0-0000	NR +	- an		8.3	AR	NR	10.6	AR			1180	10105
OKMN-SB-ASB34-0-0016	9.15	AN AN	7 00	0.334	7.61	Q	0.584	0.526	0 96.0		30.7	5035
OKMN-SB-ASB34-0-0035	49.3	15.5	0.70	0.46	۲.	R	9.52	NR	NR	av	0.450	NR
UKMN-SB-ASB34-0-0055	R	105	166	41.1	NK	NR	25.1	5.88	7.25	A 65	44.U	53/5
UKMN-SB-ASB34-0-0085	1600	NR	1008	1715	4040	AR L	32.3	10.8	12.7	26.3	1035	00200
MWN-SB-ASB35-0-000	NR	2.47	2.69	1 35	nenot	16.8	47.4	NR	0.565	224	55.BE	17660
UNMN-SB-ASB35-0-0015	38.5	25.8	34.2	1 0 25	0.53	Y	6.34	2.33	3.10	0.570	- AN	1/ 000
MMN-36-ASB35-0-0035	NR	26.1	84.5	AN AN	2076	ž	R	7.03	7.17	12.9	an	0000
VANN-38-ASB35-0-0055	146	95.4	673	Rof	C2/22	- NA	RN	6.16	24.2	22.8	an	32400
MMIN-30-ASI339-0-0085	RR	98.5	1175	1275	2876	2/2	373	26.9	33.1	53.8	445	26600
OKMNLSB ASD30-UB-UU35	26.3	NR	72.9	NR	an	0.18	566	0.322	QN	98.3	83.3	NP
OKMN-SB-ASB36-0-000	11.9	2.76	3.09	1.67	161		×2 S	NR	12.6	20.2	115	27950
OKMN-SB-ASB36-0.0000	52.4	13.4	58.4	116	1073	AN	2.22	NR 	NR	0.434	2.38	1460
OKMN-SB-ASB36-0-0055		36.1	160	179	1615	NR	1230		R R	7.37	62.7	NR
OKMN-SB-ASB36-0-005		04.7	226	205	2715	4.94	103	34.4	112	24.6	R	37250
OKMN-SB-ASB36-DB-0015		40.0	132	61.E	NR	QN	0.274		87.0	22.4	RN	11450
CKMN-SB-ASB37-0-0000	3 90	1.06	¥2	RN	1040	NR	36.6	aN		0.71	11.8	88.7
OKMN-SB-ASE37-0-0015	6.93	2 08	Here and the second sec	2.14	NR	0.315	NR	159		9.42 0.700	68.0	23400
OKMN-SB-ASB37-0-0035	AN	0.20	0.11.	18.2	242	NR	14.3	an		0.599	2.37	RN
OKMN-SB-ASB37-0-0055	NR		4.34	7.55	88.3	NR	6.81	0 878	1,70	2.03	16.4	5515
OKMN-SB-ASB37-0-0075	NR NR	0.500	0.29	7.81	10.5	NR	14.8	NR	1 24	0.800	7.68	2755
OKMN-SB-ASB37-DB-0035	4.66	2 18	1.00	NR NR	13.7	ON	1.13			0410	8.08	17050
OKMN-SB-ASB38-0-0000	1.86	1.10	100	9.06	96,4	NR	10.6	1.36		0.170	0.664	672
KMN-SB-ASB38-0-0015	2.01	1.21		L1.7	18.6	0.191	0.950	QN	0.211	0.582	0.0	3205
UKMN-SB-ASB38-0-0035	7.05	3.06	8.00		82.1	NR	LI HI	0.337	0.275	0.708	E 04	345
UNWIN-SB-ASB38-0-0055	12.1	5.12	15.9	204	- GIV	XX	4.98	0.527	0.774	2.01	8 88	1110 1110
UNWIN-SIS-ASE38-0-0080	17.6	6.51	21.3	18.0		Ϋ́́	9.05	0.869	1.02	2.58	301	0111
OKANI CD ACDAC 20035	7.78	3.33	9.08	888	137		ЯЯ	0.302	0.206	1.76	NR	1000
VININ-00-42839-0-0016 28	28.4	12.5	26.1	20 7		YN	5.74	0.645	0.886	10 6		
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Summary of FC Soil Analytical Data - December 2006 Area North of Highway 5 Oakdale, MN

	Avn PERA	Ave DEDAA			Lakaa	B. WN						
Sample ID	lolon duni		ANT UNA	ANG PEHDA	Avg PFOA	Avg PFNA	Avg PFDA	Avg PFUnA	Avg PFDoA	Avo PFRS	AVA DEMS	Ave DECO
	(Britist Incode)	(ByDu 'odd)	(B/Bu 'add)	(B/Bu 'tidd)	(B/Gu 'qdd)	(ppb, ng/g)	(ppp, na/a)	(oph. no/o)	Inch model	(a)an dan)		
	Ury Weight	Dry Weight	Dry Weight	Dry Weight	Drv Weiaht	Dry Weinht	Dry Wainht		(Rufus (mdal)	(BrBo 'odd)	(6/Gu 'add)	(6)6u 'qdd)
UKMIN-SB-ASB39-0-0035	82.5	18.4	29.0	31.2	1027				TIP WEIGHT	Ury Weight	Dry Weight	Dry Weight
OKMN-SB-ASB39-0-0055	306	42.7	104	4.00	1901	\$0.4	7.07	4.53	6.74	10.6	172	13300
OKMN-SB-ASB39-0-0070	193	0.96	000	120	1400	4.57	40.4	4.85	5.73	22.7	αN	an
OKMN-SB-ASB39-DB-0015	34.5	1 0 2 4	0.04	28.5	944	4.83	28.8	2.25	2.79	13.5	208	GN
OKMN-SB-ASP40-0-0000	an	0.61	B.15	63.9	483	RN	10.9	1.85	1.59	115	AR F	5710
OKMN-SB-ASB40.0015	0.358	1-22	0.413	NR	RN	QN	0.887	QN	QN	0.287		
OKMN-SB-ASB40-0035	1 41	0.834	0./80	0.497	6.79	Q	0.919	0.202	QN	0.504	0.865	206
OKMN-SB-ASB40-0055	2.69	700 0	2.53	128	1.22	2	1.29	QN	Q	0.496	2.26	374
OKMN-SB-ASB40-0-0090	4.46	3 04	0 60	2.00	0-91	2	Å	Q	QN	0.536	1.03	133
OKMN-SB-ASB41-0-0015	9.80	7.92	17.2	10.0	21.3	ON CO	Q	Q	Q	0.513	0.777	37.9
OKMN-SB-ASB41-0-0035	43.8	16.8		0.00	000	2.63	9.97	0,440	0.252	6.99	73.6	5740
OKMN-SB-ASB41-0-0055	30.2	12.6	+ 700	02.0	623	2.13	37.8	2.95	2.03	111	30.5	1685
OKMN-SB-ASB41-0-0090	107	15.7	24.5	0.70	2000	2.38	34.0	2.53	Ϋ́́	7.50	29.5	2350
OKMN-SB-ASB41-DB-0090	0.66	13.0		10,0	02.4	Q	2	Q	QN	4,19	3.90	20.6
OKMN-SB-ASB42-0-0000	DN NO	0.303		7.84	1.80	ON .	Q	g	QN	4.09	3.68	22.7
OKMN-SB-ASB42-0-0015	QN	UN UN	0.380		0.840	QN	Q	Q	DN	QN	QN	24.6
OKMN-SB-ASB42-0-0035	8.46	3.35	17.5	12.131	1.03	ON CON	0.239	Q	ĝ	0.284	<u>ON</u>	59.7
OKMN-SB-ASB42-0-0055	9.77	3.55	18.0	14.3	130	0.291	0.319	Q	0.282	4,19	11.6	168.5
OKMN-SB-ASB42-0-0070	16.8	4 74	23.4	12.0	777	0.450	0.879	QN	0.226	4.69	16.7	NR
OKMN-SB-ASB43-0-0015	7.39	5 11	0 56	4.0-4 4.0-4	0.70	ND	0.445	Q	Q	4.14	5.16	75.6
OKMN-SB-ASB43-0-0035	34.8	14.5	17.1	12.0	02.8	0.265	0.655	Q	0.399	4.28	14.1	207
OKMN-SB-ASB43-0-0055	90.6	27.3	35.2	0 12	1004	79.7	11.0	2.92	4.10	6.63	103	3855
OKMN-SB-ASB43-0-0090	39.3	20.5	40.3	6.06	1020	YN S	11.8	3.00	3.45	15.7	193	5310
				40.K	<i>b</i> 04	1.03	0.209	Q2	Q	8.78	29.6	182

ND = Not detected at or above acceptable LOQ. NR = Not reported due to quality control failures.

STUDY TITLE

Analysis of Perfluorobutanoic Acid (PFBA), Perfluoropentanoic Acid (PFPeA), Perfluorohexanoic Acid (PFHA), Perfluoroheptanoic Acid (PFHpA), Perfluorooctanoic Acid (PFOA), Perfluorononanoic Acid (PFNA), Perfluorodecanoic Acid (PFDA), Perfluoroundecanoic Acid (PFUnA), Perfluorododecanoic Acid (PFDoA), Perfluorobutanesulfonate (PFBS), Perfluorohexanesulfonate (PFHS), and Perfluorooctanesulfonate (PFOS) in Water, Soil and Sediment Using LC/MS/MS for the 3M Cottage Grove Monitoring Program Phase 2

DATA REQUIREMENTS

EPA TSCA Good Laboratory Practice Standards 40 CFR 792

STUDY DIRECTOR

Jaisimha Kesari P.E., DEE Weston Solutions, Inc. 1400 Weston Way West Chester, PA 19380 Phone: 610-701-3761

INTERIM REPORT COMPLETION DATE

April 18, 2007 and June 8, 2007

PERFORMING LABORATORY

Exygen Research A Division of MPI Research, Inc. 3058 Research Drive State College, PA 16801 Phone: 814-272-1039

STUDY SPONSOR

3M Company 3M Building 42-02-E-27 St. Paul, MN 55144 Phone: 651-778-5200

PROJECT

Protocol Number: P0002561 Exygen Study Number: P0002561

Total Pages: 224

GOOD LABORATORY PRACTICE COMPLIANCE STATEMENT

Exygen Study Number P0002561, entitled "Analysis of Perfluorobutanoic Acid (PFBA), Perfluoropentanoic Acid (PFPeA), Perfluorohexanoic Acid (PFHA), Perfluoroheptanoic Acid (PFHpA), Perfluorooctanoic Acid (PFOA), Perfluorononanoic Acid (PFNA), Perfluorodecanoic Acid (PFDA), Perfluoroundecanoic Acid (PFUnA), Perfluorododecanoic Acid (PFDoA), Perfluorobutanesulfonate (PFBS), Perfluorohexanesulfonate (PFHS), and Perfluorooctanesulfonate (PFOS) in Water, Soil and Sediment Using LC/MS/MS for the 3M Cottage Grove Monitoring Program Phase 2," conducted for 3M Company, is being performed in compliance with EPA TSCA Good Laboratory Practice Standards 40 CFR 792 by Exygen Research.

Charles Simons (/ Principal Investigator Exygen Research, a division of MPI Research, Inc.

Jaisimha Kesari P.E., DEE Study Director Weston Solutions, Inc.

as

Robert A. Paschke Sponsor Representative 3M Company

Exygen Research Amendment Number 1

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<u>4113</u>07 Date

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AMENDED QUALITY ASSURANCE STATEMENT

Exygen Research's Quality Assurance Unit reviewed Exygen Study Number P0002561, entitled, "Analysis of Perfluorobutanoic Acid (PFBA), Perfluoropentanoic Acid (PFPeA), Perfluorohexanoic Acid (PFHA), Perfluoroheptanoic Acid (PFHpA), Perfluorooctanoic Acid (PFOA), Perfluorononanoic Acid (PFNA), Perfluorodecanoic Acid (PFDA), Perfluoroundecanoic (PFUnA), Acid Perfluorododecanoic Acid (PFDoA), Perfluorobutanesulfonate (PFBS), Perfluorohexanesulfonate (PFHS), and Perfluorooctanesulfonate (PFOS) in Water, Soil and Sediment Using LC/MS/MS for the 3M Cottage Grove Monitoring Program Phase 2". All reviewed phases¹ were inspected for conduct according to Exygen Research's Standard Operating Procedures, the Study Protocol, the Study Method, and all applicable Good Laboratory Practice Standards. All findings were reported to the Exygen Principal Investigator and Management and to the Study Director.

Phase	Date Inspected	Date Reported to Principal <u>Investigator</u>	Date Reported to Exygen <u>Management</u>	Date Reported to Study Director
12) Draft Interim Report and Raw Data Review	04/13/07	04/17/07	04/18/07	04/19/07
14) Final Report Review	04/17/07	04/18/07	04/18/07	04/19/07
18) Amended Raw Data Review and Amended Final Interim Report Review	06/04/07	06/05/07	06/05/07	06/08/07

U. Lynann Porter

Uno7 Date

Senior Quality Assurance Research Auditor, Quality Assurance Unit

¹Note: All in-lab inspections and the protocol review will be documented in the QA statement for the final analytical report at the conclusion of the study. This QA statement involves only the review of the interim report and associated raw data.

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<u>CERTIFICATION OF AUTHENTICITY</u>

This interim report, for Exygen Study Number P0002561, is a true and complete representation of the raw data.

Submitted by: Exygen Research A division of MPI Research, Inc. 3058 Research Drive State College, PA 16801 (814) 272-1039

Principal Investigator, Exygen:

Charles Simons Director, Analytical Laboratory Operations Exygen Research, a division of MPI Research, Inc.

6/8/07

Date

Exygen Research Facility Management:

Rick Grazzini

Richard A. Grazzini Executive Director of Analytical Sciences Exygen Research, a division of MPI Research, Inc.

Study Director, Weston Solutions, Inc.

Jaisimha Kesari P.E., DEE Weston Solutions, Inc.

Sponsor Representative, 3M Company:

Robert A. Paschke Manager, 3M Corporate Environmental Programs

Exygen Research Amendment Number 1

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Date

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STUDY IDENTIFICATION

Analysis of Perfluorobutanoic Acid (PFBA), Perfluoropentanoic Acid (PFPeA), Perfluorohexanoic Acid (PFHA), Perfluoroheptanoic Acid (PFHpA), Perfluorooctanoic Acid (PFOA), Perfluorononanoic Acid (PFNA), Perfluorodecanoic Acid (PFDA), Perfluoroundecanoic Acid (PFUnA), Perfluorododecanoic Acid (PFDoA), Perfluorobutanesulfonate (PFBS), Perfluorohexanesulfonate (PFHS), and Perfluorooctanesulfonate (PFOS) in Water, Soil and Sediment Using LC/MS/MS for the 3M Cottage Grove Monitoring Program Phase 2

PROTOCOL NUMBER:	P0002561	
EXYGEN STUDY NUMBER:	P0002561	
TYPE OF STUDY:	Residue	
SAMPLE MATRIX:	Soil and Water	
TEST SUBSTANCES:	Perfluorobutanoic Acid (PFBA), Perfluo (PFPeA), Perfluorohexanoic Acid (PFH heptanoic Acid (PFHpA), Perfluorooctan Perfluorononanoic Acid (PFNA), Perfluo (PFDA), Perfluoroundecanoic Acid (PFU dodecanoic Acid (PFDoA), Perfluorobut (PFBS), Perfluorohexanesulfonate (PFH Perfluorooctanesulfonate (PFOS)	A), Perfluoro- noic Acid (PFOA), prodecanoic Acid JnA), Perfluoro- anesulfonate
SPONSOR:	3M Company 3M Building 42-02-E-27 St. Paul, MN 55144	
STUDY DIRECTOR:	Jaisimha Kesari P.E., DEE Weston Solutions, Inc. 1400 Weston Way West Chester, PA 19380	
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PERFORMING LABORATORY:	Exygen Research A division of MPI Research, Inc. 3058 Research Drive State College, PA 16801	
ANALYTICAL PHASE TIMETABLE:	Study Initiation Date: Interim Analytical Start Date: Interim Analytical Termination Date: Interim Report Completion Date: Amended Report Completion Date:	10/20/06 01/10/07 04/10/07 04/18/07 06/08/07
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PROJECT PERSONNEL

The Study Director for this project is Jaisimha Kesari at Weston Solutions, Inc. The following personnel from Exygen Research were associated with various phases of this interim portion of the study:

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Appendix B	Analytical Method ETS-8-012.1

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SUMMARY OF CHANGES AND REASON FOR AMENDMENT

The limits of quantitation (LOQ's) for the water samples analyzed in this interim report were incorrect. When the water samples were prepared for extraction and analysis, the samples were diluted by a factor of 2 in the initial preparation. The calibration standards did not receive the same preparation before analysis therefore the dilution was not factored into the original LOQ's calculated for the data sets. After reviewing the data sets and the results obtained for the equipment rinseate blank and trip blank water samples, it was determined to raise all LOQ values for each data set by a factor of 2. The incorrect LOQ values for the blank samples had no affect on the overall results reported for the soil samples.

1.0 SUMMARY

Exygen Research extracted and analyzed soil and water samples for the determination of perfluorobutanoic acid (PFBA), perfluoropentanoic acid (PFPeA), perfluorohexanoic acid (PFHA), perfluorohexanoic acid (PFHA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFDA), perfluorobutanesulfonate (PFNA), perfluorobutanesulfonate (PFBS), perfluorohexanesulfonate (PFHS), and perfluorooctanesulfonate (PFOS) according to 3M Environmental Laboratory Method ETS-8-012.1 (Appendix B).

The limit of quantitation (LOQ) for the analytes in the soil samples are listed in **Tables I**, **II**, **III**, and **IV**. The target LOQ for the method for soil samples was 0.2 ng/g. The limit of quantitation (LOQ) for the analytes in the water samples are listed in **Tables V**, **VI**, **VII**, and **VIII**. The nominal LOQ for the method for water samples was 0.050 ng/mL. After evaluation of the reagent blanks (method blanks) for each analyte used for the analysis, the LOQ was determined. In some cases, the LOQ was raised due to the evaluation. A discussion of the process used to evaluate the reagent blanks can be found in subsection 6.4.

Analytical results for the analysis of PFBA, PFPeA, and PFHA found in the soil samples are summarized in **Table I.** Fortification recoveries for PFBA, PFPeA, and PFHA in the soil samples are detailed in **Table IX**. The average percent recoveries \pm standard deviations for PFBA, PFPeA, and PFHA in the soil samples were $67 \pm 23\%$, $70 \pm 24\%$, and $69 \pm 23\%$, respectively. Analytical results for the analysis of PFHpA, PFOA, and PFNA found in the soil samples are summarized in **Table II**. Fortification recoveries for PFHpA, PFOA, and PFNA in the soil samples are detailed in **Table X**. The average percent recoveries \pm standard deviations for PFHpA, PFOA, and PFNA in the soil samples were $72 \pm 28\%$, $82 \pm 35\%$, and $67 \pm 23\%$, respectively. Analytical results for the analysis of PFDA, PFUnA, and PFDoA found in the soil samples are summarized in **Table III**. Fortification recoveries for PFDA, PFUA, and PFDOA in the soil samples are detailed in **Table XI**. The average percent recoveries \pm standard deviations for PFDA, PFUA, and PFDOA in the soil samples are summarized in **Table III**. Fortification recoveries for PFDA, PFUA, and PFDOA in the soil samples are detailed in **Table XI**. The average percent recoveries \pm standard deviations for PFDA, PFUA, and PFDOA in the soil samples were $75 \pm 28\%$, $75 \pm 26\%$, and $77 \pm$

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29%, respectively. Analytical results for the analysis of PFBS, PFHS, and PFOS found in the soil samples are summarized in **Table IV**. Fortification recoveries for PFBS, PFHS, and PFOS in the soil samples are detailed in **Table XII**. The average percent recoveries \pm standard deviations for PFBS, PFHS, and PFOS in the soil samples were 68 \pm 24%, 77 \pm 29%, and 89 \pm 22%, respectively.

A total of 48 samples needed re-extraction and re-analysis due to the significantly high endogenous analyte residues found in the samples relative to initial matrix spike concentrations. The samples required a higher fortification level to obtain fortification recoveries. Fortification recoveries for PFBA, PFHA, PFHpA and PFOA in the reextracted soil samples are detailed in **Table XIII**. The average percent recoveries \pm standard deviations for PFBA, PFHA, PFHpA and PFOA in the reextracted soil samples are detailed in **Table XIII**. The average percent recoveries \pm standard deviations for PFBA, PFHA, PFHpA and PFOA in the re-extracted soil samples were $72 \pm 15\%$, $91 \pm 10\%$, $93 \pm 14\%$, and $104 \pm 28\%$, respectively. Fortification recoveries for PFDA, PFHS and PFOS in the re-extracted soil samples are detailed in **Table XIV**. Only one sample was re-extracted and re-analyzed for PFDA, and its fortification recovery was 91%. The average percent recoveries \pm standard deviations for PFHS and PFOS in the re-extracted soil samples were $93 \pm 24\%$ and $103 \pm 24\%$, respectively.

The assessed accuracy for the majority of the samples reported is $\pm/-30\%$. The accuracies were assessed for each sample by reviewing the matrix spike whose spiking level most closely matches the endogenous concentration found in the sample. Due to the number of samples with matrix spike recoveries outside the 70% to 130% recovery range of acceptance for $\pm/-30\%$ accuracy for the Oakdale study site, some samples have an expanded assessed accuracy ranging up to $\pm/-60\%$ as noted in Tables I – IV.

Quantitative results were obtained for the majority of soil samples and analytes. The percentage of results reported for soil samples for PFBA, PFPeA, and PFHA were 77.1%, 84.3%, and 78.6%, respectively. The percentage of results reported for soil samples for PFHpA, PFOA, and PFNA were 81.4%, 82.9%, and 50.0%, respectively. The percentage of results reported for soil samples for PFDA, PFUnA, and PFDoA were 84.3%, 74.3%, and 78.6%, respectively. The percentage of results reported for soil samples for PFBA, PFUnA, and PFDoA were 84.3%, 74.3%, and 78.6%, respectively. The percentage of results reported for soil samples for PFBS, PFHS, and PFOS were 91.4%, 81.4%, and 84.3%, respectively. All other results were designated as not reported (NR) due to quality control failures.

Analytical results for the analysis of PFBA, PFPeA, and PFHA found in the water samples are summarized in **Table V.** Fortification recoveries for PFBA, PFPeA, and PFHA in the water samples are detailed in **Table XV**. The average percent recoveries \pm standard deviations for PFBA, PFPeA, and PFHA in the water samples were $112 \pm 7\%$, $99 \pm 12\%$, and $95 \pm 7\%$, respectively. Analytical results for the analysis of PFHpA, PFOA, and PFNA found in the water samples are summarized in **Table VI**. Fortification recoveries for PFHpA, PFOA, and PFNA in the water samples are detailed in **Table XVI**. The average percent recoveries \pm standard deviations for PFHpA, PFOA, and PFNA in the water samples were $82 \pm 10\%$, $117 \pm 9\%$, and $99 \pm 9\%$, respectively. Analytical results for the analysis of PFDA, PFUA, and PFDoA found in the water samples are

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summarized in **Table VII**. Fortification recoveries for PFDA, PFUnA, and PFDoA in the water samples are detailed in **Table XVII**. The average percent recoveries \pm standard deviations for PFDA, PFUnA, and PFDoA in the water samples were $110 \pm 14\%$, $112 \pm 6\%$, and $93 \pm 13\%$, respectively. Analytical results for the analysis of PFBS, PFHS, and PFOS found in the water samples are summarized in **Table VIII**. Fortification recoveries for PFBS, PFHS, and PFOS in the water samples are detailed in **Table XVIII**. The average percent recoveries \pm standard deviations for PFBS, PFHS, and PFOS in the water samples are detailed in **Table XVIII**. The average percent recoveries \pm standard deviations for PFBS, PFHS, and PFOS in the water samples were $96 \pm 11\%$, $107 \pm 4\%$, and $82 \pm 7\%$, respectively. Quantitative results were obtained for all water samples and analytes.

Total percent solid results for the soil samples are detailed in Table XIX.

2.0 <u>OBJECTIVE</u>

The objective of the analytical part of this study was to determine levels of perfluorobutanoic acid (PFBA), perfluoropentanoic acid (PFPeA), perfluorohexanoic acid (PFHA), perfluoroheptanoic acid (PFHpA), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorodecanoic acid (PFDA), perfluoroundecanoic acid (PFUnA), perfluorododecanoic acid (PFDoA), perfluorobutanesulfonate (PFBS), perfluorohexanesulfonate (PFHS), and perfluorooctanesulfonate (PFOS) in soil and water according to Protocol P0002561 (Appendix A).

3.0 INTRODUCTION

This report details the results of the analysis for the determination of PFBA, PFPeA, PFHA, PFHpA, PFOA, PFNA, PFDA, PFUnA, PFDoA, PFBS, PFHS, and PFOS in soil and water using the 3M Environmental Laboratory analytical method ETS-8-012.1 entitled, "Method of Analysis for the Determination of Perfluorobutanoic Acid (PFBA), Perfluoropentanoic Acid (PFPeA), Perfluorohexanoic Acid (PFHA), Perfluoroheptanoic Acid (PFHpA), Perfluorooctanoic Acid (PFOA), Perfluorononanoic Acid (PFNA), Perfluorodecanoic (PFDA), Acid Perfluoroundecanoic Acid (PFUnA), Perfluorododecanoic Acid Perfluorobutanesulfonate (PFDoA), (PFBS). Perfluorohexanesulfonate (PFHS), and Perfluorooctanesulfonate (PFOS) in Water, Soil and Sediment by LC/MS/MS."

The study was initiated on October 20, 2006, when the study director signed protocol number P0002561. The analytical start date for this interim report was January 10, 2007, and the analytical termination date for this interim report was April 10, 2007.

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4.0 ANALYTICAL TEST SAMPLES

A total of seventy-nine samples (Exygen ID C0225070 – C0225148 from login ID L00010298), seventy soils and nine waters, were received at ambient temperature on December 11, 2006 from Tim Frinak at Weston Solutions, Inc. The nine water samples represented three rinse blanks, two trip blanks, and four associated trip blank field spikes. All samples were logged in by Exygen personnel and placed in refrigerated storage.

Sample identification (ID) codes for the soil samples are of the form OKMN-SB-ASBxx-x(x)-xxxx and are composed of the strings described below:

The first string defines the general sampling area where OKMN = Oakdale disposal site.

The second string defines the sample type where SB = soil boring.

The third string indicates the sampling location where ASBxx defines the soil boring location.

The fourth string describes the sample aliquot where 0 = primary sample volume, DB = duplicate sample and RB = equipment rinseate blank.

The final string is the topmost portion of the sampling interval (i.e. 0000 = 0.0 feet, 0015 = 1.5 feet, 0030 = 3.0 feet, etc.).

Sample log-in and chain of custody information is located in the raw data package associated with this interim report. Storage records will be kept at Exygen Research.

5.0 <u>REFERENCE MATERIAL</u>

The requisition information for the reference materials used in this study is listed below.

<u>Compound</u>	Exygen Inventory No.	Supplier	Received Date
PFBA	SP0008071	Oakwood Products, Inc.	09/08/06
PFPeA	SP0003847	Sigma-Aldrich, Inc.	01/07/04
PFHA	SP0008073	Oakwood Products, Inc.	09/08/06
PFHpA	SP0008069	Oakwood Products, Inc.	09/08/06
PFOA	SP0008065	Oakwood Products, Inc.	09/08/06
PFNA	SP0008066	Oakwood Products, Inc.	09/08/06
PFDA	SP0008064	Oakwood Products, Inc.	09/08/06
PFUnA	SP0008067	Oakwood Products, Inc.	09/08/06
PFDoA	SP0008068	Oakwood Products, Inc.	09/08/06
PFBS	SP0008058	3M Environmental Laboratory	09/06/06
PFBS	SP0008956	3M Environmental Laboratory	02/19/07

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Compound	Exygen Inventory No.	Supplier	Received Date
PFHS	SP0008057	3M Environmental Laboratory	
PFHS		3M Environmental Laboratory	02/19/07
PFOS	SP0002694	Fluka Corporation	04/23/03

The lots, purities, and expiration dates for the reference materials are listed below. All materials were stored refrigerated except for PFBS and PFHS which were stored frozen.

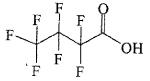
				1
<u>Compound</u>	Exygen Inventory No.	Lot #	Purity (%)	Expiration Date
PFBA	SP0008071	U02C	99	09/08/08
PFPeA	SP0003847	20524JB	99.1	01/07/09
PFHA	SP0008073	3131	98	09/08/08
PFHpA	SP0008069	H3002	99	09/08/08
PFOA	SP0008065	Y16G	98	09/08/08
PFNA	SP0008066	H7568	99	09/08/08
PFDA	SP0008064	Y31J	98	09/08/08
PFUnA	SP0008067	Ulin	99	09/08/08
Compound	Exygen Inventory No.	Lot #	Purity (%)	
PFDoA	SP0008068	<u>Lot #</u> Y01J	<u>Fully (70)</u> 98	Expiration Date
PFBS	SP0008058	2		09/08/08
PFBS	SP0008956		97.3	01/17/08
PFHS	SP0008057	2	97.3	01/18/17
		NB 120067-69	98.6	10/18/07
PFHS	SP0008961	NB 120067-69	98.6	10/18/16
PFOS	SP0002694	430180/1	101.2	10/31/07

The molecular structures of the standards are given on the following pages:

PFBA

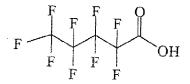
65

Chemical Name: Perfluorobutanoic Acid or Heptafluorobutyric Acid Molecular Weight: 214 Transitions Monitored: $213 \rightarrow 169$ Structure:



PFPeA

Chemical Name: Perfluoropentanoic Acid or Nonafluoropentanoic Acid Molecular Weight: 264 Transitions Monitored: 263 → 219 Structure:

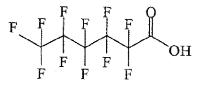


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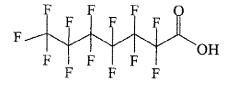
PFHA

Chemical Name: Perfluorohexanoic Acid Molecular Weight: 314 Transitions Monitored: 313 → 269 Structure:



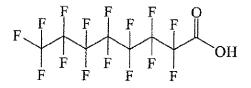
PFHpA

Chemical Name: Perfluoroheptanoic Acid Molecular Weight: 364 Transitions Monitored: 363 → 319 Structure:



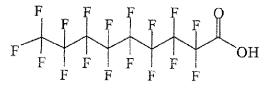
PFOA

Chemical Name: Perfluorooctanoic acid Molecular Weight: 414 Transitions Monitored: 413 → 369 Structure:



PFNA

Chemical Name: Perfluorononanoic acid Molecular Weight: 464 Transitions Monitored: 463 → 419 Structure:



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Interim Report #4 - Analysis of Oakdale Soil and Water Samples Exygen Study No.: P0002561 **PFDA** Chemical Name: Perfluorodecanoic acid Molecular Weight: 514 Transitions Monitored: 513 -> 469 Structure: **PFUnA** Chemical Name: Perfluoroundecanoic acid Molecular Weight: 564 Transitions Monitored: 563 → 519 Structure:

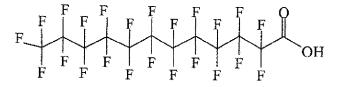
 $F \xrightarrow{F} F \xrightarrow{F} F \xrightarrow{F} F \xrightarrow{F} F \xrightarrow{F} F$ ЮΉ

ЮΉ

PFDoA

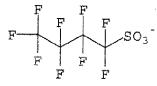
Chemical Name: Perfluorododecanoic acid Molecular Weight: 614 Transitions Monitored: 613 → 569 Structure:

 $F \xrightarrow{F} F \xrightarrow{F} F$



PFBS

Chemical Name: Perfluorobutanesulfonate Molecular Weight: 338 supplied as the potassium salt (C₄F₉SO₃K⁺) Transitions Monitored: $299 \rightarrow 80, 99$ Structure:



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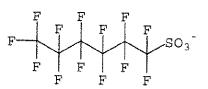
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2163.0170

PFHS

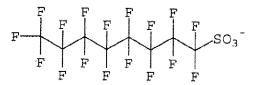
Chemical Name: Perfluorohexanesulfonate

Molecular Weight: 438 supplied as the potassium salt ($C_6F_{13}SO_3K^+$) Transitions Monitored: 399 \rightarrow 80, 99 Structure:



PFOS

Chemical Name: Perfluorooctanesulfonate Molecular Weight: 538 supplied as the potassium salt ($C_8F_{17}SO_3K^+$) Transitions Monitored: 499 \rightarrow 80, 99 Structure:



6.0 DESCRIPTION OF ANALYTICAL METHOD

The 3M Environmental Laboratory analytical method ETS-8-012.1 entitled, "Method of Analysis for the Determination of Perfluorobutanoic Acid (PFBA), Perfluoropentanoic Acid (PFPeA), Perfluorohexanoic Acid (PFHA), Perfluorohexanoic Acid (PFDA), Perfluorooctanoic Acid (PFOA), Perfluorononanoic Acid (PFNA), Perfluorodecanoic Acid (PFDA), Perfluorobutanesulfonate (PFDA), Perfluorobutanesulfonate (PFBS), Perfluorohexanesulfonate (PFHS), and Perfluorooctanesulfonate (PFOS) in Water, Soil and Sediment by LC/MS/MS" was used for sample analysis in this study.

6.1 Extraction Procedure for Soil

A 1 gram aliquot of the soil sample was used for the extraction procedure. The sample was weighed into a 15 mL polypropylene centrifuge tube. The appropriate samples were fortified and 8 mL of 80:20 acetonitrile:water was added. The samples were capped tightly and shaken. The samples were placed into an ultrasonic bath at room temperature for ~2 hours. The samples were then centrifuged at ~3000 rpm for 10 minutes. A portion of the supernate was then transferred to an autosampler vial. Each sample was analyzed by LC/MS/MS electrospray.

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2163.0171

6.2 Extraction Procedure for Water

A 10 mL aliquot of the water sample was used for the extraction procedure. The sample was measured into a 50 mL polypropylene centrifuge tube. The appropriate samples were fortified and 10 mL of acetonitrile was added. The samples were capped tightly and shaken. The samples were placed into an ultrasonic bath at room temperature for \sim 2 hours. The samples were then centrifuged at \sim 3000 rpm for 10 minutes. A portion of the supernate was then transferred to an autosampler vial. Each sample was analyzed by LC/MS/MS electrospray.

6.3 Preparation of Standards and Fortification Solutions

A stock standard solution of each analyte was prepared as specified in the method. The stock standard solutions were prepared at a concentration of 10,000 μ g/mL by dissolving 1.0 g of the standards (corrected for purity and salt content, if necessary) in acetonitrile. From these solutions, a 1000 µg/mL mixed fortification standard solution was prepared by taking 10 mL of the stocks and bringing the volume up to 100 mL with acetonitrile. By taking 10 mL of the 1000 µg/mL mixed fortification standard and bringing the volume up to 100 mL with acetonitrile, a 100 µg/mL mixed fortification standard was prepared. By taking 10 mL of the 100 µg/mL mixed fortification standard and bringing the volume up to 100 mL with acetonitrile, a 10 µg/mL mixed fortification standard was prepared. By taking 10 mL of the 10 µg/mL mixed fortification standard and bringing the volume up to 100 mL with acetonitrile, a 1.0 µg/mL mixed fortification standard was prepared. By taking 10 mL of the 1.0 µg/mL mixed fortification standard and bringing the volume up to 100 mL with acetonitrile, a 0.1 µg/mL mixed fortification standard was prepared. By taking 10 mL of the 0.1 µg/mL mixed fortification standard and bringing the volume up to 100 mL with acetonitrile, a 0.01 µg/mL mixed fortification standard was prepared. A set of external calibration standards containing all analytes were prepared in 50:50 acetonitrile:water. The following concentrations were prepared:

Conc. of Fort	Aliquot	Final Volume	Final Conc. of
Solution	Volume	of	Calibration Std.
(ng/mL)	(mL)	Solution (mL)	(ng/mL)
100	5.0	100	5.0
100	2.5	100	2.5
100	1.0	100	1.0
5.0	10	100	0.50
2.5	10	100	0.25
1.0	10	100	0.10
0.5	10	100	0.05
0.25	10	100	0.025

The stock standard solution and the 1000 μ g/mL standard solution were stored in a freezer (-20° ± 5°C) when not in use. All other fortification and calibration standard solutions were stored in a refrigerator (4° ± 2°C) when not in use. Documentation of standard preparation is located in the raw data package associated with this interim report.

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6.4 Chromatography

Quantification of the analytes was accomplished by LC/MS/MS electrospray. The retention time of all analytes can be found in Section 6.6. Method blanks prepared for each data set were used to determine the LOQ. In instances where there were no peaks in the method blanks, the LOQ was determined by the concentration of the lowest standard injected in the analytical run that met the 70–130% recovery range of its known value. In instances where there were peaks detected in the method blanks, the blanks were evaluated. If the average of the responses of all the method blanks was less than 50 % of the response of the lowest standard. If the average of the response of the response of all the method blanks was greater than 50 % of the response of the lowest standard. If the average of the response of the lowest standard meeting the recovery criteria, then the LOQ was determined by the lowest standard. If the average of the response of all the method blanks was greater than 50 % of the response of the lowest standard meeting the recovery criteria, then the LOQ was raised to the standard that met the less than 50 % criteria.

6.5 Instrument Sensitivity

The smallest standard amount injected during the chromatographic run had a concentration of 0.025 ng/mL of all analytes.

6.6 Description of LC/MS/MS Instruments and Operating Conditions

			÷ 0	
Instruments:	API 5000 I	Biomolecu	lar Mass Analy	zer
	API 4000]	Biomolecu	lar Mass Analy	zer
Interface:	SCIEX Tu	rbo Ion Sp	ray Liquid Intro	duction Interface
Computer:	DELL Pred			
	DELL Opt	iPlex GX4	00	
Software:	PE SCIEX	Analyst 1.	4.1	
HPLC:	Hewlett Pa	ickard (HP) Series 1200	
) Series 1100	
	HP Quat			
	HP Vacu	um Degas	ser	
	HP Auto	sampler		
	HP Colu	mn Oven		
HPLC Column:	Phenomene	ex Luna C8	3 (2) Mercury, 2	2mm x 4 mm, 3μm
Column Temp.:	~35° C		· · · _ ·	· I
Injection Vol.:	10 µL			
Mobile Phase (A): 2 mM A	mmonium	Acetate in wate	r
Mobile Phase (B				
Tim	ne (min)	<u>% A</u>	<u>% B</u>	
	0.0	90	10	
	0.5	90	10	
	2.0	10	90	
	5.0	10	90	
	5.1	0	100	

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2163.0173

0

100

6.0

Time (min)	<u>% A</u>	<u>% B</u>
6.1	90	10
10.0	90	10

Total run time: ~10 min Flow Rate: 0.75 mL/min Ions monitored:

ions monit	orea:		
<u>Analyte</u>	Mode	Transition Monitored	Retention Time (min)
PFBA	negative	$213 \rightarrow 169$	~3.1 min.
PFPeA	negative	$263 \rightarrow 219$	~3.6 min.
PFHA	negative	$313 \rightarrow 269$	~3.6 min.
PFHpA	negative	$363 \rightarrow 319$	~3.7 min.
PFOA	negative	$413 \rightarrow 369$	~3.8 min.
PFNA	negative	$463 \rightarrow 419$	~4.0 min.
PFDA	negative	$513 \rightarrow 469$	~4.1 min.
PFUnA	negative	$563 \rightarrow 519$	~4.2 min.
PFDoA	negative	$613 \rightarrow 569$	~4.3 min.
PFBS	negative	299 → 80, 99	~3.6 min.
PFHS	negative	$399 \rightarrow 80, 99$	~3.8 min.
PFOS	negative	499 → 80, 99	~3.9 min.

6.7 Quantitation and Example Calculation

Ten microliters of sample or calibration standard was injected into the LC/MS/MS. The peak area was measured and the standard curve was generated (using 1/x fit weighted linear regression) by Analyst software using eight concentrations of standards. The concentration was determined from the following equations.

Equation 1 calculated the amount of analyte found (in ng/mL, based on peak area) using the standard curve (linear regression parameters) generated by the Analyst software program.

Equation 1:

Analyte found $(ng/mL) = (Peak area - intercept) \times EDF \times PEDF$ slope

Where: EDF = Extraction Dilution Factor, factor by which the sample volume was diluted during the extraction (EDF =2 for water samples and EDF =1 for soil samples).

PEDF = Post Extraction Dilution Factor, factor by which the final volume was diluted, if necessary.

For the soil sample, equation 2 was used to convert the amount of analyte found in ng/mL to ng/g (ppb).

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Equation 2:

Analyte found (ppb) = [analyte found (ng/mL) x volume extracted (8 mL)] sample weight (1 g)

Equation 3 was then used to calculate the amount of analyte found in ppb based on dry weight.

Equation 3:

Analyte found (ppb) dry weight = analyte found (ppb) x [100% / total solids(%)]

NOTE: Total solids (%) = [dry weight (g) / wet weight (g)] $\times 100\%$

For samples fortified with known amounts of analyte prior to extraction, Equation 4 was used to calculate the percent recovery.

Equation 4: For water samples: Recovery (%) =

> (total analyte found (ng/mL) – average analyte in sample (ng/mL)) ×100% analyte added (ng/mL)

For soil samples (based on wet weight): Recovery (%) =

> (total analyte found (ng/g) – average analyte in sample (ng/g)) ×100% analyte added (ng/g)

An example of a calculation using an actual sample follows:

Soil sample Exygen ID: C0225127 Spike F (Set: 012407C), fortified at 200 ng/g with PFHpA where:

interact to a set	
intercept = 4230	
slope = 197000	
extraction dilution factor $=$ 1	
post extraction dilution factor $= 10$	
ng/g PFDoA added (fort level) = 200 ng/g	
average amt in corresponding sample = 13.2 ng/g (Set: 012407)	C)
total percent solid = 88.24%	

From equation 1:

Analyte found (ng/mL)	-		[512736 – 4230] x 1 x 10
			197000
		=	25.8 ng/mL

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2163.0175

From equation 2: Analyte found, wet weight $(ng/g) = (25.8 ng/mL \times 8 mL)$

 $= 206 \text{ ng/g}^{1 \text{ g}}$

From equation 3:

Analyte found (ng/g, ppb) dry weight = $206 \text{ ng/g} \times [100\% / 88.24\%]$

= 233 ng/g

From equation 4:

% Recovery

 $= (206 \text{ ng/g} - 13.2 \text{ ng/g}) \times 100\%$ 200 ng/g = 96 %

NOTE: Numbers may differ slightly from raw data due to rounding.

7.0 EXPERIMENTAL DESIGN

For water samples designated as trip blank field matrix spikes, all analytes were added at a known concentration to the bottles in the laboratory before being shipped to the field. The samples were filled to a 100 mL volumetric fill line in the field. For the soil samples designated as laboratory matrix spikes, all analytes were added to the samples after they were aliquotted in the laboratory, before the extraction solvent was added to the samples.

The soil samples were extracted in thirty-one sets. Each set included four control blanks (method blanks), three control blanks fortified at one lower level and three control blanks fortified at one higher level of known concentrations. Twenty-three of the sets contained three sample sites, one set contained one sample site, and the last seven sets contained reextractions of soil samples that required a higher fortification level. For each sample site, a sample, a laboratory replicate, and two laboratory matrix spikes were prepared and extracted.

The water samples were extracted in one set. The set included four reagent blanks (method blanks), three reagent blanks fortified at one lower level and three reagent blanks fortified at one higher level of known concentrations. The set contained three rinse blanks, two trip blanks, and four associated trip blank field spikes.

8.0 <u>RESULTS</u>

Analytical results for the analysis of PFBA, PFPeA, and PFHA found in the soil samples are summarized in **Table I.** Fortification recoveries for PFBA, PFPeA, and PFHA in the soil samples are detailed in **Table IX**. The average percent recoveries \pm standard

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deviations for PFBA, PFPeA, and PFHA in the soil samples were $67 \pm 23\%$, $70 \pm 24\%$, and $69 \pm 23\%$, respectively. Analytical results for the analysis of PFHpA, PFOA, and PFNA found in the soil samples are summarized in **Table II**. Fortification recoveries for PFHpA, PFOA, and PFNA in the soil samples are detailed in **Table X**. The average percent recoveries \pm standard deviations for PFHpA, PFOA, and PFNA in the soil samples were $72 \pm 28\%$, $82 \pm 35\%$, and $67 \pm 23\%$, respectively. Analytical results for the analysis of PFDA, PFUnA, and PFDoA found in the soil samples are summarized in **Table III**. Fortification recoveries for PFDA, PFUnA, and PFDoA in the soil samples are detailed in **Table XI**. The average percent recoveries \pm standard deviations for PFDA, PFUnA, and PFDoA in the soil samples were $75 \pm 28\%$, $75 \pm 26\%$, and $77 \pm 29\%$, respectively. Analytical results for the analysis of PFDS, pFHS, and PFOS found in the soil samples are summarized in **Table IV**. Fortification recoveries for PFBS, PFHS, and PFOS in the soil samples are detailed in **Table XI**. The average percent recoveries for PFBS, PFHS, and PFOS in the soil samples are detailed in **Table XI**. The average percent recoveries for PFBS, PFHS, and PFOS in the soil samples are detailed in **Table XI**. The average percent recoveries for PFBS, PFHS, and PFOS in the soil samples are detailed in **Table XI**. The average percent recoveries \pm standard deviations for PFBS, PFHS, and PFOS in the soil samples were $68 \pm 24\%$, $77 \pm 29\%$, and $89 \pm 22\%$, respectively.

A total of 48 samples needed re-extraction and re-analysis due to the significantly high endogenous analyte residues found in the samples relative to initial matrix spike concentrations. The samples required a higher fortification level to obtain fortification recoveries. Fortification recoveries for PFBA, PFHA, PFHpA and PFOA in the reextracted soil samples are detailed in **Table XIII**. The average percent recoveries \pm standard deviations for PFBA, PFHA, PFHpA and PFOA in the re-extracted soil samples were $72 \pm 15\%$, $91 \pm 10\%$, $93 \pm 14\%$, and $104 \pm 28\%$, respectively. Fortification recoveries for PFDA, PFHS and PFOS in the re-extracted soil samples are detailed in **Table XIV**. Only one sample was re-extracted and re-analyzed for PFDA, and its fortification recovery was 91%. The average percent recoveries \pm standard deviations for PFHS and PFOS in the re-extracted soil samples were $93 \pm 24\%$ and $103 \pm 24\%$, respectively.

The assessed accuracy for the majority of the samples reported is \pm 30%. The accuracies were assessed for each sample by reviewing the matrix spike whose spiking level most closely matches the endogenous concentration found in the sample. Due to the number of samples with matrix spike recoveries outside the 70% to 130% recovery range of acceptance for \pm 30% accuracy for the Oakdale study site, some samples have an expanded assessed accuracy ranging up to \pm 60% as noted in Tables I – IV.

Quantitative results were obtained for the majority of soil samples and analytes. The percentage of results reported for soil samples for PFBA, PFPeA, and PFHA were 77.1%, 84.3%, and 78.6%, respectively. The percentage of results reported for soil samples for PFHpA, PFOA, and PFNA were 81.4%, 82.9%, and 50.0%, respectively. The percentage of results reported for soil samples for PFDA, PFUnA, and PFDoA were 84.3%, 74.3%, and 78.6%, respectively. The percentage of results reported for soil samples for PFBS, PFHS, and PFOS were 91.4%, 81.4%, and 84.3%, respectively. All other results were designated as not reported (NR) due to quality control failures.

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Analytical results for the analysis of PFBA, PFPeA, and PFHA found in the water samples are summarized in Table V. Fortification recoveries for PFBA, PFPeA, and PFHA in the water samples are detailed in Table XV. The average percent recoveries \pm standard deviations for PFBA, PFPeA, and PFHA in the water samples were 112 \pm 7%, 99 \pm 12%, and 95 \pm 7%, respectively. Analytical results for the analysis of PFHpA, PFOA, and PFNA found in the water samples are summarized in Table VI. Fortification recoveries for PFHpA, PFOA, and PFNA in the water samples are detailed in Table XVI. The average percent recoveries ± standard deviations for PFHpA, PFOA, and PFNA in the water samples were 82 \pm 10%, 117 \pm 9%, and 99 \pm 9%, respectively. Analytical results for the analysis of PFDA, PFUnA, and PFDoA found in the water samples are summarized in Table VII. Fortification recoveries for PFDA, PFUnA, and PFDoA in the water samples are detailed in Table XVII. The average percent recoveries \pm standard deviations for PFDA, PFUnA, and PFDoA in the water samples were $110 \pm 14\%$, $112 \pm$ 6%, and 93 \pm 13%, respectively. Analytical results for the analysis of PFBS, PFHS, and PFOS found in the water samples are summarized in Table VIII. Fortification recoveries for PFBS, PFHS, and PFOS in the water samples are detailed in Table XVIII. The average percent recoveries ± standard deviations for PFBS, PFHS, and PFOS in the water samples were 96 \pm 11%, 107 \pm 4%, and 82 \pm 7%, respectively. Quantitative results were obtained for all water samples and analytes.

Total percent solid results for the sediment samples are detailed in Table XIX.

9.0 CONCLUSIONS

Except as noted above, the soil and water samples were successfully extracted and analyzed for PFBA, PFPeA, PFHA, PFHpA, PFOA, PFNA, PFDA, PFDA, PFDoA, PFBS, PFHS, and PFOS according 3M Environmental Laboratory analytical method ETS-8-012.1.

10.0 <u>RETENTION OF DATA AND SAMPLES</u>

All original paper data generated by Exygen Research that pertains to this interim report will be shipped to the study director. This does not include facility-specific raw data such as instrument or temperature logs. Exact copies of all raw data, as well as a signed copy of the final analytical report and all original facility-specific raw data, will be retained in the Exygen Research archives for the period of time specified in EPA TSCA Good Laboratory Practice Standards 40 CFR 792.

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TABLES

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Summary of PFBA, PFPeA, and PFHA in Soil Samples Table I.

		C4 Acid PFBA Perfivorobutanoie Acid		C5 Acid PFPeA Perfluoropentanoic Acid		C6 Acid PFHA		
		Analyte Found			Acceptable	Analyte Found	Perfluorohexanoic Acid Analyte Found Acceptable	
Exygen ID	Client Sample ID	(ppb, ng/g) Dry Weight	LOQ (wet) (ng/g)	Analyte Found (ppb, ng/g) Ory Weight	LOQ (wet) (ng/g)	(ppb, ng/g) Dry Weight	LOQ (wet) (ng/g)	
C0225070 C0225070 Rep	OKMN-SB-ASB37-0-0055 OKMN-SB-ASB37-0-0055*	NR NR	-	NR NR	-	5.84° 6.73*	0.40 0.40	
C0225071	OKMN-SB-AS837-0-0075	NR	-	0.527*	0.20	0.980°	0.40	
C0225071 Rep	OKMN-S8-AS837-0-0076*	NR		0.491*	0.20	1.14°	0.40	
C0225072	OKMN-SB-ASB38-0-0000	2.05	0.40	1.39	0.20	NR	-	
C0225072 Rep	OKMN-SB-ASB38-0-0000*	1.67	0.40	1.09	0.20	NR		
C0225073	OKMN-SB-ASB38-0-0015	1.75°	0.40	5.01^*	0.20	NR	-	
C0225073 Rep	OKMN-SB-ASB38-0-0015*	2.27°	0.40	1.40^*	0.20	NR		
C0225074	OKMN-SB-ASB38-0-0035	7.88°	0.40	3.35 ⁷	0.20	8.82°	0.40	
C0225074 Rep	OKMN-SB-ASB38-0-0036*	6.22°	0.40	2.76°	0.20	7.17°	0.40	
C0225075	OKMN-SB-ASB38-DB-0035	7.69°	0.40	3.25°	0.20	8.57°	0.40	
C0225075 Rep	OKMN-SB-ASB38-DB-0035*	7.87°	0.40	3.41°	0.20	9.58°	0.40	
C0225076	OKMN-SB-AS838-0-0055	11.9°	0.40	4.72*	0.20	14.7°	0.40	
C0225076 Rep	OKMN-SB-AS838-0-0055*	12.3°	0.40	5.51*	0.20	17.0°	0.40	
C0225077	OKMN-SB-ASB38-0-0080	17.3°	0.40	6.36°	0.20	20.5°	0.40	
C0225077 Rep	OKMN-SB-ASB38-0-0080*	17.8°	0.40	6.65°	0.20	22.1°	0.40	
C0225078	OKMN-SB-ASB39-0-0015	28.3°	0.40	11.9°	0.20	24.8*	0.40	
C0225078 Rep	OKMN-SB-ASB39-0-0015*	28.4°	0.40	13.1*	0.20	27.3*	0.40	
C0225079	OKMN-SB-ASB39-DB-0015	27.2°	0.40	13.0°	0.40	27.4°	0.40	
C0225079 Rep	OKMN-SB-ASB39-DB-0015*	35.2*	0.40	17.0°	0.40	36.3"	0.40	
C0225080	OKMN-SB-ASB36-0-0015	58.4°	0.40	15.3°	0.40	78.6^°	0.40	
C0225080 Rep	OKMN-SB-ASB36-0-0015*	46.3°	0.40	11.5'	0.40	40.2^^	0.40	
C0225081 C0225081 Rep	OKMN-SB-ASB36-DB-0015 OKMN-SB-ASB36-DB-0015*	NR NR	-	20.4" 16.3°	0.40 0.40	NR NR		
C0225082	OKMN-SB-ASB36-0-0030	NR	:	39.8°	0.20	174*	0.40	
C0225082 Rep	OKMN-SB-AS536-0-0030*	NR		32.4°	0.20	145°	0.40	
C0225083	OKMN-SB-ASB36-0-0055	421	0.80	66.9°	0.20	245°	0.40	
C0225083 Rep	OKMN-SB-ASB36-0-0055*	379	0.80	62.5°	0.20	207°	0.40	
C0225084	OKMN-SB-AS836-0-0095	404°	0.80	44.9*	0.20	122°	0.40	
C0225084 Rep	OKMN-SB-ASB36-0-0095*	480°	0.80	46.6*	0.20	141°	0.40	
C0225086	OKMN-SB-ASB37-0-0000	3.31	0.80	1.03^*	0.20	NR	-	
C0225086 Rep	OKMN-SB-ASB37-0-0000*	4.49	0.80	2.88^*	0.20	NR		
C0225087	OKMN-SB-ASB37-0-0015	6.71°	0.80	3.84°	0.20	11.0°	0.40	
C0225087 Rep	OKMN-SB-ASB37-0-0015*	7.15°	0.80	4.12°	0.20	10.9°	0.40	
C0225088	OKMN-SB-ASB37-0-0035	NR	-	1.70	0.20	4.91	0.40	
C0225088 Rep	OKMN-SB-ASB37-0-0035*	NR		1.59	0.20	4.96	0.40	
C0225089	OKMN-SB-ASB37-DB-0035	4.81°	0.80	2.20"	0.20	6.92°	0.80	
C0225089 Rep	OKMN-SB-ASB37-DB-0036*	4.50°	0.80	2.16"	0.20	6.49°	0.80	
C0225090 C0225090 Rep	OKMN-SB-ASB34-0-0035 OKMN-SB-ASB34-0-0035*	42.4° 56.2°	0.80 0.80	14.3° 16.7°	0.20	25.2° 28.7°	0.80	
C0225091 C0225091 Rep	OKMN-SB-ASB34-0-0055 OKMN-SB-ASB34-0-0055*	NR NR	-	104° 105°	0.20	146° 184°	0.80 0.80	
C0225092 C0225092 Rep	OKMN-SB-ASB34-0-0085 OKMN-SB-ASB34-0-0085*	1610	0.40 0.40	NR NR	-	995 1020	0.40 0.40	
C0225093 C0225093 Rep	OKMN-SB-ASB35-0-0000 OKMN-SB-ASB35-0-0000*	NR	-	2.95^	0 20 0.20	3.73^ 1.64^	0.40 0.40 0.40	
C0225094 C0225094 Rep	OKMN-SB-ASB35-0-0015 OKMN-SB-ASB35-0-0015*	41.5° 35,4°	0.40 0.40	29.2° 22.4°	0.20	34.7° 33.7°	0.40 0.40 0.40	
C0225095 C0225095 Rep	OKMN-SB-ASB35-0-0035 OKMN-SB-ASB35-0-0035*	NR		27.0" 25.2°	0.40	90.6° 78.4°	0.20 0.20	

*Laboratory Duplicate *Relative Percent Difference > 30% *Sample results with expanded assessed accuracy between +/- 30% and +/- 60%. ND = Not detected at or above acceptable LOQ. NR = Not reported due to quality control failures.

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Table I. Summary of PFBA, PFPeA, and PFHA in Soil Samples (continued)

		C4 Acid PFBA Perfluorobutenoic Acid		CS Acid PFPeA Perfluoropentanoic Acid		C6 Acid PFHA	
	Or	Analyte Found	Analyte Found Acceptable		Acceptable	Perfluorohexanoic Acid Analyte Found Acceptable	
Exygen ID	Client Sample ID	(ppb, ng/g) Dry Weight	LOO (wet) (ng/g)	(ppb, ng/g) Dry Weight	LOQ (wet) (Ag/g)	(ppb, ng/g) Dry Weight	LOQ (wet) (ng/g)
C0225096 C0225096 Rep	OKMN-SB-ASB35-DB-0035 OKMN-SB-ASB35-DB-0035*	26.t* 26.4*	0.20 0.20	NR NR	-	69.5° 76,3'	0.20 0.20
C0225097 C0225097 Rep	OKMN-SB-A\$B35-0-0055 OKMN-SB-A\$B35-0-0055*	137* 155°	0.20 0.20	82.7° 108*	0.40 0.40	678 666	0.20
C0225098 C0225098 Rep	OKMN-SB-ASB35-0-0085 OKMN-SB-ASB35-0-0085*	NR NR	-	103° 94.0'	0.40 0.40	1230 1120	0.20
C0225099 C0225099 Rep	OKMN-SB-ASB36-0-0000 OKMN-S8-ASB36-0-0000*	13,6° 10,2°	0.20 0.20	3.38 ^{4*} 2.13 ^{4*}	0.40 0.40	3.87^* 2.31^*	0.20 0.20
C0225100 C0225100 Rep	OKMN-SB-ASB32-0-0075 OKMN-SB-ASB32-0-0075*	1250 1590	0.20 0.20	NR . NR	•	536 624	0.20 0.20
C0225102 C0225102 Rep	OKMN-SB-ASB33-0-0000 OKMN-SB-ASB33-0-0000*	7.85° 7.06°	0.20 0.20	NR NR		1.45 1.31	0.20 0.20
C0225103 C0225103 Rep	OKMN-SB-ASB33-0-0015 OKMN-SB-ASB33-0-0015*	8.21^* 13.4^*	0.20 0.20	4.80° 6.09°	0.40 0.40	8.19* 10.3*	0.20
C0225104 C0225104 Rep	OKMN-SB-ASB33-0-0035 OKMN-SB-ASB33-0-0035*	16.0^* 10.2^*	0.20 0.20	8.26^* 4,99^*	0.40	12.5^* 8.29^*	0.20 0.20
C0225105 C0225105 Rep	OKMN-SB-ASB33-DB-0035 OKMN-SB-ASB33-DB-0035*	8.53^* 11.6^*	0.20 0.20	7.62° 7.51°	0.40 0.40	8.85° 8.35°	0.20
C0225106 C0225406 Rep	OKMN-SB-ASB33-0-0055 OKMN-SB-ASB33-0-0055*	NR NR	-	23.2° 23.5°	0.40 0.40	NR NR	
C0225107 C0225107 Rep	OKMN-SB-ASB33-0-0085 OKMN-SB-ASB33-0-0085*	NR NR		30.7° 34.0°	0.40 0.40	NR NR	-
C0225108 C0225108 Rep	OKMN-SB-AS834-0-0000 OKMN-SB-AS834-0-0000*	NR NR	-	NR NR	-	0.349^*	0.40 0.40
C0225109 C0225109 Rep	OKMN-SB-ASB34-0-0015 OKMN-SB-ASB34-0-0015*	6.55° 9.75°	0.20 0.20	NR NR	-	7.24° 6.92°	0.40 0.40
C0225110 C0225110 Rep	OKMN-SB-ASB31-0-0000 OKMN-SB-ASB31-0-0000*	12.9"	0.20 0.20	NR NR		NR NR	-
C0225111 C0225111 Rep	OKMIN-SB-AS831-0-0015 OKMIN-SB-AS831-0-0015*	NR NR	-	4.07** 10.2**	0.40 0.40	8.80 ^{4*} 18.9 ^{4*}	0.20 0.20
C0225112 C0225112 Rep	OKMN-SB-ASB31-0-0035 OKMN-SB-ASB31-0-0035*	205° 233°	0.40 0.40	NR NR	-	NR	0.25
C0225113 C0225113 Rep	OKMN-SB-ASB31-0-0055 OKMN-SB-ASB31-0-0055*	231* 222*	0.40 0.40	80.2° 95.6°	0.40	NR	-
C0225114 C0225114 Rep	OKMN-SB-ASB31-0-0070 OKMN-SB-ASB31-0-0070*	348* 326*	0.20 0 20	NR NR		NR NR	
C0225115 C0225115 Rep	OKMN-SB-ASB32-0-0000 OKMN-SB-ASB32-0-0000*	NR NR	-	5.48° 5.42°	0.20 0.20	NR NR	-
C0225116 C0225116 Rep	OKMN-SB-ASB32-0-0015 OKMN-SB-ASB32-0-0015*	NR NR	-	NR	-	NR	-
C0225117 C0225117 Rep	OKMN-SB-ASB32-DB-0016 OKMN-SB-ASB32-DB-0015*	309° 296°	0.20 0.20	86.7^ 61.1^	0.40 0.40	NR 187 141	0.20
C0225118 C0225118 Rep	OKMN-SB-ASB32-0-0035 OKMN-SB-ASB32-0-0035*	628° 796°	0.20	150" 160"	0.40	NR NR	0.20 -
C0225119 C0225119 Rep	OKMN-SB-ASB32-0-0055 OKMN-SB-ASB32-0-0055*	888° 877°	0.20	192° 164°	0.40	NR	-
C0225120 C0225120 Rep	OKMN-SB-ASB39-0-0035 OKMN-SB-ASB39-0-0035*	73.9 91.0	0.20	17,5 19,3	0.40	NR 27.9	0.20
C0225121	OKMN-SB-ASB39-0-0055	280	0.20	40.5	0.40	30.0 95.3	0.20 0.29

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*Laboratory Duplicate *Reliative Percent Difference > 30% *Sample results with expanded assessed accuracy between +/- 30% and +/- 60%. ND = Not detected at or above acceptable LCC. NR = Not reported due to quality control taltures.

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Table I. Summary of PFBA, PFPeA, and PFHA in Soil Samples (continued)

		C4 Acid PFBA Perfluorobutanois Asid		C5 Acid PFPeA Perflucropentanoic Acid		C6 Acid PFHA Perfluorohexanoic Acid	
		Analyte Found	Acceptable	Analyte Found	Acceptable	Analyte Found	Acceptable
	Client	(pp6, ng/a)	LOQ (wet)	(pob, ng/g)	LOQ (wet)	(ppb, ng/g)	LOQ (wet)
Exygen ID	Sample ID	Dry Weight	(ng/g)	Dry Weight	(ng/g)	Dry Weight	(ng/g)
				1		1	(1/3/9)
C0225122	OKMN-SB-ASB39-0-0070	186°	0.20	25.6	0.40	41.6	0.20
C0225122 Rep	OKMN-SB-ASB39-0-0070*	197°	0.20	26.3	0.40	39.5	0.20
C0225123	OKMN-SB-ASB40-0-0000	NR	-	1.24	0.40	0,415	0.20
C0225123 Rep	OKMN-S8-ASB40-0-0000*	NR	-	1.20	0.40	0,411	0.20
C0225124	OKMN-SB-ASB40-0-0015	ND"	0.40	ND	0.40	0.764	0.20
C0225124 Rep	OKMN-SB-ASB40-0-0015*	D.368**	0.40	ND	0.40	0.806	0.20
00000.005							
C0225125	OKMN-SB-ASB40-0-0035	1.01^*	0.40	ND'	0.40	0.779*	0.20
C0225125 Rep	OKMN-SB-ASB40-0-0035*	1.81^*	0.40	0.834'	0.40	2.09*	0.20
C0225126							
	OKMN-SB-ASB40-0-0055	2.69	0.20	0.897	0.40	3.25	0.20
C0225126 Rep	OKMN-SB-ASB40-0-0055*	2.69	0.20	1.09	0.40	3.81	0.20
C0225127							
C0225127 C0225127 Rep	OKMN-SB-ASB40-0-0090 OKMN-SB-ASB40-0-0090*	3.77^	0.20	3.14	0.40	22.1	0.20
Cuzzoiz/ Rep	UKM/N-S8-AS840-0-0090*	5.15*	0.20	2.93	0.40	21.8	0.20
C0225128	OKMN-S8-AS841-0-2015						
C0225128 Rep	OKMN-SB-ASB41-0-0015 OKMN-SB-ASB41-0-0015*	9.74	0.20	8.29	0.40	18.0	0.20
OUTEO LEO LICO	UNMIN-30-A3641-0-0015	9.86	0.20	7.54	0.40	16.6	0.20
C0225129	OKMN-SB-ASB41-0-0035	10.0				1	
C0225129 Rep	OKMN-SB-ASB41-0-0035*	43.9	0.20	17.6	0.20	63.1	0.20
outron to http	010004-30-43041-0-0033	43.7	0.20	15.9	0.20	57.7	0.20
C0225130	OKMN-SB-AS341-0-0055	34.6	0.20				
C0225130 Rep	OKMN-SB-ASB41-0-0055*	25.8		12.3	0.20	35.7	0.20
ouccorrect top	01000-00-00041-0-0000	20.0	0.20	12.8	0.20	41.1	0.20
C0225131	OKMN-SB-ASB41-0-0090	109	0.20	16.0	0.00		
C0225131 Rep	OKMN-SB-ASB41-0-0090*	104	0.20	15.4	0.20	33.9	0.20
		104	0.20	10.4	0.20	35.0	0.20
C0225132	OKMN-SB-ASB41-DB-0090	129^	0.20	16.2^	0.20	NR	
C0225132 Rep	OKMN-SB-ASB41-DB-0090*	68.9^	0.20	11.5^	0.20	NR	-
•			0.20	11.5	0.20	NR.	*
C0225133	OKMN-SB-ASB42-0-0000	ND	0.20	ND	0.20	ND	0.40
C0225133 Rep	OKMN-SB-ASB41-0-0000*	ND	0.20	0.3031	0.20	ND	0.40
				0.000	0.20	i nu	0.40
C0225134	OKMN-SB-ASB42-0-0015	ND	0.20	ND	0.20	0.331^	0.40
C0225134 Rep	OKMN-SB-ASB41-0-0015*	ND	0.20	ND	0.20	0.446*	0.40
		í			0.20		0.40
C0225135	OKMN-SB-ASB42-0-0035	9.22	0.20	3.50	0.40	17.6	0.20
C0225135 Rep	OKMN-SB-AS841-0-0035*	7.70	0.20	3.19	0.40	17.3	0.20
							0.20
C0225136	OKMN-SB-ASB42-0-0055	9.88	0.20	3.47	6.40	18.3	0.20
C0225136 Rep	OKMN-S8-AS241-0-0055*	9.66	0.20	3.63	0.40	17.6	0.20
	· · · · · · · · · · · · · · · · · · ·						
C0225137	OKMN-SB-ASB42-0-0070	15.0	0.20	4.53	0.40	22.1	0.20
C0225137 Rep	OKMN-SB-ASB41-0-0070*	18.5	0.20	4.95	0.40	24.7	0.20
			1				
C0225139	OKMN-SB-ASB43-0-0015	8.15	0.20	5.52	0.20	10.7	0.20
C0225139 Rep	OKMN-SB-ASB43-0-0015*	6.62	0.20	4.70	0.20	8.42	0.20
C0225140			I				
	OKMN-SB-ASB43-0-0035	41.0^	0.20	17.5*	0.20	20.5^	0.20
C0225140 Rep	OKMN-SB-ASB43-0-0035*	28.6^	0.20	11.4^	0.20	13.7^	0.20
C0225141	OKMN-SB-ASE43-0-0055		I				
C0225141 Rep	OKMN-SB-ASE43-0-0955 OKMN-SB-ASE43-0-0055*	96.5" 84 C	0.20	28.0	0.20	35.6	0.20
COLLO IT I MED		84.6°	0.20	26.6	0.20	34.7	0.20
C0225142	OKMN-SB-ASB43-0-0090	37.1	0.40				
C0225142 Rep	OKMN-SB-AS843-0-0090*	37.1 41.5	0.40	20.9	0.40	40.8	0.20
**************************************	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	41,0	0.40	20.0	0.40	39.8	0.20

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*Laboratory Duplicate *Relative Percent Difference > 30% *Semple results with expanded assessed accuracy between +/- 50% and +/- 60%. *Relative Percent Difference was not calculated due to the presence of a nondetect and resulting uncertainty. ND = Not detected at or above acceptable LCQ. NR = Not reported due to quality control failures.

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		C7 Acid PFHpA Perfluorobeptanoic Acid		C8 Acid PFOA		C9 Acid PFNA Perfluorenceancie Acid	
Exygen ID	Client Sample ID	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)	Ariałyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (nç/g)
C0225070	OKMN-SB-AS837-0-0055	7.42"	0.20	9.50	0.20	NR	
C0225070 Rep	OKMN-SB-AS837-0-0055*	8,19°	0.20	11.5	0.20	NR	
C0225071	OKMN-SB-ASB37-0-0075	NR	-	13.2°	0.20	ND"	0.20
C0225071 Rep	OKMN-SB-ASB37-0-0076*	NR		14.1°	0.20	ND"	0.20
C0225072	OKMN-SB-ASB38-0-0000	2.37	0.20	21.6 ^{4*}	0.20	0.214°	0.20
C0225072 Rep	OKMN-SB-ASB38-0-0000*	1.84	0.20	15.6 ^{4*}	0.20	0.167°	0.20
C0225073 C0225073 Rep	OKMN-SB-AS838-0-0015 OKMN-SB-AS838-0-0015*	NR NR	-	58.1* 106*	0,20 0.20	NR NR	-
C0225074	OKMN-SB-ASB38-0-0035	10.2°	0.20	130°	0.20	NR	
C0225074 Rep	OKMN-SB-ASB38-0-0035*	7.68*	0.20	107*	0.20	NR	
C0225075	OKMN-SB-ASB38-DB-0035	9.47°	0.20	147°	0.20	NR	-
C0225075 Rep	OKMN-SB-ASB38-DB-0035*	8:29°	0.20	126°	0.20	NR	
C0225076	OKMN-SB-ASB38-0-0055	14.1^*	0.80	NR	-	NR	
C0225076 Rep	OKMN-SB-ASB38-0-90557	26.6^*	0.80	NR		NR	
C0225077	OKMN-SB-ASB38-0-0080	14.7°	0.80	NR	-	ND"	0.20
C0225977 Rep	OKMN-SB-ASB38-0-0080*	17.3°	0.80	NR		ND"	0.20
C0225078	OKMN-SB-ASB39-0-0015	31.7°	0.80	453	0.20	NR	-
C0225078 Rep	OKMN-SB-ASB39-0-0015*	33.7*	0.80	439	0.20	NR	
C0225079	OKMN-SB-AS839-DB-0015	53.3**	0.40	382^	0.20	NR	-
C0225079 Rep	OKMN-SB-AS839-D6-0015*	74.5**	0.40	584^	0.20	NR	
C0225080	OKMN-SB-ASB36-0-0015	135^*	0.40	1340*	0.20	NR	
C0225080 Rep	OKMN-SB-ASB36-0-0015*	97.4^*	0.40	806^	0.20	NR	
C0225081 C0225081 Rep	OKMN-SB-ASB36-DB-0015 OKMN-SB-ASB36-DB-0015*	NR NR	-	1020° 1060°	0.20 0.20	NR NR	-
C0225082	OKMN-SB-ASB36-0-0030	1971	0.40	1880	0.20	NR	-
C0225082 Rep	OKMN-SB-ASB36-0-0030*	161°	0.40	1350	0.20	NR	
C0225083	OKMN-SB-ASB36-0-0055	205°	0.40	2810	0.20	4.97	0.20
C0225083 Rep	OKMN-SB-ASB36-0-0055*	204°	0.40	2620	0.20	4.90	0.20
C0225084	OKMN-SB-ASB36-0-0095	67.0	0.40	NR	-	ND*	0.20
C0225084 Rep	OKMN-SB-ASB36-0-0095	56.2	0.40	NR		NO*	0.20
C0225086	OKMN-SB-AS537-0-0000	0.845^	0.20	NR	-	0.189^*	0.20
C0225086 Rep	OKMN-SB-AS537-0-0000*	3.43^	0.20	NR		0.441^*	0.20
C0225087	OKMN-SB-ASB37-0-0015	19.0*	0.20	256°	0.20	NR	-
C0225087 Rep	OKMN SB-ASB37-0-0015*	17.3*	0.20	227*	0.20	NR	
C0225088	OKMN-SB-ASB37-0-0035	8.22°	0.20	103^*	0.20	NR	-
C0225088 Rep	OKMN-SB-ASB37-0-0035*	6.88°	0.20	73.5^*	0.20	NR	
C0225089	OKMN-SB-ASB37-DB-0035	9.50°	0.20	99,5	0.20	NR	•
C0225089 Rep	OKMN-SB-ASB37-DB-0035*	8.61°	0.20	93.3	0.20	NR	• .
C0225090 C0225090 Rep	OKMN-SB-ASB34-0-0035 OKMN-SB-ASB34-0-0035*	38.1° 44.0°	0.20 0.20	NR NR	-	NR NR	:
C0225091	OKMN-SB-ASB34-0-0055	159°	0.20	4860°	0.20	NR	-
C0225091 Rep	OKMN-SB-ASB34-0-0055*	185°	0.20	4420°	0.20	NR	
C0225092	OKMN-SB-ASB34-0-0085	1190	0.20	18000	0.20	17.2*	0.20
C0225092 Rep	OKMN-SB-ASB34-0-0085*	1240	0.20	18100	0.20	16.3*	0.20
C0225093	OKMN-SB-A\$B35-0-0000	1.87^	0.20	17,4^*	0.20	NR	:
C0225093 Rep	OKMN-SB-A\$B35-0-0000*	0.838^	0.20	9.16^*	0.20	NR	
C0225094	OKMN-SB-ASB35-0-0015	34.1°	0.20	853	0.20	NR	
C0225094 Rep	OKMN-SB-ASB35-0-0015*	39.8″	0.20	1060	0.20	NR	
C0225095 C0225095 Rep	0KMN-SB-ASB35-0-0035 0KMN-SB-ASB35-0-0035*	NR NR		3330 2620	0.40 0.40	NR NR	-

Table II. Summary of PFHpA, PFOA, and PFNA in Soil Samples

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*Laboratory Duplicate *Relistive Percent Difference > 30% *Sample results with expanded assessed accuracy between +/- 30% and +/- 60%, ND = Not detected at or shore acceptable LCC. NR = Not reported due to quality control failures.

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Summary of PFHpA, PFOA, and PFNA in Soil Samples Table II. (continued)

		C7 Acid PFHpA		C8 Acid PFOA		C9 Acid PFNA	
***		Farfluoroheptanois Asid		Petfluorood		Perfluorononanoio Acid	
	Client	Analyte Found (ppb. ng/g)	Acceptable LOG (wet)	Analyle Found	Acceptable	Analyte Found	Acceptable
Exygen (D	Sample ID	Dry Weight	(ng/g)	(ppb. ng/g) Dry Weight	LOQ (wat) (ng/g)	(ppb, ng/g) Dry Weight	LOQ (wet) (ng/g)
C0225096	OKMN-S8-ASB35-DB-0035	NR	_	NR		1	
C0225096 Rep	OKMN-SB-ASB35-DB-0035*	NR	-	NR	-	NR NR	
C0225097	OKMN-SB-AS835-0-0065	904	0.20	14900	0.40	29,5*	0.20
C0225097 Rep	OKMN-SB-ASB35-0-0055*	888	0.20	11200	0.40	24.8	0.20
C0225098	OKMN-SB-ASB35-0-0085	1460	0.20	4500^*	0.20	6.27**	0,20
C0225098 Rep	OKMN-SB-ASB35-0-0085*	1090	0.20	3250**	0.20	4.10**	0.20
C0225099	OKMN-SB-ASB36-0-0000	1.99^	0.20	15.8**	0.20	NR	-
C0225099 Rep	OKMN-SB-ASB36-0-0000*	1.35^	0.20	13.34°	0.20	NR	-
C0225100	OKMN-SB-ASB32-0-0075	188*	0.20	2210	0.20	NR	-
C0225100 Rep	OKMN-S8-ASB32-0-0075*	183*	0.20	1710	0.20	NR	*
C0225102	OKMN-SB-ASB33-0-0000	0.734^	0.20	5.32^*	0.20	0.300**	0.20
C0225102 Rep	OKMN-SB-AS833-0-0000*	0.487^	0.20	3.26**	0.20	0.140**	0.20
C0225103	OKMN-SB-ASB33-0-0015	14,4*	0.20	419*	0.20	NR	
C0225103 Rep	OKMN-SB-ASB33-0-0015*	15.6*	0.20	864*	0.20	NR	-
C0225104	OKMN-SB-ASB33-0-0035	15.8°	0.20	NR	-	NR	_
C0225104 Rep	OKMN-SB-ASB33-0-0035*	12.2°	0.20	NR	•	NR	-
C0225105	OKMN-SB-ASB33-DB-0035	9.25°	0.20	NR		NR	
C0225105 Rep	OKMN-SB-ASB33-DB-0035*	9.50°	0.20	NR.	-	NR	-
C0225106	OKMN-SB-AS833-0-0055	49.4*	0.20	774	0.20	NR	
C0225106 Rep	OKMN-SB-ASB33-0-0056*	44.0°	0.20	736	0.20	NR	
C0225107	OKMN-SB-ASB33-0-0085	NR		3680	0.20	NR	
C0225107 Rep	OKMN-SB-ASB33-0-0085*	NR	•	3260	0.20	NR	-
C0225108	OKMN-SB-ASB34-0-0000	0.289*	0.20	7.13°	0.20	ND"	0.20
C0225108 Rep	OKMN-SB-ASB34-0-0000*	0.378"	0.20	8.09*	0.20	ND"	0.20
C0225109	OKMN-SB-AS834-0-C015	5.51	0.20	NR		NR	
C0225109 Rep	OKMN-SB-ASB34-0-0015*	6.41°	0.20	NR	-	NR	
C0225110	OKMN-SB-ASB31-0-0000	C.760°	0.20	5.87*	0.20	ND°	0.20
C0225110 Rep	OKMN-SB-ASB31-0-0000*	0.740°	0.20	6.82*	0.20	ND*	0.20
C0225111	OKMN-SB-AS831-0-0015	7.76^*	0.20	NR		0.335^*	0.20
C0225111 Rep	OKMN-SB-ASB31-0-0015*	12,8^*	0.20	NR	-	1.26^*	0.20
C0225112	OKMN-SB-ASB31-0-0035	NR	-	NR		NR	
C0225112 Rep	OKMN-SB-ASB31-0-0035*	NR	-	NR		NR	
C0225113	OKMN-SB-ASB31-0-0055	NR	_	6620°	0.20	NR	
C0225113 Rep	OKMN-SB-ASB31-0-0055*	NR	-	5460°	0.20	NR	-
C0225114	OKMN-SB-ASB31-0-0070	NR	.	9430	0,20	NR	
C0225114 Rep	OKMN-SB-ASB31-0-0070*	NR	-	8830	0.20	NR	
C0225115	OKMN-SB-ASB32-0-0000	NR	.	17.3°	0.20	NR	
C0225115 Rep	OKMN-SB-ASB32-0-0000*	NR	-	20.6*	0.20	NR	-
C0225116	OKMN-SB-AS832-0-0015	NR	-	3300^*	0.20	NR	
C0225116 Rep	OKMN-S8-ASB32-0-0015*	NR	~	5540 ^{^*}	0.20	NR	
C0225117	OKMN-SB-ASB32-DB-0015	179°	0.20	3930^	0.20	8.58*	0.20
C0225117 Rep	CKMN-\$B-AS832-DB-0015*	140°	0.20	2830^	0.20	7.32*	0.20
C0225118	OKMN-SB-AS832-0-0035	258°	0.20	11400	0.20	NB	
C0225118 Rep	OKMN-SB-ASB32-0-0035*	275"	0.20	12200	0.20	NR NR	
C0225119	OKMN-SB-ASB32-0-0055	NR	.	5610	0.20	ND	
C0225119 Rep	OKMN-SB-ASB32-0-0055*	NR	-	6310	0.20	NR NR	-
C0225120	OKMN-S8-ASB39-0-0035	31.1	0.20	943*	0.20	A 61-	0.00
C0225120 Rep	OKMN-SB-AS839-0-0035*	31.3	0.20	1110°	0.20	4.51" 4.66°	0.20 0.20
C0225121	OKMN-SB-ASB39-0-0055	112*	0.20	1350°	0.20	4.33°	0.20
C0225121 Rep						Y.UU	

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*Laboratory Duplicate *Relative Percent Difference > 30% *Sample results with expanded assessed accuracy between +/- 30% and +/- 60%. ND = Not detected at or above acceptable LOQ. NR = Not reported due to quality control failures.

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Table II. Summary of PFHpA, PFOA, and PFNA in Soil Samples (continued)

404000		C7 Acid PFHpA Perflooroheptanoic Acid		C8 Acid PFOA Perfluorocetancic Acid		C9 Acid PFNA Persuorononanoio Acid	
	0	Analyte Found	Acceptable	Analyte Found	Acceptable	Analyte Found	Acceptable
Exygen ID	Client	(ppb, ng/g)	LOQ (wet)	(ppb, ng/g)	LOQ (wet)	(ppb, ng/g)	LOO (wet)
LXYG811D	Sample ID	Dry Weight	(ng/g)	Dry Weight	(ng/g)	Dry Weight	(ng/g)
C0225122	OKMN-SB-ASB39-0-0070						
C0225122 Rep	OKMN-SB-ASB39-0-0070 OKMN-SB-ASB39-0-0070*	76.0*	0.20	926	0.20	5.32"	0.20
COLLO IZZ Nep	OKMIN-3B-A3839-0-0070*	41.0*	0.20	961	0.20	4.33*	0.20
C0225123	OKMN-SB-AS840-0-0000						
C0225123 Rep	OKMN-SB-ASB40-0-0000*	NR	-	NR	-	ND	0.20
a a mare into a cop	CV/004-02-X0B40-0-0000-	NR	-	NR	-	ND	0.20
C0225124	OKMN-SB-ASB40-0-0015	0.420*					
C0225124 Rep	OKMN-SB-A5840-0-0015"	0.573^	0.20	7.33	0.20	ND	0 20
		0.073	0.20	6.24	0.20	ND	0.20
C0225125	OKMN-SB-AS840-0-0035	0.654^*	0.20	12.14			
C0225125 Rep	OKMN-SB-ASB40-0-0035*	1.92^*	0.20	32.1*	0.20	ND	0.20
•		1.04	0.20	32.1"	0.20	ND	0.20
C0225126	OKMN-SB-ASB40-0-0055	2.47*	0.20	12.4	0.20	1	
C0225126 Rep	OKMN-SB-AS840-0-0055*	2.82	0.20	15.6	0.20	ND	0.20
			0.20	1 10.0	0.20	ND	0.20
C0225127	OKMN-SB-AS840-0-0090	15.0	0.20	27.4*	0.20	1 10	
C0225127 Rep	OKMN-S8-ASB40-0-0090*	14,9	0.20	27.2	0.20	ND ND	0.20
		1	0.20	61.6	0.20	NO	0.20
C0225128	OKMN-SB-ASB41-0-0015	31.8	0.20	728	0.20	2.76	
C0225128 Rep	OKMN-SB-AS841-0-0015*	28.1	0.20	586	0.20	2	0.20
			5.2.5	000	0.20	2.50*	0.20
C0225129	OKMN-SB-ASB41-0-0035	88.9	0.20	749	0.20	2.08	0.20
C0225129 Rep	OKMN-S8-ASB41-0-0035*	78.3	0.20	696	0.20	2.18"	
			- 20	000	0.26	2.10	0.20
C0225130	OKMN-SB-ASB41-0-0055	55.3	0.20	578	0.20	2.32"	0.20
C0225130 Rep	OKMN-SB-ASB41-0-0055*	59.7	0.20	538	0.20	2.44	0.20
					0.20	2.44	0.20
C0225131	OKMN-SB-ASB41-0-0090	18.0	0.20	60.8	0.20	ND	0.20
C0225131 Rep	OKMN-S8-ASB41-0-0090*	19.2	0.20	63.9	0.20	ND	0.20
00000-000	*****						0.20
C0225132	OKMN-S8-AS841-D8-0090	21.4	0.20	75.3^	0.20	ND	0.20
C0225132 Rep	OKMN-SB-AS841-DB-0090*	16.9	0.20	40.8*	0.20	ND	0.20
C0225133		ļ					0.20
C0225133 Rep	OKMN-SB-ASB42-0-0000	ND	0.20	0.620^	0.20	ND	0.20
00220133 Rep	OKMN-SB-ASB41-0-0000*	ND	0.20	1.07^	0.20	ND	0.20
C0225134							
C0225134 Rep	OKMN-SB-ASB42-0-0015	ND1	0.20	0.874^*	0.20	ND	0.20
CONTROL ON MED	OKMN-SB-ASB41-0-0015*	9.1911	0.20	1.19**	0.20	NÐ	0.20
C0225135	OKHRI OD ADD to a see						
C0225135 Rep	OKMN-SB-ASB42-0-0035 OKMN-SB-ASE41-0-0035*	13.5	0.20	154**	0.20	0.309	0.20
sveet to nep	orwin-ab-4ap41-0-0035*	12.6	0.20	121^*	0.20	0.272	0.20
C0225136	OKMN-SB-ASB42-0-0055	45.0					
C0225136 Rep	OKMN-SB-ASB42-0-0055 OKMN-SB-ASB41-0-0055*	15.3	0.20	211	0.20	0.460	0.20
- man man more		15.3	0.20	232	0.20	0.609	0.20
C0225137	OKMN-SB-ASB42-0-0070	13.1	0.00	245			
C0225137 Rep	OKMN-SB-ASB41-0-0070*	13.1	0.20	64.3	0.20	ND	0.20
	5.538-00-00-0070	13.3	0.20	61.5	0.20	ND	0.20
C0225139	OKMN-SB-ASB43-0-0015	6.21^	0.20	2017 de 1			
C0225139 Rep	OKMN-SB-ASB43-0-0015*	4.20^	0.20	65.8*	0.20	0.2851	0.20
F		7.20	0.20	4†.9 ^	0.20	NO	0.20
C0225140	OKMN-SB-ASB43-0-0035	192	0.20	CORRE			
C0225140 Rep	OKMN-SB-ASB43-0-0035*	14.9	0.20	696^* 355^*	0.20	3.05*	0.20
ŕ		17.0	0.20	30011	0.20	2.68*	0.20
C0225141	OKMN-SB-ASB43-0-0055	38.1	0.20	£ 1004		1.m.	
C0225141 Rep	OKMN-SB-ASB43-0-0055*	31.6	0.20	1190^	0.20	NR	-
		51.0	0,⊉0	737*	0.20	NR	-
C0225142	OKMN-SB-ASB43-0-0090	28.2	0.20	233°	I		
C0225142 Rep	OKMN-SB-ASB43-0-0090*	30.2	0.20	233° 284°	0.20	1.08	0.20
			0.20	204	0.20	0.975	0.20
			1	····			

*Laboratory Duplicate *Relative Percent Difference > 30% *Sample results with expanded assessed accuracy between +/- 30% and +/- 60%. *Relative Percent Difference was not calculated due to the presence of a nondetect and resulting uncertainty. ND = Not detocted at or above acceptable LOQ. NR = Not reported due to quality control failures.

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Summary of PFDA, PFUnA, and PFDoA in Soil Samples Table III.

		C10 Acid PFDA		C11 Acid PFUnA		C12 Acid PFDoA	
		Perfluorodecanoic Acid		Perfluoroundecanoic Acid		Perfluorododecancic Acid	
Ехусел (D	Client Sample ID	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)	Analyte Found (ppb, ng/g) Dry Weight	Acceptable LOQ (wet) (ng/g)
C0225070	OKMN-SB-ASB37-0-0055	13.2°	0.20	NR	-	0.913^*	0.20
C0225070 Rep	OKMN-SB-ASB37-0-0055*	16.3°	0.20	NR		1.51^*	0.20
C0225071	OKMN-SB-ASB37-0-0075	1.17*	0.20	ND	0.20	ND"	0.20
C0225071 Rep	OKMN-SB-ASB37-0-0075*	1.09*	0.20	ND	0.20	ND"	0.20
C0225072	OKMN-SB-ASB38-0-0000	1.11^*	0.20	ND"	0.20	0.211""	0.20
C0225072 Rep	OKMN-SB-ASB38-0-0000*	0.790^*	0.20	ND"	0.20	ND"'	0.20
C0225073	OKMN-SB-ASB38-0-0015	NR	-	ND*1	0.20	ND*1	0.20
C0225073 Rep	OKMN-SB-ASB38-0-0015*	NR		0.337*1	0.20	0.275*1	0.20
C0225074	OKMN-SB-ASB38-0-0035	5.63°	0.20	0.561°	0.20	0.748°	0.20
C0225074 Rep	OKMN-SB-ASB38-0-0935*	4.33"	0.20	0.493°	0.20	0.800°	0.20
C0225075	OKMN-SB-ASB36-DB-0035	5.84°	0.20	0.619*	0.20	0.826°	0.20
C0225075 Rep	OKMN-SB-ASB38-DB-0035*	5.63°	0.20	0.679°	0.20	0.946°	0.20
C0225076	OKMN-SB-ASB38-0-0055	5.90^*	0.20	0.618^*	0.20	0.842 ^{4*}	0_20
C0225076 Rep	OKMN-SB-ASB38-0-0055*	12.2^*	0.20	1.12^*	0.20	1.20**	0.20
C0225077	OKMN-SB-ASE38-0-0080	NR	-	0.265^*	0.20	0.206°	0.20
C0225077 Rep	OKMN-SB-ASB38-0-0080*	NR		0.348^*	0.20	0.206°	0.20
C0225078 C0225078 Rep	OKMN-SB-ASB39-0-0015 OKMN-SB-ASB39-0-0015*	11.4° 11.5°	0.20 0.20	NR NR	-	NR NR	-
C0225079	OKMN-SB-ASB39-DB-0015	9.92*	0.20	1,64°	0.20	1.39*	0.20
C0225079 Rep	OKMN-SB-ASB39-DB-0015*	11.8*	0.20	2.05°	0.20	1.79*	0.20
C0225080 C0225080 Rep	OKMN-SB-ASB36-0-0015 OKMN-SB-ASB36-0-0015*	41.2° 32.3°	0.20 0.20	NR NR	-	NR NR	-
C0225081 C0225081 Rep	OKMN-S8-ASB36-D8-0015 OKMN-SB-ASB38-DB-0015*	35.5* 37.6*	0.20 0.20	NR NR	•	NR NR	-
C0225082	OKMN-SB-ASB36-0-0030	1200	0.20	91,4	0.20	112	0.20
C0225082 Rep	OKMN-SB-ASB36-0-0030*	1260	0.20	93,4	0.20	112	0.20
C0225063	OKMN-SB-ASB36-0-0055	131°	0.20	5.19°	0.20	6.69*	0.20
C0225083 Rep	OKMN-SB-ASB36-0-0055*	115°	0.20	4.48*	0.20	5.87*	0.20
C0225084	OKMN-SB-A\$B36-0-0095	0.200^*	0.20	ND"	0.20	ND"	0.20
C0225084 Rep	OKMN-SB-A\$B36-0-0095*	0.348^*	0.20	ND"	0.20	ND"	0.20
C0225086 C0225086 Rep	OKMN-SB-ASB37-0-0000 OKMN-SB-ASB37-0-0000*	NR NR	-	1.61° 1.60°	0.20 0.20	NR NR	-
C0225087 C0225087 Rep	OKMN-SB-AS837-0-0015 OKMN-SB-AS837-0-0016*	15.1" 13.5"	0.20 0.20	NR	-	1.58° 1.32°	0.20 0.20
C0225088 C0225088 Rep	OKMN-SB-ASB37-0-0035 OKMN-SB-ASB37-0-0035*	7.37* 6.25*	0.20 0.20	0:893° 0.762°	0.20 0.20	1.04° 0.908°	0.20 0.20
C0225089	OKMN-SB-ASB37-DB-0035	11.4°	0.20	1.41°	0.20	1.87	0.20
C0225089 Rep	OKMN-SB-ASB37-DB-0035*	9.79*	0.20	1.30°	0.20	1.55	0.20
C0225090	OKMN-SB-ASB34-0-0035	21.9°	0.20	5.17°	0.26	6.42°	0.20
C0225090 Rep	OKMN-SB-ASB34-0-0035*	28.3°	0.20	6.58″	0.20	8.07°	0.20
C0225091	OKMN-SB-ASB34-0-0055	32.5	0.20	10.9	0.20	12.6°	0.20
C0225091 Rep	OKMN-SB-ASB34-0-0055*	32.0	0.20	10.7	0.20	12.7°	0.20
C0225092	OKMN-SB-ASB34-0-0085	48.2°	0.40	NR	-	0.618⁼	0.20
C0225092 Rep	OKMN-SB-ASB34-0-0085*	46.5°	0.40	NR		0.511°	0.20
C0225093	OKMN-SB-ASB35-0-0000	8.88^*	0.40	2.65°	0.20	3.28°	6.20
C0225093 Rep	CKMN-SB-ASB35-0-0000*	3.79^*	0.40	2.00°	0.20	2.92*	0.20
C0225094	OKMN-SB-ASB35-0-0015	NR	-	6.78"	0.20	6.43″	0.20
CC225094 Rep	OKMN-SB-ASB35-0-0015*	NR		7,27°	5.20	7.90°	0.20
C0225095	OKMN-SB-ASE35-0-0035	NR	-	6.67°	0.20	26.7	0.20
C0225095 Rep	OKMN-SB-ASE35-0-0035*	NR		5.65°	0.20	21.6	0.20

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