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August 25, 2025

Emily Storm  
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2984 Shawano Avenue  
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Re: Response to Request for Additional Information  
Plan of Operation Approval Modification  
Brown County South Landfill, License No. 3565

Dear Emily Storm:

This letter serves as a response to the Request for Information (RFI) letter received from the Wisconsin Department of Natural Resources (WDNR) dated July 11, 2025. The RFI was submitted by WDNR in response to the March 11, 2025, Plan of Operation Modification request. The following sections provide responses along with the attachments as discussed on a phone call with representatives of WDNR, Brown County, and Foth Infrastructure & Environment, LLC (Foth) on July 17, 2025.

## **Gas Extraction System**

*The plan needs to include narrative explicitly stating what is being modified from the original plan of operation (PLOP). The plan does not explicitly state how the proposed design differs from the original design.*

Response: The original Plan of Operation (PLOP) detailed a proposed gas extraction system layout with extraction wells, collection piping, and a blower skid and flare. The plan modification included a construction level design for the gas extraction equipment skid with greater level of detail than the PLOP and was provided for WDNR information. Elements detailed include sizing and pitch of gas header piping to the extraction skid as well as location and configuration of the condensate knockout and liquids management. Condensate knockout structures are proposed to be dual contained as well as any liquid conveyance piping. Condensate will be pumped from the knockout pot to the existing dual contained gravity transfer line leading to the leachate tank. The sizing and planned location of the gas extraction and destruction equipment has not changed and is in conformance with the PLOP. The gas extraction system is planned for control and combustion of landfill gas up to 3,000 cubic feet per minute (cfm) at this time.

## **Beneficial Use Soils Acceptance Criteria**

The information requested for the beneficial use soils acceptance criteria, below, was also requested in the WDNR's email on September 10, 2024.

1. *Include a copy of the specific parts of the plan of operation or include a summary of the 'acceptable limits (total limits)' proposed in the plan of operation.*

Response: Brown County is not seeking any alternative acceptable limits or total limits as part of this plan modification. Section 7 of the attached Alternative Daily Cover and Beneficial Use Plan was updated with additional language. The limits set with the PLOP, Special Waste Plan, and administrative code will continue to be utilized by Brown County staff for waste acceptance criteria.

2. *Verify if the proposed standards for contaminated soils acceptance includes dredged soils.*

Response: Brown County currently manages dredged soils at another facility, Bay Port. This plan modification does not seek approval of any dredged soils at the South Landfill.

3. *Include a revised copy of the Special Waste Plan (if modified) and the Alternative Daily Cover and Beneficial Reuse Plan to include in the proposed modifications.*

Response: A copy of the current Special Waste Plan is included as Attachment 1. No revisions are proposed at this time. Changes to the Alternative Daily Cover and Beneficial Reuse Plans include updates to the plan to reflect any prior WDNR approvals.

4. *Provide a narrative of any sampling that has been conducted on the soil or sediment, including number of samples, frequency, and results compared against the ch. NR 720, Wis. Adm. Code (NR 720), residual contaminant levels (RCLs), allowable acceptable limits in the Special Waste Plan, as well as toxicity characteristic leaching procedure.*

Response: For calendar years 2022 through 2024, an overview of contaminated soil sampling results for material taken at the South Landfill is detailed and submitted to the WDNR as part of the site's solid waste operations reporting. A comparison of sample results against NR 720 RCLs is included as well as a comparison of soil results to Special Waste Acceptance levels. These results are detailed in annual reports in Section 2, tables, and analytical test reports.

5. *Provide a narrative explaining whether the soil/material has been remediated or will go through any type of remediation prior to being brought to site.*

Response: Soils and materials considered for acceptance are first screened through the Special Waste Plan. The site may accept materials meeting the levels established in the plan whether the materials have been remediated off site or not. Brown County will not be performing any remediation of waste on property.

6. *Include a narrative of the proposed storage/stockpiling, use, and any setback requirements from exterior sideslope for the soil/material that will be used to prevent migration of contaminants from the soils outside the limits of waste.*

Response: Soils accepted in accordance with the PLOP and Special Waste Plan and will be managed in accordance with the PLOP and Alternative Daily Cover and Beneficial Reuse plans. As detailed in these plans, contaminated soils meeting the requirements for acceptance will be managed in a means to limit or prevent contact with surface water. Note that these practices include, but are not limited to, use of contaminated soils for Alternative Daily Cover, intermediate cover, as well as interior structures such as berm, dikes, roads, and staging areas.

7. *Section NR 506.105(3), Wis. Adm. Code, prohibits the acceptance of soils having an average organic compound concentration exceeding 2,000 milligrams per kilogram (mg/kg), unless managed in accordance with ch. NR 708, Wis. Adm. Code. Discuss how this will be tracked and if this requirement will conflict with the proposed acceptance criteria of ten times the industrial contact limit.*

Response: The Special Waste Management Plan contains a sampling requirement limitation of less than 2,000 parts per million (ppm). The site requires sampling results be submitted and reviewed for Gasoline Range Organics (GRO) and Diesel Range Organics (DRO). A copy of the Special Waste Management Plan is attached.

## **Air Program**

1. *Provide the Air Management Program a copy of the landfill's Special Waste Plan.*

Response: A copy of the Special Waste Management Plan has been attached to this letter (Attachment 1).

2. *Your air pollution control permit applications identify stockpiled contaminated soils as an insignificant source, but do not identify disposal or beneficial use or reuse activities. Were emissions from these activities estimated? If so, please provide those estimates. If not, please provide a date by which the landfill can complete and submit them to the Air Management Program.*

Response: Emissions from disposal or beneficial use of contaminated soil are included with the overall emission estimates from the landfill. The emission estimates for volatile organic compounds (VOCs) and hazardous air pollutants (HAPs), obtained from the recent air operation permit renewal application, are attached to this letter (Attachment 2). The emission factors and VOC/HAP concentrations used in these calculations were obtained from default values in AP-42 Chapter 2.4 and assume co-disposal of waste, which would include non-residential wastes such as contaminated soil. Our experience at other local landfills that accept contaminated soil is that actual test data for VOC/HAPs in landfill gas shows generally lower concentrations in test data than the default co-disposal concentrations in AP-42 Chapter 2.4. So actual VOC/HAP emissions from the landfill may be lower than the emission estimates show in the attachment.

3. *Explain how and when contaminated soils are tested for organic compounds.*

Response: Contaminated soils are tested in accordance with the Special Waste Management Plan prior to acceptance for disposal and go through an application approval process. Soils that are petroleum contaminated or from other remedial projects that may contain VOCs are tested for GRO, DRO, VOCs, and/or polycyclic aromatic compounds (PAHs) in accordance with protocols in the Special Waste Management Plan. Soils that will be accepted for alternative daily cover or beneficial use are tested in accordance with the Alternative Daily Cover and Beneficial Reuse Plan.

4. *Provide records of the amount of contaminated soil disposed of or beneficially used or reused since disposal or beneficial use or reuse began.*

Response: Records of disposal of contaminated soil are provided in the Annual Solid Waste Report.

5. *Provide annual weight records of hazardous air contaminants contained in the contaminated soil that was disposed of or beneficially used or reused.*

Response: Emissions of VOCs/HAPs from contaminated soil disposal are estimated and reported in the annual Air Emissions Inventory Report as part of the overall landfill emissions. Emission from the landfill are generally not subject to NR 445, Wisconsin Administrative Code [per NR 445.01(1)(b)], since the facility is already subject to a 40 CFR 63 Subpart AAAA (National Emission Standards for Hazardous Air Pollutants: Municipal Solid Waste Landfills).

Sincerely,

Foth Infrastructure & Environment, LLC



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cc: Ryan Bergh, Wisconsin Department of Natural Resources ([Ryan.Bergh@wisconsin.gov](mailto:Ryan.Bergh@wisconsin.gov))  
Ben Hintz, Brown County Port & Solid Waste Department  
Chad Doverspike, Brown County Port & Solid Waste Department

Attachments:

Attachment 1 Special Waste Management Plan (April 2019)  
Attachment 2 Alternative Daily Cover and Beneficial Reuse Plan (Revised August 2025)  
Attachment 3 VOC and HAP Emissions

**Attachment 1**  
**Special Waste Management Plan (April 2019)**

Plan

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# Special Waste Management Plan Brown County South Landfill

Project I.D.: 18B027

Brown County Port & Resource Recovery Department  
Green Bay, Wisconsin

April 2019



# Special Waste Management Plan Brown County South Landfill

Project ID: 18B027

Prepared for  
Brown County Port & Resource Recovery Department  
Green Bay, Wisconsin

Prepared by  
Foth Infrastructure & Environment, LLC

April 2019

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# Special Waste Management Plan

## Brown County South Landfill

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### Attachments

Attachment A	Analytical Protocols/Acceptance Criteria
Attachment B	Application for Special Waste Disposal at the Brown County South Landfill
Attachment C	Wisconsin Administrative Code NR 506 Landfill Operational Criteria

## List of Abbreviations, Acronyms, and Symbols

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ACD	alternate daily cover
BCPRRD	Brown County Port & Resource Recovery Department
Foth	Foth Infrastructure & Environment, LLC
mg/kg	milligram per kilogram
mg/L	milligram per liter
POTW	Publicly Owned Treatment Works
SDS	Safety Data Sheet
SLF	South Landfill
WDNR	Wisconsin Department of Natural Resources
Wis. Adm. Code	Wisconsin Administrative Code

# 1 Introduction

The purpose of this document is to establish a Special Waste Management Plan for the Brown County South Landfill (SLF) in accordance with Wisconsin Administrative Code (Wis. Adm. Code) Chapter NR 506.09, satisfy the requirement for a Special Waste Management Plan, and describe the procedures to be used for characterizing and managing special wastes at the SLF.

The SLF site is located in the town of Holland, Wisconsin. The primary service areas of the landfill are Outagamie, Brown, and Winnebago Counties, but some wastes are also accepted from other areas in Wisconsin. The types of waste streams generated within these service areas are a mix of residential, commercial, industrial, and rural wastes.

Wis. Adm. Code Chapter NR 506.09 requires that solid wastes not prohibited or limited by Chapter NR 506 be handled in accordance with an approved Special Waste Management Plan.

## 2 Background

The purpose of this Special Waste Management Plan is to ensure, to the extent practicable, that only those wastes which are allowed under the requirements of Wis. Adm. Code s. NR 506 are accepted for management at the SLF.

For the purposes of this Plan, special waste is described later in this document. Municipal solid wastes are those wastes which consist mainly of food wastes and rubbish generated by households, stores, restaurants, and hotels in both urban and rural settings, and are defined by s. Wis. Adm. Code NR 500.03 as follows:

- (a) Household waste, or
- (b) Solid waste from commercial or industrial sources that does not contain hazardous waste and does not contain any process waste which is the direct or indirect result of the manufacturing of a product or the performance of a service such as dry cleaners or paint shops. "Municipal solid waste" does not include waste wood, papermill sludge, sewage sludge, tires, or industrial process wastes.

This Plan has been developed to provide a mechanism to inventory and evaluate waste streams resulting from commercial and/or industrial activity such that those wastes which are deemed special wastes are properly characterized and appropriately managed.

This Special Waste Management Plan will accomplish the following objectives:

- ◆ Identify those portions of solid waste streams which are considered special wastes.
- ◆ Provide a mechanism for characterizing special waste streams.
- ◆ Provide a mechanism for review of special waste information.
- ◆ Provide a mechanism to ensure that only those special wastes which can be managed in accordance with SLF's Plan of Operation and Wis. Adm. Code s. NR 506 are accepted.
- ◆ Provide for the effective, management of special wastes upon receipt at the SLF facility.

### 3 Special Waste Evaluation

To accomplish the objectives set forth in Section 2, the procedures, which are described in this section, will be used. A minimum of one representative sample of each waste stream proposed for disposal/ management/treatment at the SLF must be evaluated or tested initially and re-evaluated at least once every three years or upon a change in the waste generation process unless authorized by Brown County Port & Resource Recovery Department (BCPRRD). A Safety Data Sheet (SDS) may be accepted in lieu of testing at the discretion of BCPRRD. If a special waste stream was previously approved for a one-time-only disposal, and the time limit of the approval has expired, a re-evaluation and re-approval will be required prior to disposal and/or management of this waste stream at the SLF unless authorized by the BCPRRD.

#### 3.1 Identification of Special Wastes

Solid waste streams intended for disposal at the SLF will be evaluated in order to facilitate the identification of special waste streams. BCPRRD will train equipment operators, scale attendants, sales personnel, and other appropriate facility personnel in the identification of special wastes and regulated hazardous wastes. Training will emphasize familiarity with types of wastes likely to be special or hazardous as well as recognition of containers/labels typically associated with special or hazardous waste streams, and will meet the training requirements specified in Wis. Adm. Code s. NR 524.

#### 3.2 Evaluation and Characterization of Special Wastes

Those solid waste streams, identified as special wastes, must be appropriately characterized to evaluate whether a given special waste is acceptable for management at the SLF.

Waste streams identified in Table 3-1 are for those wastes from a commercial or industrial activity which meet one or more of the following:

- ◆ Waste from an industrial process.
- ◆ Waste from a pollution control process
- ◆ Residue or debris from the cleanup of a spill of a chemical substance or commercial product or waste.
- ◆ Contaminated residuals from the cleanup of a facility which handled chemical substances, commercial products or wastes.
- ◆ Chemical-containing equipment removed from service (in which the chemical composition and concentration are unknown).

Special wastes shall be characterized and will require that a minimum of one representative sample of the special waste be tested by a laboratory certified by the Wisconsin Department of Natural Resources (WDNR) to perform such analyses. For waste streams where there is the potential for variability, such as soil from contaminated sites, each potential contaminant must be

addressed in a sampling program. In such instances where variability exists, averaging of concentrations may be used for acceptance. The waste stream descriptions and test protocol category to be used for laboratory analysis are specified in Table 3-1. The testing protocols for these special wastes can be found in Attachment A. Analytical parameters associated with the protocols may be modified by BCPRRD or their designee for specific waste streams. For waste materials that do not fall into these specific categories, the applicant should contact the BCPRRD for guidance on required analytical testing. The test results and other relevant information will be reviewed in accordance with the procedures described in Section 3.3.

**Table 3-1**  
**Special Waste Streams and Analytical Protocols**

Waste Description	Analytical Protocol/Category <sup>1</sup>
Foundry Process Waste	A
Municipal, Hospital, and Boiler Ash	A
Ink Wastes	A
Paint Wastes and Paint Sludges	A
Metal Treatment/Preparation Sludges	A
Waste Glues and Adhesives	A
Ceramic Production/Manufacturing Waste	A
Contaminated Soils	A
Construction & Demolition Wastes	A
Coal Combustion Residuals	A
Abrasive Blasting Materials	A
Grinding Sludges	B
Pollution Control Wastes	B
Wastes from remedial projects, investigations, and spill cleanups	B
Unknown Chemical Substances	B
Auto Shredder Fluff	B
Paper Mill Sludge Wastes	C
Other Sludge Wastes	C
Petroleum Contaminated soils for Co-disposal	D
Publicly Owned Treatment Works (POTW) Wastes	E
Miscellaneous rejected products, chemicals or containers	F

<sup>1</sup> Analytical protocols may vary depending upon waste type.

Prepared by: MRS  
Checked by: JRV1

### **3.3 Special Waste Information Review**

The special waste information review process will begin when BCPRRD receives the following:

- ◆ a completed Application for Special Waste Approval (refer to Attachment B);
- ◆ a laboratory report containing the results of analytical testing according to the analytical protocol appropriate for the special waste stream (refer to Table 3-1 and Attachment A) and/or;
- ◆ any other information deemed pertinent by the generator of the special waste.

Other information may include one or more of the following:

- ◆ SDSs
- ◆ Technical product information
- ◆ Process information
- ◆ Generator certification

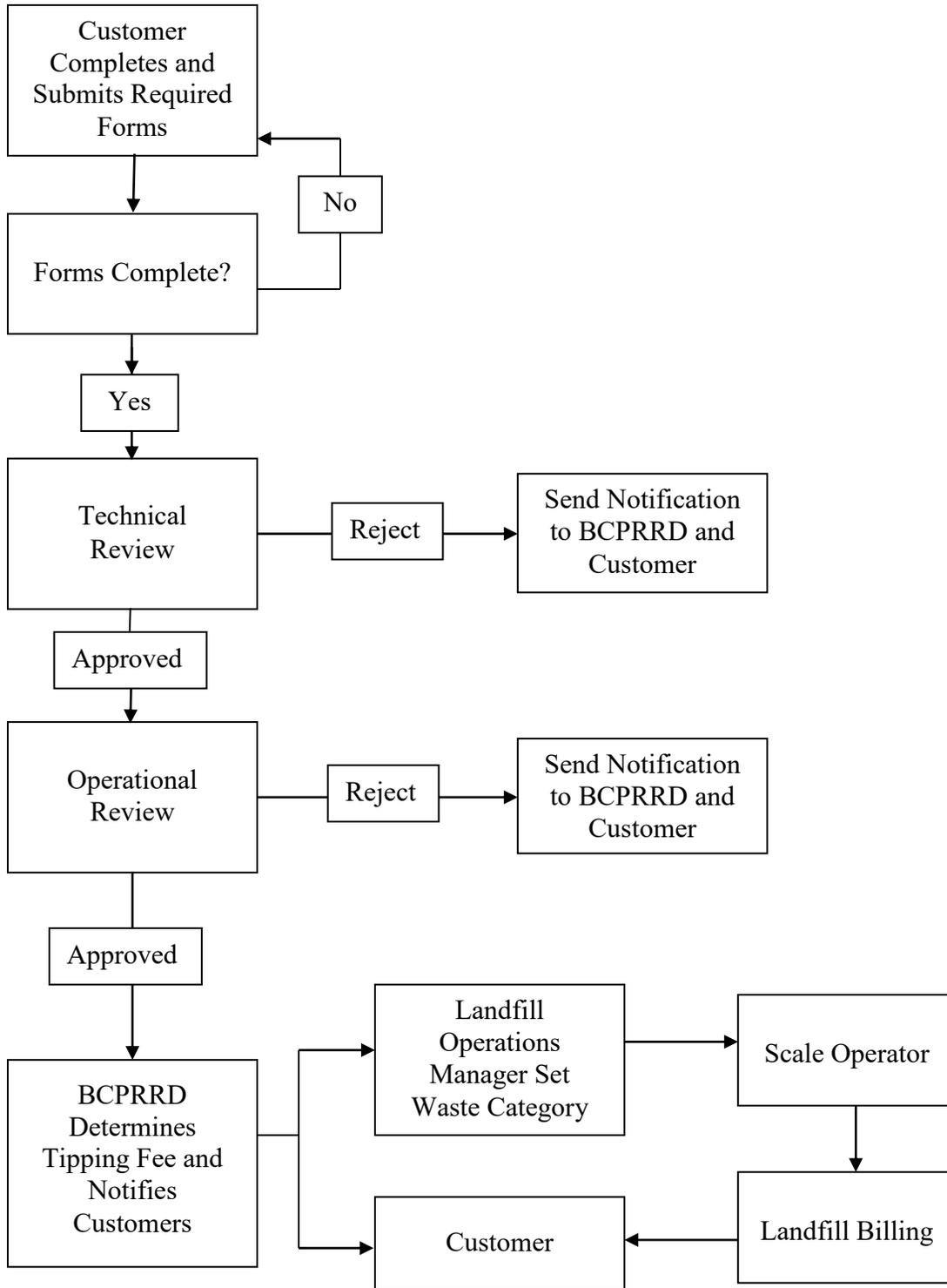
The information provided (the Application for Special Waste Approval, the laboratory report and/or the supporting documentation) will be reviewed by both technical and operational staff for completeness and to determine if additional analysis, information or clarification is needed. Additional information may be required in order to make a reasonable decision regarding the ability to manage a given waste at the Brown County facility.

In addition to the Application for Special Waste Approval, information and/or analytical requirements to be provided for individual waste streams are identified in Attachment A. BCPRRD reserves the right to request additional information/data in order to complete the waste evaluation process. In addition, BCPRRD also may reduce or modify analytical requirements based on information supplied by generators.

Attachment A contains the waste acceptance criteria specified for analytical protocols referenced in Table 3-1. The general waste evaluation and approval process which is to be used is depicted visually on Figure 3-1.

Figure 3-1

Special Waste Approval Flow Chart



It should be noted there may be waste streams which do not fall into the categories described in Table 3-1. These special wastes will be evaluated on a case-by-case basis by BCPRRD and may require WDNR approval prior to acceptance for management at the SLF.

The following information shall be provided to evaluate the acceptability of these waste streams:

- ◆ Source of waste, geographic location, and address of origin.
- ◆ Waste type and anticipated annual volume.
- ◆ Chemical and physical characterization and other pertinent information such as SDSs, technical product bulletins, etc.
- ◆ A statement indicating the waste stream is non-hazardous.
- ◆ Results of a paint filter test (performed by a laboratory) which indicates liquid content.

The waste generator will be notified by BCPRRD of the decision to accept or reject the waste stream and of any special packaging or shipping requirements. If the waste is rejected, the reasons for rejection will be provided to the generator. The generator will be informed that if characteristics of the special waste stream change, they must contact the facility operator before delivery of the waste to the SLF for disposal or management.

### 3.4 Agency Approval

The BCPRRD will approve special waste streams for management at its facility in accordance with this Special Waste Management Plan and the Plan of Operation for the Brown County facility. Wastes prohibited by Wis. Adm. Code s. NR 506, or Section 6 of this Plan, will not be accepted for disposal.

Wastes which are limited under ss. NR 506.10 to 506.155 will be disposed in accordance with those sections. Solid wastes, which are not prohibited or limited under ss. NR 506.095 to 506.155 and which do not constitute more than 5% of the total proposed design capacity, will be disposed without additional WDNR approval providing they do not pose a significant threat to landfill operations, leachate or landfill gas quality, or groundwater quality, and they are handled in accordance with this Special Waste Management Plan.

Special waste requests which constitute more than 5% of the total proposed design capacity will be submitted to the WDNR Northeast Region's Waste Management Specialist and will include, at a minimum, the following information:

- ◆ Detailed physical and chemical characteristics including percent solids, SDSs, where appropriate, and the results of the paint filter test.
- ◆ The volume of waste to be disposed of on a daily and yearly basis.

- ◆ The source of the wastes and a description of the processes which generated the waste.
- ◆ The duration of disposal.
- ◆ Special handling and disposal procedures.

It is BCPRRD's intent to approve waste streams for management at Brown County with no direct WDNR input as long as the requirements of the Plan of Operation and this Special Waste Management Plan are followed.

## 4 Special Waste Receipt

Vital to the success of this Special Waste Management Plan is the implementation and maintenance of a system to ensure proper disposal of accepted wastes at the SLF. A tracking system will be instituted for proper management of the waste from identification (as described in Section 3.1) to inspection to disposal (as described below).

### 4.1 Waste Inspection

Random load inspections will be conducted in accordance with the Plan of Operation for the SLF to detect wastes not specifically approved by BCPRRD for acceptance.

### 4.2 Procedure for Handling Unapproved/Unauthorized Special Waste

If any unapproved/unauthorized/hazardous wastes are identified by random load checking, or are otherwise discovered to be improperly deposited at the facility, then BCPRRD will promptly notify the WDNR, the hauler responsible for shipping the waste to the landfill, and the generator of the wastes, if known. Loads containing unapproved/ unauthorized/hazardous waste identified through the random load inspections will not be accepted. The area where these wastes are deposited will be immediately cordoned off from public access. The hauler will implement cleanup, transportation, and disposal of the waste at a waste management facility permitted to accept the waste.

The party responsible for transporting the waste to the SLF will be responsible for the costs of such proper cleanup, transportation, and disposal. Subsequent shipments by persons or sources found or suspected to be responsible for shipping unapproved/unauthorized waste in the past will be subject to the special precautionary measures.

If an unapproved or unauthorized special waste is discovered, the incident will be documented and placed in the landfill file.

### 4.3 Liquid Wastes

Off-specification or outdated consumer products (pickles, ice cream, etc.) which contain incidental liquids by virtue of the way in which they are packaged and sold to the public may be acceptable for disposal at the SLF. Requests for disposal of these off-specification/outdated consumer products will be reviewed on a case-by-case basis.

## 5 Waste Management Techniques

Techniques available for those special wastes, which are acceptable for management at the SLF, are described below:

- ◆ Co-disposal in active area of landfill.
- ◆ Disposal in trench within the landfill but away from active area.
- ◆ Utilization for daily cover in the landfill.
- ◆ Utilization for construction of earthen-type structure(s).
- ◆ Interior roads or unloading/staging areas.

There are additional management techniques which will be used for specific special wastes. These are described below for the wastes specified.

### 5.1 Asbestos-Containing Materials

The following asbestos-containing materials may be accepted at SLF:

- ◆ Category I nonfriable asbestos containing material, which is not construction and demolition material.
- ◆ Category II nonfriable asbestos containing material.
- ◆ Friable asbestos material.

Category I nonfriable asbestos containing material may be placed in the active fill area.

Category II nonfriable asbestos-containing material and friable asbestos material will be disposed in a trench excavated into existing refuse and will be covered with a minimum of 3 feet of non-asbestos solid waste or soil prior to compaction. Asbestos waste will not be disposed of within 10 feet of the liner or sidewalls or placed in previous asbestos disposal areas, areas proposed for future leachate recirculation wells and gas collection wells.

The location of Category II nonfriable asbestos-containing material and friable asbestos material disposal within the landfill will be recorded by horizontal and vertical coordinates. The location will be recorded in the landfill operating record in accordance with NR 506.17.

The generators/transporters of asbestos are required to comply with all applicable regulations for handling and transporting the materials.

### 5.2 Contaminated Soil

#### **5.2.1 Petroleum Contaminated Unconsolidated Materials**

Untreated petroleum-contaminated soil may be used as alternate daily cover (ADC) within the SLF or other beneficial uses (berms, roads or staging areas) if the following conditions are met:

- ◆ The volume of untreated petroleum-contaminated soil that is proposed to be used as daily cover does not exceed either the landfill's net daily cover needs or 12.5% of the annual volume of waste received by the landfill, whichever is less.
- ◆ The use of untreated petroleum-contaminated soil as daily cover will not impair operation of the landfill, cause windblown problems, ponding of storm water or other nuisance conditions.

Untreated petroleum-contaminated soil may be used in the construction of soil structures within the fill area when approved for that specific use by the WDNR.

Untreated petroleum-contaminated soil cannot be accepted for use other than as daily cover or in the construction of soil structures within the landfill unless the WDNR determines, on a case-by-case basis, that there is no practicable treatment alternative, and approves the disposal in writing.

When untreated petroleum-contaminated unconsolidated material having an average organic compound concentration exceeding 250 milligrams per kilogram (mg/kg) is received for management at the SLF, records of the following information shall be maintained:

- ◆ The volume of materials received, the average organic compound concentration, the average benzene concentration, and the location for each site from which untreated petroleum-contaminated soil is accepted.
- ◆ The accumulated total pounds of organic compounds and accumulated pounds of benzene accepted in untreated petroleum-contaminated soils.
- ◆ The tonnage records of untreated petroleum-contaminated soil accepted annually.

Petroleum-contaminated soil which has been treated such that the concentration of volatile organic compound contaminants in the soil does not exceed 250 mg/kg is not subject to the requirements above.

### **5.2.2 Other Contaminated Soils**

Other contaminated soils may be approved at the discretion of the BCPRRD for disposal, use as ADC or other beneficial uses (berms, roads or staging areas). To be considered for disposal, use as ADC or other beneficial uses the soils must be acceptable under the criteria outlined in Protocol A (Attachment A). In addition, the soils must meet following characteristics to be acceptable for use as ADC or other beneficial uses:

- ◆ For use as ADC, the soil must be suitable for placement in a thin layer to provide complete coverage over the open waste face. In addition, the material shall not be primarily comprised of silt which is highly erodible and creates dust issues.
- ◆ For use for berms, roads or staging areas, the soil must be able compacted into a firm base. Materials which are primarily silt and/or with high moisture contents or other low strength materials may be unsuitable for these uses.

- ◆ Materials which pose a potential to be hazardous if contact by landfill personnel or other equipment operators is not suitable for ADC, roadways or staging areas. These materials may be suitable in berms if covered promptly with other materials.

### 5.3 Sludge Wastes

A justification shall be indicated that no other reasonable use or disposal option exists for the sludge waste. Sludges accepted for management shall be worked into the active refuse disposal area and shall not be disposed within 10 feet of the liner or sidewalls to protect the integrity of the drainage blanket.

## **6 Unacceptable Waste Streams**

BCPRRD will not accept the following wastes for disposal at the SLF:

- ◆ Hazardous waste.
- ◆ Untreated infectious wastes.
- ◆ Waste oil or materials containing waste oil except as provided in s. NR 506.105 (Attachment C).
- ◆ Radioactive wastes.
- ◆ Wastes containing free liquids (unless specifically approved).
- ◆ Wastes that could spontaneously combust or that could ignite other wastes.
- ◆ Lead/acid batteries.
- ◆ Heavy metal-containing light bulbs, fluorescent tubes or lamp recycling wastes.
- ◆ Wastes which do not meet the acceptability criteria as described herein.
- ◆ Wastes deemed not acceptable by BCPRRD special waste ordinance.
- ◆ Wastes rejected by WDNR.
- ◆ Yard waste.
- ◆ Major appliances.
- ◆ Materials that are separated for recycling as part of an effective recycling program.

## 7 Operating Records

Records will be maintained which detail the amount and description of special waste(s) received. At a minimum, records of the generator's name, the point of generation, the method of handling, the date the waste was received, the description of the waste, and the amount of waste received will be kept at the BCPRRD.

In addition, those records specified by Sections 4.3, 5.1, and 5.2 will be maintained in accordance with NR 506.17.

The following information will be included in the SLF's consolidated annual report:

- ◆ Total tonnage and category for each type of special waste accepted for disposal.
- ◆ Computation of the quantities by volume disposed of in the landfill using assumed densities.
- ◆ Any require special reporting information for individual waste types.
- ◆ List of rejected wastes and reasons for rejection.

## 8 Plan Amendment

BCPRRD will amend this Special Waste Management Plan whenever management practices, waste acceptance procedures, or the types of waste accepted changes. When WDNR solid waste regulations change, this Plan will be amended to incorporate the rule change(s) within nine months of rule promulgation. The revised plan will be submitted to the WDNR for information but no approval will be required.

**Attachment A**  
**Analytical Protocols/Acceptance Criteria**

Brown County South Landfill  
Analytical Protocol/Acceptance Criteria  
Protocol A

(Foundry process waste; municipal, hospital and boiler ash; ink wastes; paint wastes and paint sludges; metal treatment/preparation sludges; waste glues and adhesives; ceramic production/manufacturing waste; contaminated soils; construction and demolition wastes; coal combustion residuals; abrasive blasting materials)

Analytical Parameter	Acceptance Criteria
pH	2.0 > pH < 12.5
Total solids	> 40%
Free liquids	0%
Flash point (closed cup)	> 140°F
TCLP metals <sup>(1)</sup>	
arsenic	TCLP < 5.0 mg/L
barium	TCLP < 100.0 mg/L
cadmium	TCLP < 1.0 mg/L
chromium	TCLP < 5.0 mg/L
lead	TCLP < 5.0 mg/L
mercury	TCLP < 0.2 mg/L
selenium	TCLP < 1.0 mg/L
silver	TCLP < 5.0 mg/L
copper	TBD <sup>(2)</sup>
nickel	TBD <sup>(2)</sup>
zinc	TBD <sup>(2)</sup>
Total available sulfide	< 500 mg/kg
Total available cyanide	< 250 mg/kg
TCLP organics <sup>(1)</sup>	
benzene	TCLP < 0.5 mg/L
carbon tetrachloride	TCLP < 0.5 mg/L
chlorobenzene	TCLP < 100.0 mg/L
chloroform	TCLP < 6.0 mg/L
o – cresol <sup>(3)</sup>	TCLP < 200.0 mg/L
m – cresol <sup>(3)</sup>	TCLP < 200.0 mg/L
p – cresol <sup>(3)</sup>	TCLP < 200.0 mg/L
1,4 - dichlorobenzene	TCLP < 7.5 mg/L
1,2 - dichloroethane	TCLP < 0.5 mg/L
1,1 - dichloroethane	TCLP < 0.7 mg/L
2,4 - dinitrotoluene	TCLP < 0.13 mg/L
hexachlorobenzene	TCLP < 0.13 mg/L

Protocol A (*continued*)

Analytical Parameter	Acceptance Criteria
hexachlorobutadiene	TCLP <0.5 mg/L
hexachloroethane	TCLP <3.0 mg/L
methyl ethyl ketone	TCLP <200.0 mg/L
nitrobenzene	TCLP <2.0 mg/L
pentachlorophenol	TCLP <100.0 mg/L
pyridine	TCLP <5.0 mg/L
tetrachloroethene	TCLP <0.7 mg/L
trichloroethene	TCLP <0.5 mg/L
2,4,5 - trichlorophenol	TCLP <400.0 mg/L
2,4,6 - trichlorophenol	TCLP <2.0 mg/L
vinyl chloride	TCLP <0.2 mg/L
Ammonia	TBD <sup>(2)</sup>
TKN	TBD <sup>(2)</sup>

- (1) For all constituents which are identified as TCLP extraction, it is permissible to utilize a totals analysis if <20 times the regulatory level. If the totals analysis is >20 times regulatory limit, the TCLP extraction is required.
- (2) The acceptance criteria will be determined on a case by case basis depending on the constituent levels and proposed amounts to be disposed.
- (3) If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol concentration is used. The regulatory level for total cresol is 200 mg/L.

Note: Physical testing of materials to be considered for use as ADC or other beneficial uses will be required. Testing shall include grain size (ASTM D6913), hydrometer (ASTM D7928) and moisture content (ASTM D2216).

Meeting the minimum testing requirements does not relieve the generator of the responsibility to determine whether their waste is hazardous. Brown County reserves the right to request additional information in order to evaluate the waste stream for disposal.

mg/L = milligram per liter

Brown County South Landfill  
Analytical Protocol/Acceptance Criteria  
Protocol B

(Grinding sludges/swarfs; pollution control wastes; wastes from remedial projects, investigations and spill clean ups; unknown chemical substances; auto shredder fluff)

<b>Analytical Parameter</b>	<b>Acceptance Criteria</b>
pH	2.0 > pH < 12.5
Total solids	> 40%
Free liquids	0%
Flash point (closed cup)	> 140°F
TCLP metals <sup>(1)</sup>	
arsenic	TCLP < 5.0 mg/L
barium	TCLP < 100.0 mg/L
cadmium	TCLP < 1.0 mg/L
chromium	TCLP < 5.0 mg/L
lead	TCLP < 5.0 mg/L
mercury	TCLP < 0.2 mg/L
selenium	TCLP < 1.0 mg/L
silver	TCLP < 5.0 mg/L
copper	TBD <sup>(2)</sup>
nickel	TBD <sup>(2)</sup>
zinc	TBD <sup>(2)</sup>
Total available sulfide	< 500 mg/kg
Total available cyanide	< 250 mg/kg
TCLP organics <sup>(1)</sup>	
benzene	TCLP < 0.5 mg/L
carbon tetrachloride	TCLP < 0.5 mg/L
chlorobenzene	TCLP < 100.0 mg/L
chloroform	TCLP < 6.0 mg/L
o – cresol <sup>(3)</sup>	TCLP < 200.0 mg/L
m – cresol <sup>(3)</sup>	TCLP < 200.0 mg/L
p – cresol <sup>(3)</sup>	TCLP < 200.0 mg/L
1,4 - dichlorobenzene	TCLP < 7.5 mg/L
1,2 - dichloroethane	TCLP < 0.5 mg/L
1,1 - dichloroethane	TCLP < 0.7 mg/L
2,4 - dinitrotoluene	TCLP < 0.13 mg/L

Protocol B (*continued*)

<b>Analytical Parameter</b>	<b>Acceptance Criteria</b>
hexachlorobenzene	TCLP <0.13 mg/L
hexachlorobutadiene	TCLP <0.5 mg/L
hexachloroethane	TCLP <3.0 mg/L
methyl ethyl ketone	TCLP <200.0 mg/L
nitrobenzene	TCLP <2.0 mg/L
pentachlorophenol	TCLP <100.0 mg/L
pyridine	TCLP <5.0 mg/L
tetrachloroethene	TCLP <0.7 mg/L
trichloroethene	TCLP <0.5 mg/L
2,4,5 - trichlorophenol	TCLP <400.0 mg/L
2,4,6 - trichlorophenol	TCLP <2.0 mg/L
vinyl chloride	TCLP <0.2 mg/L
PCB (Arochlor 1216, 1221, 1232, 1242, 1249, 1254, 1260)	<50 ppm
Ammonia	TBD <sup>(2)</sup>
TKN	TBD <sup>(2)</sup>

<sup>(1)</sup> For all constituents which are identified as TCLP extraction, it is permissible to utilize a totals analysis if <20 times the regulatory level. If the totals analysis is >20 times regulatory limit, the TCLP extraction is required.

<sup>(2)</sup> The acceptance criteria will be determined on a case by case basis depending on the constituent levels and proposed amounts to be disposed.

<sup>(3)</sup> If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol concentration is used. The regulatory level for total cresol is 200 mg/L.

Note: Physical testing of materials to be considered for use as ADC or other beneficial uses will be required. Testing shall include grain size (ASTM D6913), hydrometer (ASTM D7928) and moisture content (ASTM D2216).

Meeting the minimum testing requirements does not relieve the generator of the responsibility to determine whether their waste is hazardous. Brown County reserves the right to request additional information in order to evaluate the waste stream for disposal.

Brown County South Landfill  
Analytical Protocol/Acceptance Criteria  
Protocol C

(Paper mill sludge wastes; other sludge wastes)

<b>Analytical Parameter</b>	<b>Acceptance Criteria</b>
pH	2.0 > pH < 12.5
Total solids	> 20%
Free liquids	0%
Flash point (closed cup)	> 140°F
TCLP metals <sup>(1)</sup>	
arsenic	TCLP < 5.0 mg/L
barium	TCLP < 100.0 mg/L
cadmium	TCLP < 1.0 mg/L
chromium	TCLP < 5.0 mg/L
lead	TCLP < 5.0 mg/L
mercury	TCLP < 0.2 mg/L
selenium	TCLP < 1.0 mg/L
silver	TCLP < 5.0 mg/L
copper	TBD <sup>(2)</sup>
nickel	TBD <sup>(2)</sup>
zinc	TBD <sup>(2)</sup>
Total available sulfide	< 500 mg/kg
Total available cyanide	< 250 mg/kg
TCLP organics <sup>(1)</sup>	
benzene	TCLP < 0.5 mg/L
carbon tetrachloride	TCLP < 0.5 mg/L
chlorobenzene	TCLP < 100.0 mg/L
chloroform	TCLP < 6.0 mg/L
o – cresol <sup>(3)</sup>	TCLP < 200.0 mg/L
m – cresol <sup>(3)</sup>	TCLP < 200.0 mg/L
p – cresol <sup>(3)</sup>	TCLP < 200.0 mg/L
1,4 - dichlorobenzene	TCLP < 7.5 mg/L
1,2 - dichloroethane	TCLP < 0.5 mg/L
1,1 - dichloroethane	TCLP < 0.7 mg/L
2,4 - dinitrotoluene	TCLP < 0.13 mg/L

Protocol C (*continued*)

<b>Analytical Parameter</b>	<b>Acceptance Criteria</b>
hexachlorobenzene	TCLP <0.13 mg/L
hexachlorobutadiene	TCLP <0.5 mg/L
hexachloroethane	TCLP <3.0 mg/L
methyl ethyl ketone	TCLP <200.0 mg/L
nitrobenzene	TCLP <2.0 mg/L
pentachlorophenol	TCLP <100.0 mg/L
pyridine	TCLP <5.0 mg/L
tetrachloroethene	TCLP <0.7 mg/L
trichloroethene	TCLP <0.5 mg/L
2,4,5 - trichlorophenol	TCLP <400.0 mg/L
2,4,6 - trichlorophenol	TCLP <2.0 mg/L
vinyl chloride	TCLP <0.2 mg/L
PCB (Arochlor 1216, 1221, 1232, 1242, 1249, 1254, 1260)	<50 ppm
Ammonia	TBD <sup>(2)</sup>
TKN	TBD <sup>(2)</sup>

<sup>(1)</sup> For all constituents which are identified as TCLP extraction, it is permissible to utilize a totals analysis if <20 times the regulatory level. If the totals analysis is >20 times regulatory limit, the TCLP extraction is required.

<sup>(2)</sup> The acceptance criteria will be determined on a case-by-case basis depending on the constituent levels and proposed amounts to be disposed.

<sup>(3)</sup> If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol concentration is used. The regulatory level for total cresol is 200 mg/L.

Note: Physical testing of materials to be considered for use as ADC or other beneficial uses will be required. Testing shall include grain size (ASTM D6913), hydrometer (ASTM D7928) and moisture content (ASTM D2216).

Meeting the minimum testing requirements does not relieve the generator of the responsibility to determine whether their waste is hazardous. Brown County reserves the right to request additional information in order to evaluate the waste stream for disposal.

Brown County South Landfill  
Analytical Protocol/Acceptance Criteria  
Protocol D

(Contaminated soils from petroleum-related products for co-disposal.)

<b>Analytical Parameter</b>	<b>Acceptance Criteria</b>
All petroleum-contaminated soils	
Lead, leachable <sup>(1)</sup>	TCLP <5.0 mg/L
Gasoline; grades 80, 100, 100LC, and aviation fuel	
Gasoline range organics	<2000 ppm
Benzene, leachable <sup>(2)</sup>	TCLP <0.5 mg/L
Diesel; jet fuel; Nos. 1, 2, and 4 fuel oil	
Diesel range organics	<2000 ppm
Benzene, leachable <sup>(2)</sup>	TCLP <0.5 mg/L
Crude oil; lube oil; No. 6 fuel oil	
Diesel range organics	<2000 ppm
Unknown petroleum	
Gasoline range organics	<2000 ppm
Diesel range organics	<2000 ppm
Cadmium, leachable <sup>(3)</sup>	TCLP <1.0 mg/L
Waste oil	
Gasoline range organics	<2000 ppm
Diesel range organics	<2000 ppm
Cadmium, leachable	TCLP <1.0 mg/L

<sup>(1)</sup> Total lead may be run first, and if the total is less than 100 mg/kg, TCLP for lead is not required.

<sup>(2)</sup> Leachable benzene shall be done if total benzene exceeds 10 mg/kg (20 times the hazardous waste limit).

<sup>(3)</sup> Total cadmium may be run first, and if the total is less than 20 mg/kg, TCLP for cadmium is not required.

Notes: Physical testing of materials to be considered for use as ADC or other beneficial uses will be require. Testing shall include grain size (ASTM D6913), hydrometer (ASTM D7928) and moisture content (ASTM D2216).

Meeting the minimum testing requirements does not relieve the generator of the responsibility to determine whether their waste is hazardous. Brown County reserves the right to request additional information in order to evaluate the waste stream for disposal.

## Brown County South Landfill

### Analytical Protocol/Acceptance Criteria Protocol E

Publicly Owned Treatment Works wastes:

<b>Analytical Parameter</b>	<b>Acceptance Criteria</b>
pH	2.0 > pH < 12.5
Total solids	> 20%
Free liquids	0%
TCLP metals <sup>(1)</sup>	
arsenic	TCLP < 5.0 mg/L
barium	TCLP < 100.0 mg/L
cadmium	TCLP < 1.0 mg/L
chromium	TCLP < 5.0 mg/L
lead	TCLP < 5.0 mg/L
mercury	TCLP < 0.2 mg/L
selenium	TCLP < 1.0 mg/L
silver	TCLP < 5.0 mg/L
copper	TBD <sup>(2)</sup>
nickel	TBD <sup>(2)</sup>
zinc	TBD <sup>(2)</sup>
Total available sulfide	< 500 mg/kg
Ammonia	TBD <sup>(2)</sup>
TKN	TBD <sup>(2)</sup>

<sup>(1)</sup> For all constituents which are identified as TCLP extraction, it is permissible to do a totals analysis if < 20 times the regulatory level. If the totals analysis is > 20 times regulatory limit, the TCLP extraction is required.

<sup>(2)</sup> The acceptance criteria will be determined on a case by case basis depending on the constituent levels and proposed amounts to be disposed.

Note: Physical testing of materials to be considered for use as ADC or other beneficial uses will be required. Testing shall include grain size (ASTM D6913), hydrometer (ASTM D7928) and moisture content (ASTM D2216).

Meeting the minimum testing requirements does not relieve the generator of the responsibility to determine whether their waste is hazardous. Brown County reserves the right to request additional information in order to evaluate the waste stream for disposal.

# Brown County South Landfill

## Protocol F

(Commercial products or chemicals which are off-specification; outdated; unused or are banned; empty containers which formerly contained commercial products or chemicals; equipment removed from service.)

Pertinent information regarding these waste streams must be provided (as an attachment to the application) by the waste generator. This information can be one or more of the following:

- ◆ SDSs
- ◆ Technical product information
- ◆ Process information
- ◆ Operator information/knowledge
- ◆ Laboratory analysis report

Note: Meeting the minimum testing requirements does not relieve the generator of the responsibility to determine whether their waste is hazardous. Brown County reserves the right to request additional information in order to evaluate the waste stream for disposal.

**Attachment B**  
**Application for Special Waste Disposal at the**  
**Brown County South Landfill**

Brown County  
Port & Resource Recovery  
2561 S Broadway  
Green Bay, WI 54304  
(920) 492-4950

**Brown County South Landfill**  
**Application for Special Waste**  
**Disposal**

Application Number  
\_\_\_\_\_

**A. Generator Information**

Firm Name \_\_\_\_\_  
Contact Person \_\_\_\_\_  
Phone Number \_\_\_\_\_  
Site Address (where material is generated)  
\_\_\_\_\_  
\_\_\_\_\_

**B. Billing Information**

Firm Name \_\_\_\_\_  
Address \_\_\_\_\_  
\_\_\_\_\_  
City, State, Zip \_\_\_\_\_  
Phone \_\_\_\_\_  
Contact Person \_\_\_\_\_

**C. Consultant Information**

Firm Name \_\_\_\_\_  
Firm Address \_\_\_\_\_  
\_\_\_\_\_  
Contact Person \_\_\_\_\_  
Phone Number \_\_\_\_\_  
FAX Number \_\_\_\_\_

**D. Hauler Information**

Firm Name \_\_\_\_\_  
Firm Address \_\_\_\_\_  
\_\_\_\_\_  
Contact Person \_\_\_\_\_  
Phone Number \_\_\_\_\_  
FAX Number \_\_\_\_\_  
Hauler ID \_\_\_\_\_

**E. Waste Information**

Waste Name \_\_\_\_\_  
Process Generating Waste \_\_\_\_\_  
Waste Category Number \_\_\_\_\_  
Anticipated Waste Volume (include units) \_\_\_\_\_  
Frequency of Disposal \_\_\_\_\_  
Name of Lab Performing Analysis \_\_\_\_\_  
Date of Most Recent Analysis \_\_\_\_\_  
Physical State @ 25°C \_\_\_\_\_  
Color \_\_\_\_\_ Odor \_\_\_\_\_  
Comments \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\*For all waste types, attach available pertinent documents, SDSs, technical bulletins, etc. List attachments here:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**F. Generator Warranty**

The generator warrants, represents, and certifies that this waste is not hazardous waste as specified by NR 600 or 40CFR261, that his material does not contain more than 50 ppm of PCB materials, and that this information is representative of the waste.

\_\_\_\_\_  
Generator's Signature

\_\_\_\_\_  
Title

**Instructions**

For Category A, B, and, C Wastes: Complete Section I

For Category D Wastes: Complete Section II

For Category E Wastes: Complete Section III

For Category F Wastes: See Section IV

## Section I

For Category A, B, and C Wastes, complete the following and attach laboratory report:

### Analytical Information

Parameter	Acceptance Level (mg/L)	Lab Result
% Solids	≥ 40% (A&B) ≥ 20% (C)	_____
% Free Liquids (paint filter test)	0%	_____
Flash Point	> 140°F	_____
pH	2 ≤ pH ≤ 12.5	_____
Total available sulfide	<500 mg/kg	_____
Total available cyanide	<250 mg/kg	_____
Arsenic	< 5.0	_____
Barium	< 100.0	_____
Cadmium	< 1.0	_____
Chromium	< 5.0	_____
Lead	< 5.0	_____
Mercury	< 0.2	_____
Selenium	< 1.0	_____
Silver	< 5.0	_____
Copper	See note	_____
Nickel	See note	_____
Zinc	See note	_____
Ammonia	See note	_____
TKN	See note	_____
Benzene	< 0.5	_____
Carbon tetrachloride	< 0.5	_____
Chlorobenzene	< 100.0	_____
Chloroform	< 6.0	_____
Cresol	< 200.0	_____
1,4-Dichlorobenzene	< 7.5	_____
1,2-Dichloroethane	< 0.5	_____
1,1-Dichloroethylene	< 0.7	_____
2,4-Dinitrotoluene	< 0.3	_____
Hexachlorobenzene	< 0.13	_____
Hexachlorobutadiene	< 0.5	_____
Hexachloroethane	< 3.0	_____
Methyl ethyl ketone	< 200.0	_____
Nitrobenzene	< 2.0	_____
Pentachlorophenol	< 100.0	_____
Pyridine	< 5.0	_____
Tetrachloroethylene	< 0.7	_____
Trichloroethylene	< 0.5	_____
2,4,5-Trichlorophenol	< 400.0	_____
2,4,6-Trichlorophenol	< 2.0	_____
Vinyl Chloride	< 0.2	_____

For Category B and C Wastes, complete the following and attach laboratory report:

PCB (Arochlor 1216, 1221, 1232, 1242, 1249, 1254, 1260)

## Section II

For Category D Wastes, complete the following and attach laboratory report:

### Analytical Information

Parameter	Acceptance Level	Lab Result
<b>a. All Soils</b>		
Lead	Total <100 mg/kg or TCLP <5 mg/L	_____
<b>b. Gasoline or Diesel</b> (analyze all parameters in a., plus the following):		
DRO	<2000 ppm	_____
or GRO	<2000 ppm	_____
Benzene	Total <10 mg/kg Or TCLP <0.5 mg/L	_____
<b>c. Waste Oil or Unknown Petroleum Waste</b> (analyze all parameters in a., plus the following):		
DRO	<2000 ppm	_____
or GRO	<2000 ppm	_____
Cadmium	Total <20 mg/kg Or TCLP <1 mg/L	_____

## Section III

For Category E Wastes, complete the following and attach laboratory report:

### Analytical Information

Parameter	Acceptance Level (mg/L)	Lab Result
pH	2 ≤ pH ≤ 12.5	_____
% Solids	≥ 20%	_____
% Free liquids	0%	_____
TCLP metals		
Arsenic	< 5.0	_____
Barium	< 100.0	_____
Cadmium	< 1.0	_____
Chromium	< 5.0	_____
Lead	< 5.0	_____
Mercury	< 0.2	_____
Selenium	< 1.0	_____
Silver	See note	_____
Copper	See note	_____
Nickel	See note	_____
Zinc	See note	_____
Ammonia	See note	_____
TKN	See note	_____
Total available sulfide	< 500 mg/kg	_____

## **Section IV**

For Category F Wastes, include the following information and attach SDS(s), technical bulletin(s), or other pertinent information regarding the waste stream. Indicate the waste type, the source of the waste stream, the reason for disposal, the physical state of the material, and describe the process from which the waste was generated.

Note: The acceptance criteria will be determined on a case-by-case basis depending on the constituent levels and proposed amounts to be disposed.

**Attachment C**  
**Wisconsin Administrative Code**  
**NR 506 Landfill Operational Criteria**

## Chapter NR 506

## LANDFILL OPERATIONAL CRITERIA

NR 506.01	Purpose.	NR 506.105	Untreated contaminated unconsolidated material.
NR 506.02	Applicability.	NR 506.11	Infectious waste.
NR 506.03	Definitions.	NR 506.12	Ultra low-level radioactive waste.
NR 506.04	Open burning.	NR 506.13	Free liquids wastes.
NR 506.05	Daily cover requirements.	NR 506.135	Leachate recirculation.
NR 506.055	Alternate daily cover.	NR 506.14	Non-free liquid solid wastes.
NR 506.06	Intermediate cover.	NR 506.15	Management of residue produced by burning municipal solid waste.
NR 506.07	Operational requirements for landfills.	NR 506.155	Very small quantities of hazardous waste.
NR 506.08	Closure requirements.	NR 506.16	Procedures for excluding the receipt of waste not specifically approved for acceptance at the landfill.
NR 506.085	Final use.	NR 506.17	Record keeping.
NR 506.09	Waste characterization.	NR 506.18	Enforcement.
NR 506.095	Prohibited items.	NR 506.19	Landfill compliance certifications and audits.
NR 506.10	Asbestos.		

**Note:** Corrections made under s. 13.93 (2m) (b) 7., Stats., Register, August, 1997, No. 500.

**NR 506.01 Purpose.** The purpose of this chapter is to help ensure that efficient, nuisance-free and environmentally acceptable solid waste management procedures are practiced in Wisconsin and to outline the requirements regarding operational criteria for solid waste landfills and surface impoundments. This chapter is adopted under ch. 289, Stats., and s. 227.11, Stats.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88.

**NR 506.02 Applicability. (1)** Except as otherwise provided, this chapter governs all solid waste disposal facilities as defined in s. 289.01 (35), Stats., except hazardous waste facilities as defined in s. 291.01 (8), Stats., and regulated under chs. NR 660 to 679; metallic mining operations for nonferrous minerals as defined in s. 293.01 (9), Stats., and regulated under ch. NR 182; and metallic mining operations for ferrous minerals as defined in s. 295.41 (26), Stats., including mining wastes and mining waste sites as defined in s. 295.41 (30) and (31), Stats., and regulated under subch. III of ch. 295, Stats.

**(2)** This chapter does not apply to the design, construction or operation of industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 281.41, Stats., or permitted under ch. 283, Stats., nor to facilities used solely for the disposal of liquid municipal or industrial wastewater facilities, sewerage systems and waterworks treating liquid wastes approved under s. 281.41, Stats., or permitted under ch. 283, Stats., except for facilities used for the disposal of solid waste.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; correction in (1) made under s. 13.93 (2m) (b) 7., Stats., Register, May, 1992, No. 437; am. (1), Register, June, 1996, No. 486, eff. 7-1-96; correction in (1) made under s. 13.93 (2m) (b) 7., Stats., Register December 2006 No. 612; CR 13-057; am. (1) Register July 2015 No. 715, eff. 8-1-15.

**NR 506.03 Definitions.** The terms in this chapter are defined in s. NR 500.03.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88.

**NR 506.04 Open burning.** The department may approve burning of brush, grubbed material and other similar material in accordance with air management, solid waste management and all other applicable regulations.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; r. and rec., Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.05 Daily cover requirements. (1)** MUNICIPAL SOLID WASTE. All solid waste disposed in a municipal solid waste landfill shall be compacted and completely covered at the end of each operating day with a compacted layer of at least 6 inches of soil. Alternate daily cover materials may be approved or mandated by the department as required in s. NR 506.055. If clay soil

is used for daily cover purposes, it shall be scarified or removed prior to placement of the next lift of solid waste.

**(2) INDUSTRIAL AND COMMERCIAL WASTE.** Unless otherwise specified by the department, high volume industrial waste is not subject to daily cover requirements, unless disposed of in a municipal solid waste landfill. All other industrial waste and commercial waste shall be compacted and completely covered at the end of each operating day with a compacted layer of at least 6 inches of soil or other material approved in writing by the department. The department may grant an exemption in writing for less frequent covering. In granting such exemptions, the department shall consider the characteristics of the solid waste, the leaching potential of the solid waste and the potential for nuisance conditions if other than daily covering is utilized.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; r. and rec. (1), am. (2), Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.055 Alternate daily cover. (1)** FACILITIES SEEKING APPROVAL. An owner or operator of a solid waste landfill seeking approval from the department to use an alternate daily cover material shall submit the following information:

(a) Type of material to be used, including its chemical and physical properties as required in s. NR 506.09. A discussion of the material's successful use at other solid waste landfills in controlling vectors, windblown material and odors may be required.

(b) Method and rate of application.

(c) Conditions when alternate daily cover cannot be used, including but not limited to weather conditions, equipment breakdown, ability to obtain a sufficient quantity of alternate daily cover, maximum time alternate daily cover can be exposed, and a discussion of back-up cover materials for use when alternate cover cannot be used.

(d) Discussion of how the alternate cover material will be stored on-site prior to its use, including measures to be taken to prevent transportation of contaminants to groundwater and surface water, and prevention of windblown nuisances.

**(2) MANDATED USE OF ALTERNATE DAILY COVER.** Upon request from a person operating a foundry or a scrap dealer in the state of Wisconsin, the department shall require that a person operating a municipal solid waste landfill accept and use the requested foundry sand or shredder fluff for cover at part or all of the landfill for the period specified in the request if all of the following conditions are met:

(a) The foundry operator or scrap dealer agrees to transport the foundry sand or shredder fluff to the landfill either daily or on another schedule acceptable to the municipal solid waste landfill operator.

(b) The department approves the use of the foundry sand or shredder fluff for cover at the landfill.

(c) The landfill operator is not contractually bound to obtain cover from another source.

(d) The amount of cover to be provided by the requesting foundry operator or scrap dealer does not exceed the amount of cover required under the plan of operation for the landfill less any cover provided by another foundry operator or scrap dealer.

**(3) GENERAL APPROVAL FOR THE USE OF ALTERNATE DAILY COVER.** The department may issue general approvals for use of specific alternate daily cover materials which have been demonstrated to control disease vectors, fires, odors, blowing litter and scavenging without presenting a threat to human health and the environment.

**History:** Cr. Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.06 Intermediate cover.** Unless otherwise approved by the department in writing, any portion of a landfill which has been used for solid waste disposal but will not receive additional solid waste for a period exceeding 6 months shall be covered with one foot of fine grained intermediate cover or other material approved by the department. A specific soil type may be specified by the department for this one foot layer. The intermediate cover shall be compacted and adequately sloped to allow storm water runoff. The slopes shall be no less than 5% and no greater than 33%. The department may require that intermediate slopes be vegetated depending on the length of time they will remain open. This section does not apply to high volume industrial waste nor does it apply to wood residue approved as a construction material or to provide protection of the liner from frost under s. NR 506.07 (3) (b), unless specifically required by the department.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; am., Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.07 Operational requirements for landfills.** No person may operate or maintain a new or existing landfill except in conformance with any approved plan of operation and the following minimum requirements:

**(1) GENERAL.** (a) Daily disposal of solid waste shall be confined to as small an area as practical.

(b) Provisions shall be made to confine windblown material within the active disposal area.

(c) At the conclusion of each day of operation, all windblown material shall be collected and properly disposed of in the active area in accordance with the provisions of this section unless the operator establishes, to the satisfaction of the department, that all windblown material cannot be collected using reasonable efforts because of conditions beyond the control of the operator, and windblown material which can be collected using a reasonable effort has been collected and properly disposed and nuisance conditions do not exist.

(d) Putrescible materials such as spoiled foods and animal carcasses shall be immediately compacted and covered.

(e) Access to the landfill shall be restricted through the use of fencing, natural barriers or other methods approved in writing by the department.

(f) Effective means shall be taken to limit access to the active disposal area to minimize exposure of the public to hazards.

(g) Effective means shall be taken to control birds, flies, rodents, deer and other animals.

(h) Equipment shall be provided to control accidental fires and arrangements shall be made with the local fire protection agency to acquire its services when needed.

(i) As required in s. NR 524.05, a trained operator or certified facility manager shall be present at the landfill during all hours of operation, and a list of names of trained operators and certified facility managers shall be maintained at the landfill.

(j) A gate shall be provided at the entrance to the operation and it shall be kept locked when an attendant is not on duty.

(k) The gate area shall be policed at the beginning of each day of operation to remove any solid waste which has been indiscriminately dumped during periods when the landfill was closed.

(L) A sign, acceptable to the department, shall be posted at the entrance of any landfill operated for public use which indicates the landfill name, license number, the hours of operation, waste types accepted, penalty for unauthorized use, necessary safety precautions and any other pertinent information.

(m) The landfill shall be surrounded with rapidly growing trees, shrubbery, fencing, berms or other appropriate means to screen it from the surrounding area and to provide a wind break.

(n) Fugitive dust shall be controlled in accordance with s. NR 415.04 from all areas of the landfill.

(o) Scavenging within the active disposal area is prohibited.

(p) Provisions shall be made for back-up equipment in the event of operating equipment breakdown.

(q) A minimum separation distance of 20 feet shall be maintained between the limits of filling and adjacent property or the perimeter of the licensed acreage, whichever is closer at nonapproved facilities as defined in s. 289.01 (24), Stats. At all other facilities, a minimum separation distance of 100 feet shall be maintained between the limits of solid waste filling and the property boundary or the perimeter of the licensed acreage, whichever is closer. The department may require additional separation distance if necessary to provide for vehicle access, drainage, monitoring, gas migration control, separation to adjacent homes or other landfill development factors.

(r) All topsoil within the landfill construction limits shall be salvaged and stored within the property boundaries for use in landfill closure. All stockpiled soil material which is not anticipated to be used within 6 months shall be seeded.

(s) All access roads to the active area of the operation shall be of all-weather construction and shall be maintained in good condition.

(t) All access roads for the use of solid waste hauling trucks shall be constructed with a maximum grade no greater than 10%. The intersection of the access road with an existing highway shall be constructed to provide sufficient sight distance and minimize interference with traffic on existing highways.

**(2) SEDIMENTATION AND EROSION CONTROL.** (a) All areas of the landfill property, including areas of temporary disturbance, with the potential for off-site migration of sediment shall be designed, constructed and maintained in accordance with the applicable requirements of s. NR 504.09 (1), and technical standards developed under subch. V of ch. NR 151, which include the following:

1. Storm water shall be diverted away from the working area and areas already filled with solid waste.

2. Storm water from upslope areas shall be diverted around disturbed areas to minimize erosion, entrained sediment and the amount of water contacting the disturbed area.

3. The size and duration of disturbances shall be minimized, to the extent practicable, to minimize off-site sediment migration.

4. While the site is disturbed, temporary measures shall be used to trap sediment and off-site sediment migration. This could include gravel breaks or the equivalent to minimize the transport of sediments offsite.

5. Runoff channels shall be protected to prevent scour and erosion that generates sediment.

**Note:** The technical standards developed by the Wisconsin department of natural resources, runoff management program are available at [http://dnr.wi.gov/topic/stormwater/construction/erosion\\_control.html#7](http://dnr.wi.gov/topic/stormwater/construction/erosion_control.html#7) or can be obtained from the department of natural resources, bureau of waste management, 101 S. Webster Street, P.O. Box 7921, Madison, WI 53707-7921, (608) 266-2111, [waste.management@dnr.state.wi.us](mailto:waste.management@dnr.state.wi.us). Copies are also available for inspection at the offices of the legislative reference bureau and the secretary of state.

(b) Storm water drainage ditches, structures and sedimentation basins shall be cleaned and maintained such that they properly control storm water and limit entrained sediment in accordance

with approved engineering designs. The department may waive this requirement on a case by case basis for existing facilities.

(c) All areas of the landfill which will not contain solid waste and are planned for vegetative cover shall be topsoiled, seeded and mulched as soon as practical, but no later than 90 days after completion of construction or by October 15, whichever is earlier and, if construction is completed after September 15, no later than June 15 of the following year. This includes, but is not limited to, the landfill entrance, drainage ditches and surrounding areas. Erosion control measures shall be placed within 30 days after completion of construction. The seed type and amount of fertilizer applied shall be selected according to: the type and quality of topsoil, its compatibility with native vegetation and the final use. Unless otherwise approved by the department in writing, seed mixtures and applications rates shall be in accordance with section 630, Wisconsin department of transportation standard specifications for road and bridge construction.

**Note:** Copies of Wisconsin department of transportation standard specifications for road and bridge construction can be obtained from the department of natural resources, bureau of waste management, 101 S. Webster street, Madison, Wisconsin 53707. Copies are also available for inspection at the offices of the legislative reference bureau and the secretary of state.

**(3) WASTE PLACEMENT.** (a) Disposal of solid waste shall begin at the edge of each phase. Waste shall be pushed out over the granular blanket. Vehicles may not be driven directly on the granular blanket. Alternative operating procedures may be approved by the department if the consistency of the solid waste prevents vehicular access over a filled area.

(b) Except for portions of the sideslope greater than 10 feet above the base liner, a layer of solid waste at least 4 feet thick or an adequate amount of other frost protection material shall be placed over the granular blanket in all portions of the lined area prior to December 1st of the year following the year the clay portion of the liner was constructed. After this date, solid waste may not be placed on any portion of the base liner or lower 10 feet of the sideslope not covered with a 4-foot thick layer of solid waste or other adequate frost protection material. Those portions of the base liner or lower 10 feet of sideslope not covered with a 4-foot thick layer of solid waste or other frost protection material by this date shall be investigated for density and effects from freeze-thaw as specified by the department and shall be repaired and recertified during the next construction season if required, prior to waste placement. The requirements of this paragraph may be waived by the department.

(c) To provide for maximum compaction after the initial 4-foot lift of waste is placed, each single layer of municipal solid waste shall be spread and compacted in 2-foot layers.

**(4) GAS CONTROL.** Effective means shall be utilized to prevent the migration of explosive gases generated by the waste fill. At no time shall the concentration of explosive gases in any landfill structure, excluding the leachate collection system or gas control and recovery system components exceed 25% of the lower explosive limit for such gases. At no time shall the concentration of explosive gases in the soils outside of the limits of filling or air within 200 feet of or beyond the landfill property boundary exceed the lower explosive limit for such gases. The department may require the concentration of explosive gases not exceed detectable levels for that gas at the landfill property boundary.

**(5) LEACHATE COLLECTION SYSTEMS.** (a) Leachate shall be removed from all collection tanks, manholes, lift stations, sumps or other structures used for leachate storage as often as necessary to allow for gravity drainage of leachate from the facility at all times or as it is produced, including hours when the landfill is closed, such as overnight and weekends. Unless the facility has received approval from the department to recirculate leachate or gas condensate derived from the landfill as provided in s. NR 506.13 (2), all leachate removed from a leachate collection system shall be disposed of at a wastewater treatment facility approved by the department and capable of accepting the leachate in accord-

ance with the requirements of its WPDES permit. The landfill owner or operator shall immediately notify the department of any change in the availability of the designated wastewater treatment facility to accept or dispose of the leachate removed from the landfill. Waste may not be accepted at the landfill unless leachate is being managed in accordance with landfill's approved plan of operation and the requirements of this section.

(b) Any liquid which comes in contact with waste or accumulates in a portion of the landfill where active waste disposal operations are occurring shall be handled as leachate and properly treated as specified in par. (a) unless otherwise approved by the department in writing.

(c) All leachate collection lines shall be cleaned with a water jet cleanout device with a maximum pressure of 10,000 pounds per square inch immediately after construction, and annually thereafter.

(d) All leachate collection lines shall be cleaned with water jet cleanout devices initially after placement of the leachate drain layer using pipe cleaning procedures that insert cleanout devices from each access point to, at a minimum, the toe of the opposite sideslope.

(e) A video camera inspection shall be conducted on all leachate collection pipes after the initial pipe cleaning activities required in par. (d) and at 5 year intervals, following the annual pipe cleaning required in par. (c). The video camera inspection shall extend a minimum of 300 feet unto the base grades of each leachate collection line.

(f) All blockages of leachate collection pipes, pipe breaks or any impedances to passage of pipe cleaning equipment shall be investigated, defined and a remediation proposed for review and approval by the department.

(g) A summary report shall be submitted after each pipe cleaning and each video camera inspection event. The report shall summarize any specialty equipment or chemicals used in collection pipe cleaning. The report shall include a description of all observations, including recording tape or disk of the video camera inspection. The report shall summarize the investigation of blockages or other difficulties in cleaning pipes. The report shall propose remediation if the leachate collection pipes are not restored to function and blockages are not cleared.

(h) A summary report shall be submitted after the removal of dams or barriers used to separate clean water in a prepared cell from solid waste and leachate. The report shall document the removal of the separation features and the connection of any separated pipe lengths.

**(7) PHASED CLOSURE.** For all landfills that do not have a department-approved plan for phased development and closure, by October 15th of each year, any areas that are at final grades shall be capped, topsoiled and seeded unless otherwise approved by the department.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; am. (intro.), (1) (a), (c), r. (1) (d), (j), (o), renum. (1) (e) to (u) to be (1) (d) to (h), (j) to (m), (o) to (t), (2) to (6) to be (3) to (7) and am. (1) (e), (g), (k), (L), (m), (q), (r) and (t), (3) to (7), cr. (1) (i), (2), Register, June, 1996, No. 486, eff. 7-1-96; correction in (1) (q) made under s. 13.93 (2m) (b) 7., Stats., Register March 2003 No. 567; CR 04-077: cr. (5) (d) to (h) Register November 2005 No. 599, eff. 12-1-05; CR 05-020: am. (2) (a) (intro.), r. (6) Register January 2006 No. 601, eff. 2-1-06.

**NR 506.08 Closure requirements.** Any person who maintains or operates a landfill, or who permits use of property for such purpose shall, when the fill area or portion thereof reaches final grade, or when the department determines that closure is required, cease to accept solid waste and close the landfill or portion thereof in accordance with the plan approval issued by the department and the following minimum practices unless otherwise approved by the department in writing:

**(1) NOTIFICATION PROCEDURES.** (a) At least 120 days prior to closing the landfill, the owner or operator shall notify the department in writing of the intent to close the landfill and the expected date of closure. Prior to this date, the owner or operator shall

notify all users of the landfill of the intent to close the landfill so that alternative disposal options can be arranged.

(b) Signs shall be posted at all points of access to the landfill at least 30 days prior to closure indicating the date of closure and alternative disposal facilities. Facilities which are operated by and serve only a single waste generator and are not open to the public are exempt from this provision.

(c) Notice of the upcoming closure shall be published in a local newspaper at least 30 days prior to closure and a copy of the notice shall be provided to the department within 10 days of the date of publication. Facilities which are operated by and serve only a single waste generator and are not open to the public are exempt from this provision.

**(2) GENERAL REQUIREMENTS.** Within 10 days after ceasing to accept solid waste, the owner or operator shall restrict access by the use of gates, fencing or other appropriate means to insure against further use of the landfill. If the final use allows access, such access shall be restricted until closure has been completed and approved by the department.

**(3) CLOSURE.** Closure activities shall begin within 30 days after ceasing to accept solid waste. Closure shall be accomplished in the following manner for facilities without a closure plan or plan of operation approved in writing by the department. Placement of final cover in accordance with s. NR 504.07 may be required if the department determines that this type of final cover system is necessary to prevent or abate attainment or exceedance of the groundwater standards contained in ch. NR 140. Municipal solid waste landfills that accepted greater than 100 tons of solid waste per day on an annual basis and ceased accepting municipal solid waste on or before October 8, 1993 shall have final cover placement completed by July 1, 1996. Municipal solid waste landfills that accepted 100 tons or less of solid waste per day on an annual basis and ceased accepting municipal solid waste on or before April 8, 1994 shall have final cover placement completed by July 1, 1996.

(a) The entire area previously used for disposal purposes shall be covered with at least 2 feet of compacted earth having a hydraulic conductivity of no more than  $1 \times 10^{-5}$  cm/sec or if the hydraulic conductivity of the underlying soils or any base liner system is less than  $1 \times 10^{-5}$  cm/sec, then the 2 feet of compacted earth shall have a hydraulic conductivity that is equal to or less than the underlying soils or any base liner system. The final grades shall be sloped adequately to allow storm water runoff. A specific soil type may be required by the department for this 2-foot layer. The department may require the cover layer to be more than 2 feet thick.

(b) Storm water run-on shall be diverted around all areas used for solid waste disposal to limit the potential for erosion of the cover soils and increased infiltration. Drainage swales conveying storm water runoff over previous solid waste disposal areas shall be lined with a minimum thickness of 2 feet of clay.

(c) The final slopes of the landfill shall be greater than 5%, but may not exceed 4 horizontal to one vertical unless otherwise approved by the department.

(d) The finished surface of the disposal area shall be covered with a minimum of 6 inches of topsoil.

**(4) ESTABLISHMENT OF VEGETATION.** Within 180 days after ceasing to accept solid waste, or if solid waste termination is after September 15, by June 15 of the following year, the owner or operator shall complete seeding, fertilizing and mulching of the finished surface. The seed type and amount of fertilizer applied shall be selected depending on the type and quality of topsoil and compatibility with both native vegetation and the final use. Unless otherwise approved by the department in writing, seed mixtures and sowing rates shall be those specified for right-of-ways in accordance with section 630, Wisconsin department of transportation standard specifications for highway and structure construction.

**Note:** The Wisconsin department of transportation standard specifications for highway and structure construction is available at <http://www.dot.wisconsin.gov/business/engrserv/procedures.htm> or can be obtained from the department of natural resources, bureau of waste management, 101 S. Webster Street, P.O. Box 7921, Madison, WI 53707-7921, (608) 266-2111, [waste.management@dnr.state.wi.us](mailto:waste.management@dnr.state.wi.us). Copies are also available for inspection at the offices of the legislative reference bureau and the secretary of state.

**(5) DEED NOTATION.** Following closure of a landfill phase which accepted municipal solid waste after July 1, 1996, the owner or operator shall, within 90 days after closure, record a notation on the deed to the landfill property. The notation in the deed shall in perpetuity notify any potential purchaser of the property that the land has been used as a landfill and its use is restricted to prevent disturbing the integrity of the final cover, liner or any other components of the containment system or the function of the monitoring systems.

**(6) HAZARDOUS AIR CONTAMINANT CONTROL.** All landfills which have a design capacity of greater than 500,000 cubic yards and have accepted municipal solid waste shall install a department approved system to efficiently collect and combust hazardous air contaminants emitted by the landfill within 18 months of February 1, 1988 unless the owner can demonstrate that the performance criteria of s. NR 504.04 (4) (f) can be achieved without implementing such a system. Control techniques other than combustion may be approved by the department.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; am. (intro.), (1) (a), (b), (2), (3) (intro.), (a) to (c), (4), (6), r. and recr. (5), Register, June, 1996, No. 486, eff. 7-1-96; CR 05-020: am. (4) Register January 2006 No. 601, eff. 2-1-06.

**NR 506.085 Final use.** The following activities are prohibited at solid waste disposal facilities which are no longer in operation unless specifically approved by the department in writing:

- (1) Use of the waste disposal area for agricultural purposes.
- (2) Establishment or construction of any buildings over the waste disposal area.
- (3) Excavation of the final cover or any waste materials.

**Note:** Activities at closed solid waste disposal facilities shall be restricted in accordance with the applicable transference of responsibility provisions of s. 289.46 (2), Stats.

**History:** Cr. Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.09 Waste characterization. (1) GENERAL.** No person may dispose in a landfill prohibited items under s. NR 506.095. Wastes which are limited under ss. NR 506.10 to 506.155 may only be disposed in accordance with those sections. Solid wastes which are not prohibited or limited under ss. NR 506.095 to 506.155 and which do not constitute more than 5% of the total proposed design capacity may be disposed without additional department approval providing they do not pose a significant threat to landfill operations, leachate or landfill gas quality, or groundwater quality, and they are handled in accordance with an approved special waste management plan. The physical and chemical characteristics of any high volume industrial waste stream such as foundry process waste, papermill sludge, utility coal-ash wastes, and other non-municipal waste streams that are anticipated to individually constitute more than 5% of the total proposed design capacity shall be analyzed and described in accordance with this section.

**(2) SUBMITTAL REQUIREMENTS.** Requests for authorization to accept additional waste types shall include the following information at a minimum:

- (a) Detailed physical and chemical characteristics including percent solids, material safety data sheets where appropriate and the results of the paint filter test.
- (b) The volume of waste to be disposed of on a daily and yearly basis.
- (c) The source of the wastes and a description of the processes which generated the waste.
- (d) The duration of disposal.
- (e) Special handling and disposal procedures.

(f) Based upon a preliminary review of the above information, the department may require additional information to determine the compatibility of the waste with the existing design and operation of the landfill.

**Note:** Landfill operators who wish to accept hazardous waste from very small quantity generators subject to s. NR 662.220 (1) shall obtain approval from the department under s. NR 506.155.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; r. and recr. (1), am. (2) (a), Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.095 Prohibited items.** No person may dispose of the following in a landfill:

- (1) Lead acid batteries.
- (2) Major appliances.
- (3) Waste oil or materials containing waste oil, except as provided in s. NR 506.105 and par. (a).

(a) Material containing, or otherwise contaminated with, minimal amounts of oil from which the oil has been removed to the extent possible such that no visible signs of free flowing oil remain in or on the material, may be disposed of in a solid waste landfill, provided the material is not listed or identified as a hazardous waste.

**Note:** The department encourages the recycling of used oil including oil-soaked rags and similar materials, by use of laundering services, burning for energy recovery and other recycling methods.

**Note:** Disposal of petroleum contaminated soil and materials into solid waste disposal facilities shall be done in accordance with the applicable provisions of chs. NR 419 and 722.

(b) Oil drained or removed from materials containing or otherwise contaminated with oil is subject to regulation as used oil.

**Note:** The department encourages that solid waste material from which oil is removed, such as used oil filters that have been drained in accordance with s. NR 661.04 (2) (m), be recycled. If the material cannot be recycled, it should be properly characterized and disposed of in accordance with the requirements of chs. NR 500 to 538 and 660 to 679.

(c) No person may mix oil with other material for the purpose of avoiding the prohibition of s. 287.07 (1m) (b), Stats.

(4) Yard waste.

(5) Solid waste that contains any material identified in s. 287.07 (3), Stats., that is generated in a region, as defined in s. 287.01 (8), Stats., that does not have an effective recycling program as determined under s. 287.11, Stats., and ch. NR 544, unless the material is subject to an exemption, waiver or beneficial use approval under s. 287.11 (2p), Stats. This subsection does not apply to any material identified in s. 287.07 (3), Stats., that contains infectious waste or that is from a treatment area and is mixed with infectious waste generated in the treatment area, if the container, package or material has been treated pursuant to standards established under ch. NR 526 to render the infectious waste non-infectious.

(6) A material identified in s. 287.07 (3), Stats., that is separated for recycling as part of an effective recycling program under s. 287.11, Stats., and ch. NR 544, unless the department has granted a variance under s. 287.11 (2m), Stats.

**History:** Cr. Register, June, 1996, No. 486, eff. 7-1-96; corrections in (5) and (6) were made under s. 13.93 (2m) (b) 7., Stats., Register March 2003 No. 567.

**NR 506.10 Asbestos.** No person may dispose of asbestos containing material at a solid waste landfill except in conformance with the following minimum requirements:

(1) **LANDFILL CRITERIA.** Only facilities meeting the following criteria may accept asbestos for disposal:

(a) Except as provided in par. (c), only approved facilities as defined in s. 289.01 (3), Stats., may accept asbestos containing material for disposal.

(b) The following asbestos containing materials may be accepted only at landfills engineered with a liner and leachate collection system which are approved to accept asbestos. The department may approve other landfills on a case by case basis.

1. Category I non-friable asbestos containing material, which is not construction and demolition material,

2. Category II non-friable asbestos containing material,
3. Friable asbestos material.

(c) Construction and demolition materials containing category I non-friable asbestos may be disposed of at construction and demolition waste landfills approved in accordance with ch. NR 503 and approved facilities as defined in s. 289.01 (3), Stats.

(2) **GENERAL REQUIREMENTS.** (a) Unless an alternative handling procedure is approved by the department, category II nonfriable asbestos containing material and friable asbestos material shall be disposed of in a trench excavated into existing refuse and shall be covered with a minimum of 3 feet of non-asbestos solid waste or soil prior to compaction.

**Note:** All applicable safety measures required by chs. NR 400 to 499, and EPA and OSHA, specifically, those requirements dealing with the safety of personnel working with the asbestos, shall be followed. U.S. EPA 40 CFR Part 61 "National Emission Standards for Hazardous Air Pollutants (NESHAP)" contains additional requirements for the disposal of asbestos containing materials.

(b) The location of category II nonfriable asbestos containing material and friable asbestos material disposal within the landfill shall be recorded by horizontal and vertical coordinates and maintained in accordance with s. NR 506.17.

(c) Category II nonfriable asbestos containing material and friable asbestos material may not be placed in previous asbestos disposal areas or areas proposed for future landfill construction, including leachate headwells and gas collection wells.

**Note:** All applicable safety measures required by chs. NR 400 to 499, and EPA and OSHA, specifically, those requirements dealing with the safety of personnel working with the asbestos, shall be followed. U.S. EPA 40 CFR Part 61 "National Emission Standards for Hazardous Air Pollutants (NESHAP)" contains additional requirements for the disposal of asbestos containing materials.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; am. (intro.), (2) (a), r. and recr. (1), (2) (b), (c), Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.105 Untreated contaminated unconsolidated material.** Except as provided in s. NR 506.095 (3) and this section, untreated contaminated unconsolidated material which is the result of a remediation conducted under chs. NR 700 to 736, or a remediation conducted in another state under the laws of that state, may not be disposed at a landfill, unless the disposal is in compliance with ss. NR 419.07 and 722.09 (4), and the landfill's approved plan of operation. Untreated contaminated unconsolidated material other than untreated petroleum contaminated soil which is the result of a remediation conducted under chs. NR 700 to 736, or a remediation conducted in another state under the laws of that state, may be approved by the department for use as daily cover, in construction of soil structures within a landfill, or disposal on a case by case basis. Unconsolidated material has the meaning specified in s. NR 700.03 (64r).

**Note:** "Unconsolidated material" means soil, sediment or other granular material, such as fill, not including debris.

**Note:** Absorbents used to clean up oil spills are regulated under s. NR 506.095 and ch. NR 679.

(1) **USE OF UNTREATED PETROLEUM CONTAMINATED SOIL.** (a) Untreated petroleum contaminated soil may be used as landfill daily cover if all of the following conditions are met:

1. The volume of untreated petroleum contaminated soil that is proposed to be used as daily cover does not exceed either the landfill's net daily cover needs or 12.5% of the annual volume of waste received by the landfill.

2. The use of untreated petroleum contaminated soil as daily cover will not impair operation of the landfill, cause windblown problems, ponding of storm water or other nuisance conditions. Clay soils may not be used as daily cover.

3. The landfill has a liner and leachate collection system meeting the requirements of s. NR 504.06.

4. The requirements of subs. (2) to (4) are complied with.

(b) Untreated petroleum contaminated soil may be used in the construction of soil structures within the fill area when approved for that specific use by the department.

(c) Untreated petroleum contaminated soil may be disposed in a landfill other than as daily cover or in the construction of soil

structures within the landfill only if approved by the department in the plan of operation for the landfill.

(d) Except as provided in pars. (a) to (c), no person may dispose of untreated petroleum contaminated soil in a landfill other than as daily cover or in the construction of soil structures within the landfill unless the department determines, on a case by case basis, that there is no practicable treatment alternative, and the department approves the disposal in writing.

(e) Petroleum contaminated soil which has been treated such that the concentration of volatile organic compound contaminants in the soil does not exceed 250 milligrams per kilogram is not subject to this section.

**Note:** Responsible parties must comply with s. NR 722.07 (3) by completing a written evaluation of recycling or treatment technologies.

**(2) VOLUME LIMITATIONS.** (a) Except as provided in par. (b) or (c), the volume of untreated petroleum contaminated soil from a single clean-up site or facility that is proposed for landfill disposal may not exceed 250 cubic yards as measured *in situ*.

(b) Except as provided in par. (c), untreated volumes of petroleum contaminated soil from a single clean-up site or facility that exceed 250 cubic yards may be disposed of in a licensed landfill with a department approved composite liner, or a liner that is equivalent to a composite liner in terms of environmental protection as determined by the department, if approved by the department in the plan of operation for the landfill.

(c) Volumes of untreated petroleum contaminated soil from a single clean-up site or facility that exceed 2,000 cubic yards may be disposed of in a landfill only if prior written approval of a remedial action options report is obtained in accordance with s. NR 722.13 and approved in the landfill's plan of operation.

**(3) MAXIMUM ORGANIC COMPOUND CONCENTRATION.** No person may accept for disposal in a landfill untreated petroleum contaminated soil having an average organic compound concentration exceeding 2,000 mg/kg except for soils managed in accordance with ch. NR 708. For volumes of material less than 55 gallons the department may waive this prohibition in writing if the department finds that there are no practicable treatment alternatives. The department may accept knowledge in lieu of testing for specific waste types.

**Note:** The average organic compound concentration for untreated petroleum contaminated material is generally measured by diesel range organic compounds (DRO), gasoline range organic compounds (GRO), petroleum volatile organic compounds (PVOC), or polycyclic aromatic hydrocarbon compounds (PAH), alone or in combination.

**Note:** NR 419 imposes the following limits:

For ozone nonattainment areas the concentration of volatile organic compound contaminants in the soil accepted may not exceed 250 mg/kg.

For ozone attainment areas, in all contaminated soils accepted with a volatile organic compound concentration of greater than 250 mg/kg, the total quantity of volatile organic compounds may not exceed 25 tons per year.

Material contaminated with polychlorinated biphenyls (PCBs) must be managed in accordance with the requirements of ch. NR 157 and this chapter.

**(4) RECORD KEEPING.** Except as otherwise provided in par. (b), the owner or operator of a landfill which accepts untreated contaminated unconsolidated material having an average organic compound concentration exceeding 250 mg/kg in accordance with this section shall maintain records in accordance with s. NR 506.17 and the following:

(a) Records shall be maintained of the volume of materials received, the average organic compound concentration, the average benzene concentration, and the location for each site from which untreated petroleum contaminated soil is accepted at the landfill.

(b) Records shall be maintained on an on-going basis and summarized annually of the accumulated total pounds of organic compounds and accumulated pounds of benzene accepted in untreated petroleum contaminated soils at the landfill. The department may waive this requirement if an alternative air monitoring program for VOC emissions is approved by the department in accordance with ch. NR 419.

(c) The tonnage records of untreated petroleum contaminated soil accepted annually shall be summarized and submitted with the annual tonnage certification report required by s. NR 520.14 (3) (a).

**History:** Cr. Register, June, 1996, No. 486, eff. 7-1-96; am. (4) (c), Register, August, 1997, No. 500, eff. 9-1-97; CR 05-020: am. (4) (c) Register January 2006 No. 601, eff. 2-1-06; correction in (intro.) made under s. 13.92 (4) (b) 7., Stats., Register July 2015 No. 715.

**NR 506.11 Infectious waste.** No person may accept infectious waste at a solid waste disposal facility unless the requirements of s. NR 526.13 have been met.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; am. Register, October, 1994, No. 466, eff. 11-1-94.

**NR 506.12 Ultra low-level radioactive waste.** No person may dispose of ultra low-level radioactive waste at a landfill except in accordance with the following:

**(1) LANDFILL CRITERIA.** Only landfills meeting the following criteria may accept ultra low-level radioactive waste for disposal:

(a) The landfill shall be a licensed and approved landfill as defined in s. 289.01 (3), Stats.

(b) The landfill shall be approved by the department in writing to accept ultra low-level radioactive waste.

**(2) GENERAL REQUIREMENTS.** The following criteria also apply to landfills proposing to accept ultra low-level radioactive waste:

(a) Sludge wastes shall meet the requirements contained in s. NR 506.13 or 506.14, as appropriate.

(b) A plan shall be submitted which addresses the control of any radon gas which may be generated by the waste.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; am. (intro.), (1) (a), (b), (2) (intro.), Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.13 Free liquids wastes. (1) SMALL QUANTITY EXEMPTION.** An owner or operator of a solid waste landfill used for the disposal of municipal solid waste may not accept containers holding liquid waste unless:

(a) The container is small and similar in size to that normally found in household waste;

(b) The container is designed to hold liquids for use other than storage;

(c) It is not practicable to recycle the container or the material contained; or

(d) The waste is household waste.

**(2) MUNICIPAL SOLID WASTE DISPOSAL FACILITIES.** Solid waste landfills used for the disposal of municipal solid waste may not accept waste containing free liquids except as provided in sub. (1) or unless the landfill has received approval from the department to recirculate leachate or gas condensate derived from the landfill. Recirculation of leachate or gas condensate will be considered only for landfill phases designed with a composite liner and efficient leachate collection system.

**(3) FACILITIES THAT DO NOT ACCEPT MUNICIPAL SOLID WASTE.** An owner or operator of any landfill that does not accept municipal solid waste may accept waste containing free liquids only in accordance with plans approved by the department in writing.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; am. (1), (2), (3), cr. (1) (a) to (d), Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.135 Leachate recirculation. (1) GENERAL.** Leachate recirculation operations shall comply with the following requirements:

(a) Leachate recirculation distribution systems may not discharge leachate within 100 lateral feet of the exterior sideslope final grades, unless otherwise approved by the department in writing.

(b) Leachate may not be introduced in areas with less than 20 feet of waste over the leachate collection system.

(c) Leachate may not be recirculated in areas that do not have active gas extraction systems installed. The gas extraction sys-

tems shall be operated in accordance with the approved leachate recirculation plan to control any additional gas generated by leachate recirculation and minimize release of uncontrolled gas.

(d) Leachate recirculation shall be suspended upon discovery of warning symptoms, as identified in the approved leachate recirculation plan. Leachate recirculation may not resume in the area where the problem occurred until changes are made to the system or the warning symptoms have declined to acceptable levels. The operator shall notify the department in writing within 7 days of the discovery of warning symptoms and suspension of leachate recirculation. Alternative notification procedures may be approved by the department in writing.

(e) Leachate recirculation shall be suspended whenever any of the failure thresholds identified in the approved leachate recirculation plan are exceeded. Leachate recirculation may not resume until the department has reviewed and approved changes to the system that will result in meeting the thresholds. The operator shall notify the department within 3 days of the discovery of exceeding any failure threshold. Alternative notification procedures may be approved by the department in writing.

(f) The operation of the gas extraction system shall be amended as necessary to counteract any increased incidence or intensity of odors.

(g) The landfill operator shall maintain in the landfill's written operating record the liquid mass balance for each leachate drainage basin, including leachate extracted, leachate recirculated and precipitation, in all areas where leachate is recirculated, in accordance with the requirements of s. NR 507.215. All warning symptoms, terminations of leachate recirculation and other problems and their solutions shall be recorded.

(h) Leachate may not be recirculated where daily or intermediate cover consists of low permeability clay soil or low permeability wastes, unless the daily or intermediate cover is removed or scarified.

(i) Measures shall be taken to prevent cold weather freeze up of leachate distribution equipment if used during the winter months.

**(2) SURFACE APPLICATION.** Surface application shall comply with the following requirements in addition to those in sub. (1):

(a) Leachate may not be applied in a manner that results in ponding of leachate on the surface.

(b) Leachate may not be applied in a manner that allows runoff of leachate beyond the application area.

(c) Leachate may not be applied using a spray system or any other distribution system that promotes evaporation of leachate or volatilization of compounds in leachate. Spray systems such as spray bars on the back of a tanker truck may be acceptable if the spray is directed downward.

(d) Leachate application shall be limited to the active area of the landfill.

(e) Leachate may not be applied during wet or windy conditions that would prevent containment of the leachate to the application area.

(f) Truck traffic shall be routed around the application area until the application area is covered to prevent tracking of leachate.

(g) Areas of the landfill where leachate has been applied shall be covered with newly placed waste or soil as soon as possible, but in no case later than the end of the same working day that leachate is applied.

**(3) VERTICAL DISTRIBUTION SYSTEMS.** Vertical distribution systems shall comply with the following requirements in addition to those in sub. (1):

(a) Gas extraction wells designed independent of the leachate recirculation system shall not be used for leachate distribution.

(b) Landfill gas may be extracted through leachate distribution wells to supplement the permanent gas extraction system.

**(4) HORIZONTAL DISTRIBUTION SYSTEMS.** Horizontal distribution systems shall comply with the following requirements in addition to those in sub. (1):

(a) Leachate shall not be discharged continuously to individual distribution pipes. Periodic rest periods shall be incorporated into the operating schedule to allow for absorption of leachate into the waste mass and for extraction of landfill gas.

(b) Landfill gas may be extracted through leachate distribution pipes to supplement the permanent gas extraction system.

**(5) ANNUAL REPORTING FOR LEACHATE RECIRCULATION.** An annual report shall be submitted to the department by April 30 of each year for leachate recirculation activities occurring during the previous calendar year. The report shall include:

(a) The results of the liquid mass balance measurements for each leachate drainage basin.

(b) The leachate head levels for each leachate drainage basin.

(c) Graphs showing the volumes of leachate extracted and recirculated and precipitation received for each leachate drainage basin.

(d) Graphs over the time period since leachate recirculation was initiated, for each parameter required to be sampled in s. NR 507.215.

(e) Summary of warning symptoms, terminations, resumptions of leachate recirculation after termination, and any operating problems and resolutions.

(f) Documentation drawings or diagrams showing the installed details of the leachate distribution system added or revised since the previous annual report, including but not limited to piping, pumps and distribution media.

**History:** CR 04-077: cr. Register November 2005 No. 599, eff. 12-1-05; CR 06-026: am. (1) (a) to (e) and (h) and (2) (a) to (c) and (e) to (f), Register December 2006 No. 612, eff. 1-1-07.

**NR 506.14 Non-free liquid solid wastes. (1) SMALL QUANTITY EXEMPTION.** An owner or operator of a solid waste landfill used for the disposal of municipal solid waste may accept sludge wastes amounting to less than 50 cubic yards per year per generator provided that the material is tested and determined to be non-hazardous, the criteria contained in sub. (2) (a) to (c) are complied with and the department is notified and provided with all testing information prior to disposal. The department may require additional information if deemed necessary.

**(2) MUNICIPAL SOLID WASTE DISPOSAL LANDFILLS.** An owner or operator of a solid waste landfill used for the disposal of municipal solid waste may not accept sludge wastes for disposal unless the small quantity exemption requirements provided in sub. (1) are met, or unless all of the following criteria are complied with:

(a) The landfill shall be a licensed and approved landfill under s. 289.01 (3), Stats.

(b) The proposed landfill shall be in compliance with all solid waste regulations and any plan of operation approval.

(c) The material has been tested and determined not to contain free liquids.

(d) A report has been submitted to and approved by the department which addresses the physical and chemical characteristics of the waste including the percent solids; the weight and volume of material produced; the frequency of waste generation; the amount of additional liquid which would be added over a specified time frame; methods for handling the additional gas generation and any proposed changes to the groundwater, surface water, unsaturated zone or leachate monitoring programs.

(e) An annual report is submitted which documents the daily mixing ratios of each sludge waste to municipal solid waste on both a weight and volume basis and any operational problems.

**(3) OTHER FACILITIES.** An owner or operator of any waste disposal facility other than a municipal solid waste landfill may accept sludge which does not contain free liquids only in accordance with plans approved by the department.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; am. (1), (2) (intro.), (a), (b), (d), (e), (3), Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.15 Management of residue produced by burning municipal solid waste.** **(1) GENERAL.** No person may operate or maintain a landfill for the disposal of residue produced by the burning of municipal solid waste, except in accordance with this section and the written approval of the department.

**(2) LANDFILL CRITERIA.** Only landfills meeting the following criteria may accept municipal solid waste combustor residue for disposal:

(a) The landfill shall be a licensed and approved landfill as defined in s. 289.01 (3), Stats. The department may grant an exemption to this provision if the landfill owner or operator can demonstrate substantial compliance with the design criteria in s. NR 504.11.

(b) The landfill shall be approved by the department in writing prior to accepting residue from each municipal solid waste combustor source. The landfill may accept only residue from municipal solid waste combustors designated in the municipal solid waste combustor residue disposal plan included in the initial plan of operation approval or a modification to the original approval granted under s. NR 514.07 (5).

(c) The landfill area used for disposal shall be designed and constructed, at a minimum, as a composite lined monofill meeting the requirements of s. NR 504.11 (2) (a). Operators of medical waste combustors with a design capacity of less than 10 tons per day may apply to the department for a written exemption to this requirement. All municipal solid waste combustor residue that meets or exceeds the test limits specified in s. NR 502.13 (6) (g) or subsequent confirmation testing as specified in s. NR 502.13 (6) (h), and is not subsequently treated to below those limits, may not be disposed of in a municipal solid waste landfill and shall be managed in accordance with chs. NR 660 to 679.

(d) The landfill shall maintain a storm water control system approved by the department.

(e) The landfill shall maintain access control to the landfill.

**(3) OPERATIONAL REQUIREMENTS.** No person may operate or maintain a new or existing landfill that accepts residue produced by the burning of municipal solid waste except in conformance with all provisions of a municipal solid waste residue disposal plan approved under s. NR 514.07 (5), the applicable portions of s. NR 506.07 and the following minimum requirements:

(a) Wind blown material shall be prevented.

(b) Cover soil shall be used during filling operations to restrict the exposed residue area of disposal to as small an area as practical. In no case may the exposed residue area be larger than 50 feet by 100 feet unless otherwise approved by the department.

(c) The residue shall be covered with a minimum of 6 inches of soil at the end of daily operations for each day residue was accepted unless an alternative method is approved by the department under par. (e).

(d) Filled areas, other than the active residue disposal area, shall be covered with soil or a department approved soil substitute such as foundry sand.

(e) The department may approve alternatives to daily cover such as water or foam if it can be demonstrated that the residue will not become windblown.

(f) Equipment operators shall be provided with appropriate safety equipment, such as respirators.

(g) Only residue that has been tested in accordance with s. NR 502.13 (5) or (6) may be accepted.

**History:** Cr. Register, May, 1992, No. 437, eff. 6-1-92; am. (1), (2) (intro.), (a), (b), (3) (intro.), (e), cr. (2) (c) to (e), Register, June, 1996, No. 486, eff. 7-1-96; CR

05-020; am. (2) (c) and (3) (g) Register January 2006 No. 601, eff. 2-1-06; correction in (2) (c) made under s. 13.93 (2m) (b) 7., Stats., Register December 2006 No. 612.

**NR 506.155 Very small quantities of hazardous waste.** No person may accept hazardous waste from very small quantity generators excluded from regulation under s. NR 662.220 except in accordance with this section and the written approval of the department.

**(1) LANDFILL CRITERIA.** No person may accept hazardous waste from very small quantity generators for disposal at a landfill unless all the following criteria are met:

(a) The landfill is a licensed and approved landfill as defined in s. 289.01 (3), Stats.;

(b) The landfill is in compliance with all solid waste regulations and any plan approval; and

(c) The landfill is in compliance with the minimum design criteria specified in s. NR 504.05.

**(2) GENERAL REQUIREMENTS.** No person may accept hazardous waste from very small quantity generators for disposal in a solid waste landfill unless:

(a) The person has obtained written approval under s. NR 506.09 and complies with all conditions of the approval;

(b) The person submits annual reports to the department no later than April 1 of the following year which document the types and quantities of hazardous waste accepted during the previous year, the generators and transporters of the waste and any other information required by the department; and

(c) The person has paid the waste management fund fees specified in s. 289.62, Stats., for all hazardous waste quantities accepted.

**History:** Cr. Register, January, 1991, No. 421, eff. 2-1-91; renum. from NR 506.15, Register, May, 1992, No. 437, eff. 6-1-92; am. (intro.), (1), (2) (intro.), Register, June, 1996, No. 486, eff. 7-1-96; correction in (intro.) made under s. 13.93 (2m) (b) 7., Stats., Register December 2006 No. 612.

**NR 506.16 Procedures for excluding the receipt of waste not specifically approved for acceptance at the landfill.** Owners and operators of landfills that accept municipal solid waste shall implement a program at the landfill for detecting and preventing the disposal of waste not specifically approved for acceptance including but not limited to liquids, sludges, regulated hazardous waste and PCB waste. The program shall include the following:

**(1) RANDOM INSPECTIONS OF INCOMING LOADS.** Random inspections shall be made of every incoming load of solid waste unless the owner or operator receives approval in writing from the department to take other steps to insure that incoming loads do not contain wastes not specifically approved for acceptance.

(a) Inspections shall be conducted on every 5,000 tons of solid waste accepted or one inspection per month, whichever is more frequent. No more than one inspection per week is required. An owner or operator of a landfill which accepts less than 10,000 tons per year of solid waste and demonstrates adequate justification for less frequent inspections may be approved by the department for a minimum of 4 inspections per year. To assure that the inspections are random, the first truckload which exceeds the accumulated total of 5,000 tons of solid waste shall be selected for inspection. Alternate methods of assuring random selection may be approved by the department.

(b) The inspection shall involve discharging the waste load and viewing its contents in an area that clearly segregates the waste from all other solid wastes and is capable of controlling any potentially hazardous waste prior to disposal of the waste.

**(2) RECORDS OF INSPECTIONS.** Records of the random load inspections shall include the following information:

(a) The date and time solid wastes were received.

(b) The names of the firm transporting the solid waste and the driver of the vehicle.

(c) The vehicle's license plate and the transporter's Wisconsin solid waste license number.

(d) The community or communities where the solid waste was generated.

(e) The type or types of waste such as commercial, industrial, residential or any combination.

(f) The name of the certified facility manager or certified site operator inspecting the load.

(g) All of the observations made by the inspector, including any actions taken to manage or return nonapproved waste or actions taken if extreme toxicity or hazard is discovered.

**(3) TRAINING OF LANDFILL PERSONNEL TO RECOGNIZE WASTE NOT APPROVED FOR ACCEPTANCE.** Landfill personnel shall be trained in accordance with ch. NR 524 to recognize waste not approved for acceptance.

**(4) NOTIFICATION IF A WASTE NOT APPROVED FOR ACCEPTANCE IS DISCOVERED AT THE LANDFILL.** The owner or operator of the facility shall notify the department's district or area solid waste management specialist in writing within 15 days if non-hazardous waste not approved for acceptance is discovered at the landfill. If waste not approved for acceptance is discovered and is suspected of being hazardous or containing PCBs at a concentration of 50 ppm or greater, the owner or operator of the facility shall notify the department's district or area solid waste and hazardous waste management specialists in writing within 2 days.

**(5) REJECTION OF WASTE NOT APPROVED FOR ACCEPTANCE.** Waste which is not approved for acceptance at the landfill shall be rejected. The waste shall be handled in accordance with all applicable regulations including but not limited to transportation, storage, treatment and disposal.

**History:** Cr. Register, June, 1996, No. 486, eff. 7-1-96.

**NR 506.17 Record keeping.** The owner or operator of a landfill that accepts municipal solid waste shall maintain a written operating record at the landfill during the operating life and 40 year long-term care period of the landfill. The department may approve an alternate location for maintaining the record. The record shall contain information on any landfill location criterion restriction, inspection records, training procedures, notification procedures, closure and post closure plans and financial responsibility, and all demonstrations, certifications, findings, monitoring, testing and analytical data required under chs. NR 500 to 538. Random load inspection records shall be maintained for a minimum of 3 years. The operating record shall be made available to the department upon request.

**History:** Cr. Register, June, 1996, No. 486, eff. 7-1-96; correction made under s. 13.92 (4) (b) 7., Stats., Register February 2010 No. 650.

**NR 506.18 Enforcement.** The department may deny, suspend or revoke the operating license of a solid waste disposal facility as provided in s. 289.31 (1), Stats., for failure to pay fees required under ch. 289, Stats., or for grievous and continuous failure to comply with the approved plan of operation under s. 289.30, Stats., or, if no plan of operation exists with regard to the landfill, for grievous and continuous failure to comply with any requirement of chs. NR 500 to 538. Any failure to comply with any such requirement or condition on 5 or more days within any 30 successive calendar days and which consists of action or inaction which may cause pollution as defined in s. 281.01 (10), Stats., or which may otherwise create nuisance conditions, is a grievous and continuous failure to comply with the requirement or condition.

**History:** Cr. Register, January, 1988, No. 385, eff. 2-6-88; renum. from NR 506.15, Register, January, 1991, No. 421, eff. 2-1-91; renum. from NR 506.16 and am., Register, June, 1996, No. 486, eff. 7-1-96; am. Register, December, 1997, No. 504, eff. 1-1-98.

**NR 506.19 Landfill compliance certifications and audits. (1) COMPLIANCE CERTIFICATION.** No later than March 31 of each year and continuing until otherwise specified by the department, the owner or operator of any licensed landfill which

is in operation as of July 1, 1996, or any licensed, closed landfill with an approved total design capacity exceeding 1,000,000 cubic yards shall prepare and submit to the department a compliance certification. The certification, shall be prepared and signed by the owner or operator of the landfill, certified facility manager, solid waste manager or person most directly responsible for the landfill's day to day operation. The signer shall certify that he or she is aware of all approved plans for the landfill, all department conditions of approval, and all applicable solid waste statutory and administrative rules, and that to the best of the signer's knowledge, information and belief, the landfill is or is not in substantial compliance with all approved plans and requirements. For landfills which are in full compliance, no narrative is required beyond the certification statement. For other landfills, all known areas of noncompliance shall be clearly indicated. This subsection does not impose personal liability upon certified facility managers or certified site operators.

**(2) AUDITS.** As specified under s. 289.91, Stats., the department may perform audits of any landfill. Following a minimum 30-day advance notification, the landfill owner or operator shall ensure that during the period of the audit, a conference room or adequate office space is provided for department personnel, and that proper technical personnel representing the owner are present to respond to department inquiries regarding the landfill. The owner or operator shall also ensure that any of the information in pars. (a) to (j) or any other information specified by the department in its audit notification letter is available in an organized fashion for the department to review. The owner or operator shall provide copies of requested information for the department to take with them following the audit. If requested by the department, the owner, operator or their representatives shall present the requested information to the department during the audit and also participate in an inspection of any aspects of the landfill which the department requests. The owner or operator shall provide the department with access to all items or areas of the landfill which are related to landfill performance or to compliance with approved plans, solid waste administrative rules or statutes.

(a) One or more full-sized plan view drawings clearly annotated to show the following:

1. The portions of the landfill which currently are receiving solid waste;
2. All portions of the landfill which have been filled, but have not yet been brought to approved final grades;
3. All portions of the landfill which have been filled to approved final grade and the extent to which the final cover system has been placed;
4. All portions of the landfill which currently are undergoing development or closure;
5. All portions of the landfill which have yet to be developed; and
6. Any areas which have been filled above approved final grades or beyond the approved limits of filling.

(b) Calculations based on the most recent topographic survey which show the design capacity volume which has been filled, the remaining design capacity volume, and the estimated remaining site life. All assumptions used in the calculation of estimated remaining site life shall be provided. If the currently estimated remaining site life is one or more years less than that assumed in the latest long-term care calculations, changes shall be evaluated and proposed to the annual long-term care inpayment required to be made by owners using escrow accounts, trusts or deposits with the department to provide proof of financial responsibility for long-term care.

(c) Plan view drawings or sketches documenting each leachate collection line cleaning and leachate transfer line pressure testing event. Separate drawings or sketches shall be submitted for each event, with each drawing using as a base the landfill's entire leach-

ate collection and transfer piping system. If legibility is not compromised, these drawings may be 11-inch by 18-inch pull-out drawings.

(d) For landfills which have not been required to begin a formal ch. NR 140 investigation, but which have experienced over the past 3 year reporting period: an ES exceedance; more than 2 PAL exceedances for the same parameter at the same well; or results where the average of all data for a parameter at a well exceeds a PAL, a summary of all groundwater data collected to date for the well or wells which have experienced the results presented graphically using either time versus concentration graphs or box plots.

(e) An evaluation of the performance of the leachate collection and removal system which shall include graphed results of monthly leachate removal volumes from the beginning of filling at the landfill to the end of the current calendar year. Leachate volume data shall be graphed separately for each leachate collection tank or lift station. Leachate removal volumes shall also be graphed as a depth over the area of liner which has been constructed at a given point in time. Graphs shall note when each phase or portion thereof was constructed or closed. Monthly leachate data shall be annualized by multiplying by 12 and reported in units of inches per year. All leachate quality data for BOD or COD, including that regularly performed at the request of wastewater treatment facilities, shall be presented graphically. Graphs of monthly average BOD or COD in mg/l shall be presented as well as pounds of BOD or COD removed per month from the facility. Also included shall be a tabulation of all past monthly leachate removal volumes and average BOD or COD concentrations.

(f) Graphs of leachate head conditions on the liner and trends with time shall be reported. Where lysimeters or gradient control systems are present under the liner, fluid collection quantity and quality data shall also be tabulated.

(g) Graphs and tables evaluating the performance of the gas extraction system over the previous 3 years including: the volume of gas removed and average methane concentration to be presented on a no less frequent basis than quarterly; the condition of each gas extraction well and identification of any wells which need to be replaced or that have been replaced; a summary of the hours of operation and down time of the gas recovery plant or blower; and a summary of any exceedances of the lower explosive limit of any gasses detected in gas monitoring wells located outside the limits of waste. This information shall also be presented graphically to the extent possible.

(h) An evaluation of settlement which the landfill has undergone, and any evidence of surface water ponding, poor drainage, differential settlement, erosion or other disruption of the final cover structure.

(i) An evaluation of the integrity of the vegetation on the final covered or interim-covered areas, integrity of the final cover, summary of erosion control efforts, surface stabilization efforts and any evidence of animal intrusion.

(j) Where applicable, a summary of the occurrences of liquids in secondary containment systems for leachate drain lines, condensate drain lines, manholes, collection tanks and lift stations and any corrective measures taken or proposed in response to the presence of liquids.

**History:** Cr. Register, June, 1996, No. 486, eff. 7-1-96.

## **Attachment 2**

### **Alternative Daily Cover and Beneficial Reuse Plan (Revised August 2025)**

Plan

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# Alternate Daily Cover and Beneficial Reuse Plan Brown County South Landfill

Project I.D.: 18B027

Brown County Port & Resource Recovery Department  
Green Bay, Wisconsin

September 2019

Revised August 2025



# Alternate Daily Cover and Beneficial Reuse Plan Brown County South Landfill

Project ID: 18B027

Prepared for  
Brown County Port & Resource Recovery Department  
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Green Bay, WI 54304

Prepared by  
Foth Infrastructure & Environment, LLC

September 2019  
**Revised August 2025**

#### REUSE OF DOCUMENTS

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# Alternate Daily Cover and Beneficial Reuse Plan Brown County South Landfill

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## List of Abbreviations, Acronyms, and Symbols

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ADC	Alternate Daily Cover
BCPRRD	Brown County Port & Resource Recovery Department
BOW	Brown, Outagamie, and Winnebago
cy	cubic yard
FD	Feasibility Determination
Foth	Foth Infrastructure & Environment, LLC
FR	Feasibility Report
lb	pound
MSW	municipal solid waste
NELF	Northeast Landfill
Plan	Alternate Daily Cover and Beneficial Reuse Plan
SLF	South Landfill
TDA	Tire derived aggregate
WDNR	Wisconsin Department of Natural Resources

# 1 Introduction

## 1.1 Background Information

The Brown County South Landfill (SLF) property is located in the E ½ of the SW ¼ Section 18, Township 21N, Range 20E, town of Holland, Brown County, Wisconsin. The county property encompasses approximately 313 acres, of which approximately 69.7 acres are proposed for the limits of filling for the SLF.

A Feasibility Report (FR) for the Brown County SLF was submitted in July of 1994. The SLF received a Feasibility Determination (FD) in October of 1996. The determination included a design capacity of 9,355,148 cubic yards (cy) for a municipal solid waste (MSW) landfill and an additional 3,696,323 cy for a process residue monofill. The approved Plan of Operation's design has an airspace capacity of 9,303,000 cy for MSW and does not include a monofill for process residue.

This revised Alternate Daily Cover (ADC) and Beneficial Reuse Plan (Plan) was originally submitted as an appendix to the SLF Plan of Operation (April 2019). Updates to the plan include additional material use approvals.

The SLF will serve as a replacement to the Outagamie County Northeast Landfill (NELF). The NELF currently operates as the Brown, Outagamie, and Winnebago (BOW) Counties' regional landfill in a tri-county waste agreement, with the SLF projected as the next BOW landfill. Landfill operations and waste types/sources at the SLF will be consistent with the NELF.

## 1.2 Purpose

The purpose of this Plan is to describe approved uses of various materials at the SLF as ADC or for other beneficial uses such as berms, dikes, roads, and the staging deck for haul trucks. The following waste types are approved at this time:

- ◆ Paper Mill Sludge
- ◆ Poly Reject Material
- ◆ Foundry Sand and Slag
- ◆ Automobile Shredder Fluff
- ◆ Shredded Wood and Pallets
- ◆ Contaminated Soil
- ◆ Boiler/Fly Ash
- ◆ Posi-Shell<sup>®</sup> Spray-on Synthetic Daily Cover
- ◆ Tire Derived Aggregate

Each proposed material is presented in the following sections along with a description of physical characteristics and its intended use. This Plan functions to reduce plan modifications needed in the future for the SLF. All of these materials have been approved for ADC and other beneficial uses at the NELF. This plan was later revised to include use of tire derived aggregate (TDA).

## 2 Paper Mill Sludge

The BOW regional waste system accepts paper mill sludge from a variety of sources. Paper mill sludge has been approved for use as ADC at the NELF. Prior to acceptance, each individual source of paper mill sludge is evaluated in accordance with the SLF's Special Waste Management Plan. If accepted, each source is evaluated for its potential to be used as ADC. Limiting factors include the consistency of the material and its ability to be efficiently handled and spread in a 6-inch layer. In addition, the potential to create an odor issue will also be considered.

Paper mill sludge works well as an ADC. It typically has the ability to absorb moisture which is a benefit during times of precipitation. The material is generally able to be spread in an even thickness, fills voids in the open face of the waste and works well on interior slopes. It also does not create significant dust and works well in windy conditions.

The paper mill sludge will be stockpiled daily near the active area. At the end of each day, the sludge will be spread in a 6-inch layer over the open face of the waste. The sludge will be removed to the extent practical prior to resuming filling to minimize the creation of barrier layers within the waste mass. The removed material can be reused or mixed with the MSW. Typically, the material would be removed during the next working day but could possibly be left in-place for 2 to 4 weeks depending on fill sequencing. The maximum amount of time the material would be left in-place is 6 months, at which time intermediate cover would be required.

Table 1 indicates probable sources of paper mill sludge wastes that will be accepted at the Brown County Port & Resource Recovery Department (BCPRRD) SLF, along with their percent solids.

Table 1

### Papermill Sludge as ADC

<b>Papermill Sludge Source</b>	<b>Percent Solids</b>	<b>Volume (CY)*</b>
Appvion Paper Mill	60.8	4,516
Clearwater Paper Mill	42.4	3,385
Fox River Fiber	50.6	21,999
Neenah Paper Appleton Paper Mill	39.5	1,085
Neenah Paper Neenah Paper Mill	36.0	3,461
Proctor & Gamble Paper Mill	31.5	11,498
<b>Average</b>	<b>43.5</b>	<b>Total</b> 45,944

\*Volume based on 2018 data.

As indicated by the table, paper mill sludge currently used for ADC averages 43.5% solids, with total percent solids varying with each source. BCPRRD proposes to continue using paper mill sludge as it is used at the current regional landfill in Outagamie County. Additional chemical and physical characteristics of paper mill sludge sources expected at the SLF are included in Attachment 1. Any new sources for paper mill sludge will be managed accordingly with the

SLF's Special Waste Management Plan, and should any potential sources not meet the aforementioned characteristics, BCPRRD shall seek Wisconsin Department of Natural Resources (WDNR) approval.

## 2.1 Poly Reject Material

BCPRRD is approved for acceptance of, and use of poly reject material as ADC. The material is generated by paper manufacturers during the incoming recycled material processing stage. Incoming materials are processed, and recoverable fibers are removed for recycled paper making. The remaining materials are considered a waste product and generally contain unrecoverable paper fibers, plastics, and other waste materials.

At the SLF, the poly reject materials are used beneficially as an alternative daily cover amendment. During initial placement of waste, poly rejects were used for daily cover against the drainage layer to within 10 feet of where traditional soil or fine-grained cover materials are not permitted. Materials are placed daily, spread, and pushed up slopes in similar fashion to cover materials. BCPRRD currently accepts poly reject material from multiple mills in Brown County. Future material providers may also be considered.

When used as ADC, the poly reject will be stockpiled adjacent to the active working face and spread over the refuse or special use areas in a minimum 6-inch thickness at the end of each day. The material will be removed to the extent practical prior to resuming filling to minimize the creation of barrier layers within the waste mass. The poly reject material layer will be mixed with the waste prior to additional waste placement.

The material has not been observed to produce any considerable amount of dust. Use of this material will be limited when high-wind conditions exist. Existing dust suppression practices will be applied as necessary to control dust and windblown debris. If the material causes litter problems outside the limits of waste after placement, other cover material that prevents windblown conditions shall be applied over it.

Typically, the material would be covered during the next working day but could possibly be left in-place for 2 to 4 weeks, depending on fill sequencing. The maximum amount of time the material would be left in-place is 6 months, at which time intermediate cover would be required.

### 3 Foundry Sand and Slag

BCPRRD is approved for use of foundry sand and slag for ADC in addition to construction of internal roadways, screening berms, and the staging deck for the haul trucks.

Foundry sand is created during the metal casting process. Sand is used in casting molds. The sand is reused numerous times and a portion of the sand is continuously removed and replaced with virgin sand. Eventually, heat and mechanical abrasion renders it unsuitable for use in the casting molds and it becomes a waste product. Slag is a solidified waste product removed from the molten metal created during the metal casting process.

When used as ADC, the foundry sand will be stockpiled adjacent to the active working face and spread over the refuse in a minimum 6-inch thickness at the end of each day. The foundry sand layer will be removed or mixed with the waste prior to additional waste placement. The sand will be removed to the extent practical prior to resuming filling to minimize the creation of barrier layers within the waste mass. The removed material can be reused or mixed with the MSW. Typically, the material would be covered during the next working day, but could possibly be left in-place for two to four weeks depending on fill sequencing. The maximum amount of time the material would be left in-place is six months, at which time intermediate cover would be required.

As much as possible, the material will be placed and graded directly to avoid double handling when used for berms or road base. Otherwise, it may be stockpiled temporarily near the berm or road locations. If foundry sand is used for berm construction, the outboard slopes will be covered with a minimum thickness of 1 foot of clean soil to prevent direct runoff from the material outside of the lined area of the landfill.

Slag will be stockpiled near to the active working face and used to construct structures (berms, dikes, roads or the staging deck) within the landfill limits on an as-needed basis. The primary use of the material will be for road base. If slag is used for berm construction, the outboard slopes will be covered with a minimum thickness of 1 foot of clean soil to prevent direct runoff from the material outside of the lined area of the landfill.

Foundry sand and slag can generally be used in all weather conditions. The material works well as ADC and for providing a firm base for roadways and staging areas. The sand and slag can also be mixed with other ADC materials to fill surface voids and add shear strength to the ground surface. Dusting may occur in windy conditions. The material will not be used if dust cannot be controlled. Foundry sand would not be used for berms during precipitation events unless all runoff from the material is contained within the lined area of the landfill.

#### 4 Crushed Glass

A request for use of residual glass and 3-mix glass as alternative daily cover was originally submitted as part of the Plan of Operation and later rescinded. There are no plans at this time for use of crushed glass as alternative daily cover.

## 5 Automobile Shredder Fluff

BCPRRD is approved for use of automobile shredder fluff as ADC material, in addition to construction of internal roadways and the staging deck for the haul trucks. Shredder fluff is created as a residue of the shredding and recycling of automobiles.

When used as ADC, the shredder fluff will be stockpiled adjacent to the active working face and spread over the refuse in a minimum 6-inch thickness at the end of each day. Typically, the material would be covered during the next working day but could possibly be left in-place for two to four weeks depending on fill sequencing. The maximum amount of time the material would be left in-place is six months, at which time intermediate cover would be required.

Shredder fluff is useful in providing an all-weather driving surface on internal haul roads and the staging deck. In general, the material is mixed with other materials (shredded wood, road gravel, foundry sand, etc.) and placed an approximate 1-foot thickness over the base material. As much as possible, the material will be placed and graded directly to avoid double handling. Otherwise, it may be stockpiled temporarily near the deck or road locations.

The shredder fluff material will be reviewed and approved for disposal in accordance with the SLF's Special Waste Management Plan. Attachment 2 provides the Special Waste Management Plan's analytical acceptance protocol, Protocol G, for accepting auto shredder fluff. Results of laboratory testing of the material will be included in the SLF's Annual Report.

## 6 Shredded Wood

BCPRRD is approved for acceptance and use of source-separated, clean shredded wood for ADC, internal roadway surfacing, and staging deck material for haul trucks. Typical particle size after shredding is 1 to 2 inches. Shredded wood works well as ADC in wet weather conditions. Shredded wood can also provide a base for vehicle traffic in wet weather conditions. Shredded wood is most likely to be applied as staging deck material and internal roadway surfacing, but may be used sporadically as ADC. Precautions such as using the wood in wet weather conditions will be taken to minimize fire hazards. Any new sources for shredded wood will be managed accordingly with the SLF's Special Waste Management Plan, and should any potential sources not meet the aforementioned characteristics, BCPRRD shall seek WDNR approval.

When used as ADC, the shredded wood will be stockpiled adjacent to the active working face and spread over the refuse in a minimum 6-inch thickness at the end of each day. The shredded wood will not require removal prior to additional waste placement. Typically, the material would be covered during the next working day but could possibly be left in-place for 2 to 4 weeks depending on fill sequencing. The maximum amount of time the material would be left in-place is 6 months, at which time intermediate cover would be required.

As much as possible, the material will be placed and graded directly to avoid double handling when used for road base or staging areas. Otherwise, it may be stockpiled temporarily near the areas where it is to be used.

### 6.1 Crushed Pallets

Crushed clean and stained pallets are approved for acceptance and use of as beneficial use. When used for beneficial reuse, pallet wood will be stockpiled and segregated near the active tipping area. Whole and partial pallets are spread with the dozer and then run over with the tracked vehicle to break up the wood structure into pieces ranging from approximately 2 to 8-inches. This method of handling prevents creation of airborne particles or fine-grained materials. These broken wood pieces are primarily used for the construction of interior roads and staging areas. The material can be used for decking material along with other types of shredded wood previously described. Crushed pallet wood materials works well in wet weather conditions and use of the material does not represent an increase in potential for fires in comparison to other waste materials accepted in the landfill. Precautions will be taken for use of the wood during wet weather conditions to minimize fire hazards.

## 7 Contaminated Soils

BCPRRD proposes to use contaminated soils for ADC, intermediate cover, as well as interior structures such as berms, dikes, roads and staging areas. Each new source for contaminated soils will be evaluated per the SLF's Special Waste Management Plan. Limiting factors include the consistency of the material and its ability to be efficiently handled and spread in a 6-inch layer. A minimum of 1-foot thickness of clean soil will be placed over the exterior slope of berms constructed using contaminated soils where surface water runoff may occur. All surface water contacted by contaminated soils will be handled as leachate. Contaminated soils will not be used for intermediate cover on exterior slopes unless approved at a future date.

Contaminated soil sources used as ADC will not include all types of contaminated soils that have been approved for disposal in the landfill. Pre-approved ADC and beneficial reuse contaminated soils will be limited to contaminated soils with levels at or below the NR 720 Wis. Adm. Code Industrial Direct Contact Residual Contaminant Levels (RCL) or up to [a factor of 10x of the RCL while also being below the Special Waste Management Plan acceptance levels.](#)

Contaminated soils that fall [above the 10x RCL and below the Special Waste Management Plan acceptance levels](#) may be approved on a case-by-case basis and BCPRRD will seek WDNR approval for these sources. Section 5.2 of the Special Waste Management Plan includes additional information about contaminated soil sources. [Section 7.5 includes additional soil handling guidelines for soils above the RCLs that are used beneficially.](#)

### 7.1 Alternate Daily Cover

Materials will be stockpiled adjacent to the active area at a location that will not affect traffic flow. The material will be placed in a 6-inch layer over the open face of the active fill area following each day's filling activities. The material may be supplemented with other ADC materials or soil. The material will be removed (to the extent practical) prior to filling additional waste materials in that area to minimize the potential to create hydraulic barrier layers in the waste mass. The material may be re-used as ADC if it can be removed with minimal contamination from the waste materials. Material not re-used will be mixed with the waste materials in a manner which will not create hydraulic barriers within the waste mass. Fine-grained soils will not be used during wet weather conditions.

### 7.2 Intermediate Cover

Materials will be stockpiled within the lined area of the landfill in a location where direct runoff from the material will be contained within the lined area. The material will be placed in an approximate 1-foot thick lift over a completed waste lift which will not receive additional waste for several weeks or more. The material will be placed in a manner which will direct all surface water runoff to the leachate collection system of the SLF. The material will not be placed on exterior slopes. The material will be removed (to the extent practical) prior to filling additional waste materials in that area. The material may be re-used as intermediate cover if it can be removed with minimal contamination from the waste materials. Material not re-used will be mixed with the waste materials in a manner which will not create hydraulic barriers within the waste mass.

### 7.3 Road Construction/Staging Areas

Materials will be stockpiled within the lined area of the landfill in a location where direct runoff from the material will be contained within the lined area. The material will be spread in 1 to 2 foot layers to provide a firm base over the waste material. Additional road base materials may be placed over the contaminated soils. The material may be re-used as road material if it can be removed with minimal contamination from the waste materials. Material not re-used will be mixed with the waste materials in a manner which will not create hydraulic barriers within the waste mass. Fine-grained soils will not be used during wet weather conditions.

### 7.4 Berm Construction

Materials will be stockpiled within the lined area of the landfill in a location where direct runoff from the material will be contained within the lined area. The material will be used to construct screening berms around the perimeter of waste lifts. The berms will provide visual screening and protection from the wind. A minimum 1-foot thickness of clean soil will be placed over the exterior slope of the berms if there is a potential for direct runoff of surface water into the site surface water management system. Fine-grained soils will not be used during wet weather conditions.

### 7.5 Soil Handling and Considerations

Precautions for limiting workers and general public to potential exposure routes listed under NR 720.03 (5) for direct contact human exposure of substances shall be followed. Exposure routes in soil are considered through the following pathways: dermal absorption, incidental ingestion, and inhalation of particulate matter or soil vapors. Exposure to potential contaminants should be limited on the landfill site through management of materials and engineering controls. Concerns for protecting groundwater and direct human contact are considered when determining allowable residual contaminant levels in soils. The South Landfill site collects all contact water and treats it as leachate, with the engineering control of the leachate management system. Beneficial use of contaminated soils shall not be placed on exterior side slopes and all contact water should be collected and treated with the existing leachate collection system, thus protection of groundwater is maintained for material used beneficially in the landfill.

Worker protection to include vehicle cabins with air filters. Workers are typically within air cabins for the majority of the workday. The air filters should function to reduce airborne particulate matter and reduce inhalation risk. Workers should limit contact with any contaminated soils and dermal direct contact is considered minimal. Inhalation risks should be mitigated by worker placement and travel routes during initial placement of material when there may be some exposure. Placement of material should typically be completed within 15 or 30 minutes. Material may be stockpiled in the working location.

Within interior fill areas, contaminated soils used as alternative daily cover, or for construction of berms and dikes, should be in place for limited time periods before being scarified or removed prior to the next lift of waste placement or covered by additional materials. Workers and the public shall have limited exposure to the materials.

## 8 Boiler/Fly Ash

BCPRRD requests approval for boiler/fly ash to be utilized at the SLF site for ADC as well as internal haul roads, screening berms, and staging areas. The ash from each source will be evaluated under the SLF's Special Waste Management Plan. Attachment 3 includes the typical sources of boiler/fly ash anticipated at the SLF. Boiler/fly ash may only be used if dust generation is prevented and controlled.

When used as ADC, the ash will be stockpiled adjacent to the active working face and spread over the refuse in a minimum 6-inch thickness at the end of each day. The ash layer will be mixed with the waste prior to additional waste placement. Typically, the material would be covered during the next working day but could possibly be left in-place for two to four weeks depending on fill sequencing. The maximum amount of time the material would be left in-place is six months, at which time intermediate cover would be required.

As much as possible, the material will be placed and graded directly to avoid double handling when used for berms or road base. Otherwise, it may be stockpiled temporarily near the berm or road locations. The primary concern with the use of this material is creating dust. The material will not be used if dust cannot be controlled. Water may need to be applied to the material to control dust. The material will not be used on the surface of roadways or the deck area. In general, it will be mixed with other materials (i.e., breaker run, foundry sand, construction and demolition materials, slag, etc.) to form a solid base for the hauling vehicles to operate on. The material will be covered with a surface material (road gravel, shredder fluff, wood chips, etc.) prior to being used for vehicle traffic.

Boiler/fly ash has been used successfully at landfills to stabilize low strength areas. When hydrated, the material tends to form a solid structure which provides stability. For this reason, it is felt the material will make excellent road base or deck material.

## 9 Posi-Shell® Spray-on Synthetic Daily Cover

### 9.1 General

Posi-Shell® is a synthetic spray-on daily cover material which has been approved for use as ADC at the NELF. The approval denied the use of the spray-on material during windy days or significant rain events. In addition, the approval limited the amount of time which the material could be left exposed to 72 hours.

The material has been used successfully at the NELF since late 2013. BCPRRD proposes use of Posi-Shell® as an optional daily cover at the SLF.

### 9.2 Proposed Mixtures

BCPRRD is approved for use four separate mixes in accordance with manufacturer's recommendations. The Posi-Shell® formulation guide is included in Attachment 4 along with product information. Each separate mixture is described below:

#### *Mixture 1 – Standard Mix for Dry Conditions*

In general, a typical batch of Mixture 1 will begin with 1,600 gallons of water. Two, 500-pound (lb) bulk sacks of Posi-Shell® will be added and mixed at high speed for five minutes. The material will be spray applied at a rate of approximately 0.1 to 0.125 gallons per square feet. One batch of material will cover approximately 12,800 to 16,000 square feet. This mixture is referred to as the base mix in the Posi-Shell® formulation guide, which is provided in Attachment 4.

#### *Mixture 2 – Moderate Wet Conditions*

In general, a typical batch of Mixture 2 will begin with 1,600 gallons of water. Two, 500-lb bulk sacks of Posi-Shell® will be added and mixed at high speed for five minutes. The material will be spray applied at a rate of approximately 0.125 to 0.167 gallons per square feet. A total of 4,000 lbs of Portland cement will be added and mixed for two minutes. One batch of material will cover approximately 9,600 to 12,800 square feet. This mixture is referred to as the EC-4 mix in the Posi-Shell® formulation guide, which is provided in Attachment 4.

#### *Mixture 3 – Severe Wet Conditions*

In general, a typical batch of Mixture 3 will begin with 1,600 gallons of water. Two, 500-lb bulk sacks of Posi-Shell® will be added and mixed at high speed for five minutes. The material will be spray applied at a rate of approximately 0.167 to 0.25 gallons per square feet. A total of 4,000 lbs of Portland cement and up to 200 lbs of Xtreme Rain Shield™ will be added and mixed for two minutes. One batch of material will cover approximately 6,400 to 9,600 square feet. This mixture is referred to as the Xtreme Rain Shield™ Series (medium) mix in the Posi-Shell® formulation guide, which is provided in Attachment 4.

## 9.3 Proposed Usage

### 9.3.1 Interior Active Areas and Slopes

BCPRRD is approved for use of Posi-Shell<sup>®</sup> spray-on ADC as an optional ADC for the SLF. Mixture 1 under dry weather conditions; and if light or moderate rain is expected (0 to 0.5 inches), Mixture 2 will be used. If heavy rain (>0.5 inches) is forecast, Mixture 3 will be used. The material will remain in place up to 72 hours before being covered with additional waste or other daily cover materials approved for extended exposure prior to intermediate cover placement. The material will be applied in accordance with manufacturer's recommendations. The material will not be used on exterior slopes. In addition, the material will not be used on windy days or during significant rain events.

## 10 Tire Derived Aggregate

BCPRRD proposes to use tire derived aggregate (TDA) or tire chips as an alternative construction material for horizontal gas extraction well and leachate recirculation pipe bedding aggregate. This material was approved in the November 17, 2023, plan modification approval.

The use of 2-inch by 2-inch nominally sized tire derived aggregate will result in an aggregate material similar to the 1.5-inch stone aggregate specified in the Plan of Operations. The tire derived aggregate loose density is approximately four times less dense than stone 22 pounds per cubic foot (lbs/cf) (110 for stone) as placed loose and between 30 lbs/cf to 60 lbs/cf when loaded. Studies on hydraulic conductivity of tire derived aggregate has shown ranges similar to that of stone (0.5 centimeter per second [cm/sec] to 20 cm/sec). Tire derived aggregate exhibits a greater degree of compressibility with smaller shredded size showing lower amounts than larger shreds. Compressibility of the tire derived aggregate also increases with higher vertical strains. The following design considerations are given.

- ◆ Compaction and Settlement – To minimize the effects of compressibility, compaction and post-installation settlement will be addressed. Additional compaction efforts at material installation as well as thickening of the tire derived aggregate pipe bedding is proposed.
- ◆ Chip size – Tire derived aggregate that is too small nominal size has tendency to result in lower void space for liquid and gas movement. Tire derived aggregate that is too large has greater risk of higher compressibility due to inadequate compaction on installation. Tire derived aggregate sizes of 2 inches is proposed as it appears to more closely match the planned stone aggregate characteristics for handling liquids drainage and gas extraction capacity.
- ◆ Trench size – The width and depth of the bedding will be increased by 40% to account for compressibility under vertical stresses due to filling operations and vehicle loading.

### 10.1 Performance Evaluation and Contingency Plan

Documentation of installed tire derived aggregate as beneficial use material within horizontal gas extraction wells and leachate recirculation trenches will be performed and included with annual reports. Observations of material handling and compaction will be made. The trenches will be observed as waste filling continues post construction.

Gas extraction is anticipated to begin in 2026. At the time of gas extraction, observations on well performance will be made and documented in the annual report. Should Brown County install some horizontal gas extraction wells with stone aggregate, a comparison in performance can be made at that time. Leachate recirculation will not begin until after gas extraction equipment is up and running.

As noted in Addendum No. 1 to the Plan of Operations, “the horizontal gas extraction wells will be installed as temporary control devices installed during active fill to control gas prior to the time when vertical gas wells can be installed.” Horizontal gas extraction wells have historically been prone to differential settlement of the waste mass resulting in low points in the gas piping.

Due to liquids settling out in low points, gas extraction may be hindered. Should horizontal gas extraction wells with tire derived aggregate bedding become flooded out or unusable, vertical gas extraction wells will be installed as the primary gas extractors once filling reaches design grades. For leachate recirculation wells with tire derived aggregate bedding, Brown County will monitor the system in accordance with the Leachate Recirculation Plan submitted as part of the Plan of Operation for warning symptoms and failure thresholds. Routine monitoring of the system will include documentation of gallons recirculated to each well and performance over time of the recirculation trenches will be used to assess system operations.

## 10.2 Material Delivery, Handling and Use

The tire aggregate material will be delivered to the site by trailer load at the start of gas or leachate well construction. Tire aggregate may be stockpiled on site or delivered just in time and placed right in the trench. Material stockpile amounts not to exceed 120% of required amounts to reduce excess storage. The tire aggregate will be stockpiled outside the limits of waste.

Installation of the material within trenches has shown to be consistent with stone aggregate installation. An excavator or other earth moving equipment will be used to move material into the dug trenches. An excavator bucket or other compaction equipment will be used to compact the installed tire derived aggregate pipe bedding. After piping installation, the remainder of the trench will be filled and compacted. Waste will be placed over the tire aggregate trenches to provide separation from the active fill area for fire mitigation.

## 10.3 Trial Period

A 7-year trial period through December 2031 will be applied to the use of the tire aggregate as a beneficial use material. This allows for construction of the wells to occur based on filling sequences and gas extraction system installation and operation. The tonnage accepted and used will be summarized and included in the SLF's annual report. A summary of the material effectiveness and any issues related to its use will be provided in the annual report.

## 11 Allowable Daily Cover Amounts

The SLF is expected to accept approximately 2,400 tons of waste (including beneficial use materials) per day. Assuming an average density of 1,650 lbs per cubic foot, the daily volume of airspace used is estimated to be 2,900 cy. The daily area where waste is placed is approximately 140 feet by 140 feet. Six inches of daily cover over the working face of the daily filling area results in a volume of 363 cy. Therefore, BCPRRD requests the acceptable daily cover percentage be increased to 363 cy/2,900 cy or 12.5% by volume (of the total airspace).

Attachment 1  
Paper Mill Sludge Sources

OUTAGAMIE COUNTY SOLID WASTE DEPARTMENT  
 1419 HOLLAND RD.  
 APPLETON, WI 54911

Project Number: 19000768  
 Report Date: 12/27/2018  
 Sampled By: CLIENT

Attn: BILL LONG

# Samples: 5

Sample Number: 49001625  
 Sample ID: APPVION  
 Sample Date: 12/17/2018  
 Date Received: 12/18/2018

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
AMMONIA NITROGEN	58	mg/l	23	77	98	SM4500NH3G	12/26/18	
KJELDAHL NITROGEN	1431	mg/l	70	233	639	EPA351.2	12/21/18	

Sample Number: 49001626  
 Sample ID: PROCTOR & GAMBLE  
 Sample Date: 12/17/2018  
 Date Received: 12/18/2018

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
AMMONIA NITROGEN	74	mg/l	23	77	98	SM4500NH3G	12/26/18	
KJELDAHL NITROGEN	1003	mg/l	28	93	259	EPA351.2	12/21/18	

Sample Number: 49001627  
 Sample ID: NEENAN PAPER NEENAH  
 Sample Date: 12/17/2018  
 Date Received: 12/18/2018

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
AMMONIA NITROGEN	1070	mg/l	23	77	100	SM4500NH3G	12/26/18	
KJELDAHL NITROGEN	7427	mg/l	115	383	1042	EPA351.2	12/21/18	

Sample Number: 49001628  
 Sample ID: NEENAN PAPER APPLETON  
 Sample Date: 12/17/2018  
 Date Received: 12/18/2018

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
AMMONIA NITROGEN	184	mg/l	19	63	83	SM4500NH3G	12/26/18	
KJELDAHL NITROGEN	984	mg/l	40	133	363	EPA351.2	12/21/18	

Sample Number: 49001629  
 Sample ID: FOX RIVER FIBER  
 Sample Date: 12/17/2018  
 Date Received: 12/18/2018

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
AMMONIA NITROGEN	71	mg/l	19	63	83	SM4500NH3G	12/26/18	
KJELDAHL NITROGEN	923	mg/l	28	93	255	EPA351.2	12/21/18	

All LOD/LOQs adjusted for dilution and/or solids content.

BADGER LABORATORIES, INC.  
 WDNR Certified Lab #445023150  
 Approved By:

*Amanda Vordus*

BLE:gr



Analytical Report

507 West Bell Street  
Neenah, WI 54956 4868  
P 920 729 1100 | T 1 800 776 7196  
F 920 729 4945

OUTAGAMIE COUNTY SOLID WASTE DEPARTMENT  
1419 HOLLAND RD.  
APPLETON, WI 54911-8985

Project Number: 19000848  
Report Date: 1/2/2019  
Sampled By: CLIENT

Attn: MR. GARY STEEDE

# Samples: 1

Sample Number: 49001781  
Sample ID: CLEARWATER PAPER  
Sample Date: 12/19/2018  
Date Received: 12/20/2018  
Results expressed on an 'as received' basis.

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
AMMONIA NITROGEN	69	ppm	19	63	83	SM4500NH3G	12/27/18	
KJELDAHL NITROGEN	1077	ppm	42	140	383	EPA351.2	12/31/18	

All LOD/LOQs adjusted for dilution and/or solids content.

BADGER LABORATORIES, INC.  
WDNR Certified Lab #445023150  
Approved By:

BLE:tk



# BADGER LABORATORIES & ENGINEERING INC.

501 WEST BELL STREET • NEENAH, WISCONSIN 54956-4868 • EST. 1968  
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APPROVION  
P.O. BOX 359, 825 E WISCONSIN AVE  
APPLETON, WI 54912-

Report Number: 1511331  
Report Date: 11/6/2015  
Sampled By: Client  
Emailed: 11/6/2015

Attn: DAVE SCHOENLEBER

PO#: 427392  
# Samples: 1 SLUDGE

Sample Number: 45026376  
Description: WASTEWATER TREATMENT SLUDGE  
Sample Date: 10/20/2015  
Date Received: 10/21/2015

Parameter	Results	Units	Codes	LOD	LOQ	Method	Analyzed
CHLORINE	0.07	%		0.02	0.02	ASTM D2361	11/03/15
CYANIDE, TOTAL	<0.30	ppm		0.30	1.0	SM4500CN-E	10/28/15
CYANIDE-AM. TO CL2	<0.30	ppm		0.007	0.023	SM4500CN-G	10/28/15
FLASH POINT	--SEE ATTACHED ESC REPORT--						
FREE LIQUIDS	0.0	%		0	0	SW 846 9095	10/22/15
METALS DIGESTION	DONE			0	0	SM3030E	11/02/15
PHENOL, TOTAL	6.0	ppm		1.1	3.7	EPA420.4	11/04/15
pH-LAB	7.0	S.U.		0	0	SW846-9045C	10/21/15
SULFIDE	--SEE ATTACHED ESC REPORT--						
TCLP ARSENIC	0.008	mg/l		0.005	0.017	SM3113B	11/02/15
TCLP BARIUM	0.15	mg/l		0.10	0.33	SM3111D	11/02/15
TCLP CADMIUM	<0.01	mg/l		0.01	0.03	SM3111B	11/04/15
TCLP CHROMIUM	<0.03	mg/l		0.03	0.10	SM3111B	11/02/15
TCLP EXTRACTION	COMPLETE			0	0	SW846-1311	10/31/15
TCLP LEAD	<0.03	mg/l		0.03	0.10	SM3113B	11/04/15
TCLP MERCURY	<0.0002	mg/l		0.0002	0.0008	SM3112B	11/05/15
TCLP ORGANICS	--SEE ATTACHED ESC REPORT-- / L*						
TCLP SELENIUM	<0.005	mg/l		0.005	0.017	SM3113B	11/04/15
TCLP SILVER	<0.01	mg/l		0.01	0.03	SM3113B	11/04/15
TOTAL SOLIDS	60.8	%		0.010	0.010	SM2540B	10/21/15

\*Quality Assurance Code(s):

- L. Sample(s) not received in a glass container as required by WDNR protocol.

BADGER LABS & ENGINEERING  
WDNR Certified Lab #445023150  
Approved By:

JMW:rt

WI DNR Certified Lab #445023150  
WI Reg. Engineers (Corp.) #CE00601  
WI DATCP Certified #205 (Bacteria-Water)

Members  
WI Environmental Labs; Am. Chemical Soc.;  
T.A.P.P.I.; WI Food Processors Assn.;  
Wisc. Paper Council

**Badger Laboratories & Engineering, Inc.**

Sample Delivery Group: L796360  
Samples Received: 10/23/2015  
Project Number:  
Description:

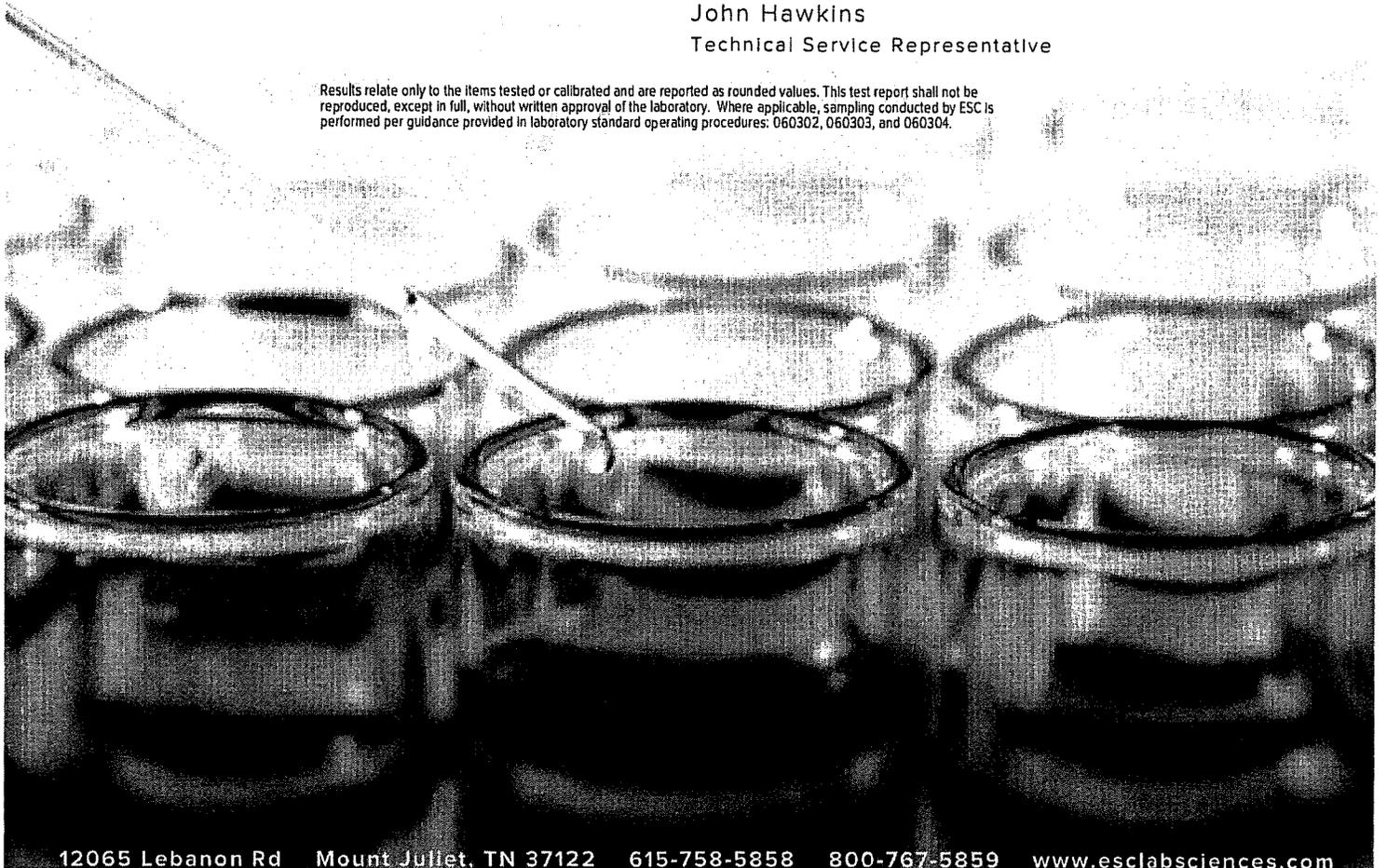
Report To: Jeff Wagner  
501 West Bell Street  
Neenah, WI 54956

Entire Report Reviewed By:



John Hawkins  
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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# SAMPLE SUMMARY

ONE LAB. NATIONWIDE

26376 L796360-01 Solid

Collected by \_\_\_\_\_ Collected date/time 10/20/15 13:30 Received date/time 10/23/15 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analysis Analyst
Preparation by Method 1311	WG824985	1	10/27/15 22:58	10/27/15 22:59	LJN
Preparation by Method 1311	WG825045	1	10/28/15 13:20	10/28/15 14:06	CHM
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG825405	1	10/29/15 20:04	10/30/15 08:41	JF
Volatile Organic Compounds (GC/MS) by Method 82608	WG825364	1	10/29/15 17:34	10/29/15 17:34	8M8
Wet Chemistry by Method 9034/90308	WG825488	1	10/30/15 11:10	10/31/15 13:45	AS
Wet Chemistry by Method D93/1010A	WG825708	1	10/31/15 12:08	10/31/15 12:08	MZ

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

26376

Collected date/time: 10/20/15 13:30

## SAMPLE RESULTS - 01

L796360

ONE LAB. NATIONWIDE



## Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		10/27/2015 10:58:35 PM	WG824985
TCLP ZHE Extraction	-		10/28/2015 1:20:54 PM	WG825045

## Wet Chemistry by Method 9034/9030B

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Reactive Sulf. (SW846 7.3.4.1)	ND		25.0	1	10/31/2015 13:45	WG825488

## Wet Chemistry by Method D93/1010A

Analyte	Result Deg. F	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170 F		1	10/31/2015 12:08	WG825708

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.0500	0.50	1	10/29/2015 17:34	WG825364
Carbon tetrachloride	ND		0.0500	0.50	1	10/29/2015 17:34	WG825364
Chlorobenzene	ND		0.0500	100	1	10/29/2015 17:34	WG825364
Chloroform	ND		0.250	6	1	10/29/2015 17:34	WG825364
1,2-Dichloroethane	ND		0.0500	0.50	1	10/29/2015 17:34	WG825364
1,1-Dichloroethene	ND		0.0500	0.70	1	10/29/2015 17:34	WG825364
2-Butanone (MEK)	ND		0.500	200	1	10/29/2015 17:34	WG825364
Tetrachloroethene	ND		0.0500	0.70	1	10/29/2015 17:34	WG825364
Trichloroethene	ND		0.0500	0.50	1	10/29/2015 17:34	WG825364
Vinyl chloride	ND		0.0500	0.20	1	10/29/2015 17:34	WG825364
(S) Toluene-d8	105		90.0-115	114		10/29/2015 17:34	WG825364
(S) Dibromofluoromethone	101		79.0-121	125		10/29/2015 17:34	WG825364
(S) o,o,p-Trifluorotoluene	98.1		90.4-116	114		10/29/2015 17:34	WG825364
(S) 4-Bromofluorobenzene	90.9		80.1-120	128		10/29/2015 17:34	WG825364

## Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
1,4-Dichlorobenzene	ND		0.100	7.50	1	10/30/2015 08:41	WG825405
2,4-Dinitrotoluene	ND		0.100	0.13	1	10/30/2015 08:41	WG825405
Hexachlorobenzene	ND		0.100	0.13	1	10/30/2015 08:41	WG825405
Hexachloro-1,3-butadiene	ND		0.100	0.50	1	10/30/2015 08:41	WG825405
Hexachloroethane	ND		0.100	3	1	10/30/2015 08:41	WG825405
Nitrobenzene	ND		0.100	2	1	10/30/2015 08:41	WG825405
Pyridine	ND		0.100	5	1	10/30/2015 08:41	WG825405
3&4-Methyl Phenol	ND		0.100	400	1	10/30/2015 08:41	WG825405
2-Methylphenol - (C7H8O)	ND		0.100	200	1	10/30/2015 08:41	WG825405
Pentachlorophenol	ND		0.100	100	1	10/30/2015 08:41	WG825405
2,4,5-Trichlorophenol	ND		0.100	400	1	10/30/2015 08:41	WG825405
2,4,6-Trichlorophenol	ND		0.100	2	1	10/30/2015 08:41	WG825405
(S) 2-Fluorophenol	42.0		10.0-77.9	87		10/30/2015 08:41	WG825405
(S) Phenol-d5	30.5		5.00-70.1	67		10/30/2015 08:41	WG825405
(S) Nitrobenzene-d5	43.9		21.8-123	120		10/30/2015 08:41	WG825405
(S) 2-Fluorobiphenyl	53.0		29.5-131	122		10/30/2015 08:41	WG825405
(S) 2,4,6-Tribromophenol	54.6		11.2-130	148		10/30/2015 08:41	WG825405
(S) p-Terphenyl-d14	62.8		29.3-137	149		10/30/2015 08:41	WG825405

ACCOUNT:

Badger Laboratories &amp; Engineering, Inc.

PROJECT:

SDG:

L796360

DATE/TIME:

11/03/15 07:10

PAGE:

5 of 16

Cp  
2 Tc  
3 Ss  
4 Cn  
5 Sr  
6 Qc  
7 GI  
8 Al  
9 Sc



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins  
Technical Service Representative

<sup>1</sup> Cp

<sup>2</sup> Tc

<sup>3</sup> Ss

<sup>4</sup> Cn

<sup>5</sup> Sr

<sup>6</sup> Qc

<sup>7</sup> Gl

<sup>8</sup> Al

<sup>9</sup> Sc

WG825488

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.



Wet Chemistry by Method 9034/9030B

L796360-01

Method Blank (MB)

(MB) 10/31/15 13:45

Analyte	MB Result mg/kg	MB Qualifier	MB RDL mg/kg
Reactive Sulf.(SW846 7.3.4.1)	ND		25.0

Cp

Tc

Ss

L796360-01 Original Sample (OS) • Duplicate (DUP)

(OS) 10/31/15 13:45 • (DUP) 10/31/15 13:45

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Reactive Sulf.(SW846 7.3.4.1)	ND	ND	1	0.000		20

Cn

Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 10/31/15 13:45 • (LCSD) 10/31/15 13:45

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Reactive Sulf.(SW846 7.3.4.1)	100	91.8	91.8	91.8	91.8	70.0-130			0.000	20

Gc

Gl

Al

Sc

WG825708

Wet Chemistry by Method D93/1010A

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE



L796360-01

L797217-01 Original Sample (OS) • Duplicate (DUP)

(OS) 10/31/15 12:08 • (DUP) 10/31/15 12:08

Analyte	Original Result Deg. F	DUP Result Deg. F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ignitability	DNI at 170 F	DNI at 170 F	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 10/31/15 12:08 • (LCSD) 10/31/15 12:08

Analyte	Spike Amount Deg. F	LCS Result Deg. F	LCSD Result Deg. F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ignitability	82.0	83	83	101	101	93.0-107			0.000	20

Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

WG825364

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE. 

Volatile Organic Compounds (GC/MS) by Method 8260B

L796360-01

Method Blank (MB)

(MB) 10/29/15 12:47

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
Benzene	ND		0.0500
Carbon tetrachloride	ND		0.0500
Chlorobenzene	ND		0.0500
Chloroform	ND		0.250
1,2-Dichloroethane	ND		0.0500
1,1-Dichloroethene	ND		0.0500
2-Butanone (MEK)	ND		0.500
Tetrachloroethene	ND		0.0500
Trichloroethene	ND		0.0500
Vinyl chloride	ND		0.0500
(S) Toluene-d8	105		90.0-115
(S) Dibromofluoromethane	102		79.0-121
(S) a,a,a-Trifluorotoluene	98.9		90.4-116
(S) 4-Bromofluorobenzene	92.1		80.1-120

- Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- Gc
- 7 GI
- c AI
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 10/29/15 10:41 • (LCSD) 10/29/15 11:01

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0274	0.0272	110	109	73.0-122			0.850	20
Carbon tetrachloride	0.0250	0.0239	0.0234	95.7	93.6	70.9-129			2.26	20
Chlorobenzene	0.0250	0.0246	0.0245	98.3	98.0	79.7-122			0.330	20
Chloroform	0.0250	0.0265	0.0261	106	104	73.2-125			1.50	20
1,2-Dichloroethane	0.0250	0.0245	0.0237	97.8	94.9	65.3-126			3.00	20
1,1-Dichloroethene	0.0250	0.0220	0.0209	88.1	83.8	60.6-133			5.01	20
2-Butanone (MEK)	0.125	0.147	0.132	118	105	46.4-155			11.2	20
Tetrachloroethene	0.0250	0.0236	0.0236	94.5	94.4	73.5-130			0.160	20
Trichloroethene	0.0250	0.0244	0.0240	97.5	96.1	79.5-121			1.45	20
Vinyl chloride	0.0250	0.0240	0.0232	96.1	92.7	61.5-134			3.68	20
(S) Toluene-d8				105	105	90.0-115				
(S) Dibromofluoromethane				105	103	79.0-121				
(S) a,a,a-Trifluorotoluene				97.6	97.0	90.4-116				
(S) 4-Bromofluorobenzene				90.9	90.0	80.1-120				

WG825364

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Volatile Organic Compounds (GC/MS) by Method 8260B

L796360-01

L796329-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 10/29/15 15:49 • (MS) 10/29/15 13:22 • (MSD) 10/29/15 13:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	1.25	0.227	0.842	0.894	49.2	53.4	1	58.6-133	J6	J6	6.03	20
Carbon tetrachloride	1.25	ND	0.781	0.832	62.5	66.5	1	60.6-139			6.28	20
Chlorobenzene	1.25	ND	0.826	0.931	66.1	74.5	1	70.1-130	J6		12.0	20
Chloroform	1.25	ND	0.971	1.02	77.7	81.6	1	66.1-133			4.93	20
1,2-Dichloroethane	1.25	ND	0.841	0.889	67.3	71.1	1	60.7-132			5.49	20
1,1-Dichloroethene	1.25	ND	0.557	0.575	44.5	46.0	1	48.8-144	J6	J6	3.18	20
2-Butanone (MEK)	6.25	ND	5.27	5.27	84.3	84.4	1	45.0-156			0.0200	20.8
Tetrachloroethene	1.25	ND	0.656	0.729	52.5	58.3	1	57.4-141	J6		10.5	20
Trichloroethene	1.25	ND	0.720	0.767	57.6	61.4	1	48.9-148			6.35	20
Vinyl chloride	1.25	ND	0.514	0.524	41.1	41.9	1	44.3-143	J6	J6	2.02	20
(S) Toluene-d8					105	105		90.0-115				
(S) Dibromofluoromethane					103	104		79.0-121				
(S) o,a,a-Trifluorotoluene					98.2	97.5		90.4-116				
(S) 4-Bromofluorobenzene					90.9	90.0		80.1-120				

L796566-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 10/29/15 16:31 • (MS) 10/29/15 14:04 • (MSD) 10/29/15 14:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	1.25	0.0244	0.884	0.877	68.7	68.2	1	58.6-133			0.770	20
Carbon tetrachloride	1.25	ND	0.781	0.758	62.5	60.6	1	60.6-139			2.96	20
Chlorobenzene	1.25	ND	0.928	0.953	74.2	76.3	1	70.1-130			2.71	20
Chloroform	1.25	ND	1.04	1.02	83.4	81.7	1	66.1-133			2.07	20
1,2-Dichloroethane	1.25	ND	0.892	0.870	71.4	69.6	1	60.7-132			2.53	20
1,1-Dichloroethene	1.25	ND	0.584	0.565	46.7	45.2	1	48.8-144	J6	J6	3.33	20
2-Butanone (MEK)	6.25	ND	3.90	3.77	62.4	60.4	1	45.0-156			3.28	20.8
Tetrachloroethene	1.25	ND	0.746	0.754	59.7	60.4	1	57.4-141			1.17	20
Trichloroethene	1.25	ND	0.857	0.850	68.6	68.0	1	48.9-148			0.910	20
Vinyl chloride	1.25	ND	0.507	0.496	40.6	39.7	1	44.3-143	J6	J6	2.25	20
(S) Toluene-d8					105	105		90.0-115				
(S) Dibromofluoromethane					103	103		79.0-121				
(S) o,a,a-Trifluorotoluene					97.9	98.9		90.4-116				
(S) 4-Bromofluorobenzene					89.6	93.6		80.1-120				

- Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

WG825405

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

QUALITY CONTROL SUMMARY

L796360-01

ONE LAB. NATIONWIDE



Method Blank (MB)

(MB) 10/30/15 06:44

Analyte	MB Result mg/l	MB Qualifier	MB RDL mg/l
1,4-Dichlorobenzene	ND		0.100
2,4-Dinitrotoluene	ND		0.100
Hexachlorobenzene	ND		0.100
Hexachloro-1,3-butadiene	ND		0.100
Hexachloroethane	ND		0.100
Nitrobenzene	ND		0.100
Pyridine	ND		0.100
2-Methylphenol	ND		0.100
3&4-Methyl Phenol	ND		0.100
Pentachlorophenol	ND		0.100
2,4,5-Trichlorophenol	ND		0.100
2,4,6-Trichlorophenol	ND		0.100
(S) Nitrobenzene-d5	64.6		21.8-123
(S) 2-Fluorobiphenyl	74.1		29.5-131
(S) p-Terphenyl-d14	88.1		29.3-137
(S) Phenol-d5	39.2		5.00-70.1
(S) 2-Fluorophenol	55.5		10.0-77.9
(S) 2,4,6-Tribromophenol	75.5		11.2-130

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) 10/30/15 05:34 • (LCSD) 10/30/15 05:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	0.0500	0.0262	0.0244	52.3	48.8	21.0-89.4			6.91	32.6
2,4-Dinitrotoluene	0.0500	0.0346	0.0327	69.3	65.4	31.2-105			5.82	22
Hexachlorobenzene	0.0500	0.0344	0.0328	68.9	65.6	38.5-116			4.88	20.1
Hexachloro-1,3-butadiene	0.0500	0.0259	0.0245	51.8	49.1	16.1-104			5.33	31.2
Hexachloroethane	0.0500	0.0260	0.0240	51.9	48.1	16.5-89.8			7.73	30.7
Nitrobenzene	0.0500	0.0290	0.0271	58.0	54.2	31.4-106			6.67	25.7
Pyridine	0.0500	0.0153	0.0137	30.6	27.4	13.5-58.9			10.8	32.5
2-Methylphenol	0.0500	0.0283	0.0257	56.6	51.3	26.4-86.9			9.81	26.5
3&4-Methyl Phenol	0.0500	0.0312	0.0287	62.4	57.4	27.9-92.0			8.37	27
Pentachlorophenol	0.0500	0.0248	0.0237	49.7	47.3	10.0-97.4			4.83	35.1
2,4,5-Trichlorophenol	0.0500	0.0362	0.0342	72.4	68.4	34.9-112			5.71	23.9
2,4,6-Trichlorophenol	0.0500	0.0357	0.0345	71.5	69.1	29.8-107			3.42	24.1

WG825405

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.



L796360-01

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LC5) 10/30/15 05:34 • (LC5D) 10/30/15 05:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
(S) Nitrobenzene-d5				53.2	49.6	218-123				
(S) 2-Fluorobiphenyl				59.7	59.5	29.5-131				
(S) p-Terphenyl-d14				70.3	67.4	29.3-137				
(S) Phenol-d5				37.0	33.6	5.00-70.1				
(S) 2-Fluorophenol				49.0	44.6	10.0-77.9				
(S) 2,4,6-Tribromophenol				68.7	67.8	11.2-130				

Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

L796180-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) 10/30/15 07:07 • (MS) 10/30/15 07:31 • (MSD) 10/30/15 07:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	0.500	ND	0.272	0.291	54.5	58.2	1	14.0-104			6.72	36.4
2,4-Dinitrotoluene	0.500	ND	0.366	0.390	73.1	77.9	1	16.2-135			6.38	20.6
Hexachlorobenzene	0.500	ND	0.362	0.397	72.4	79.3	1	31.9-135			9.11	20
Hexachloro-1,3-butadiene	0.500	ND	0.276	0.283	55.2	56.6	1	15.7-109			2.55	37.6
Hexachloroethane	0.500	ND	0.263	0.286	52.5	57.3	1	10.4-105			8.69	40
Nitrobenzene	0.500	ND	0.304	0.317	60.8	63.5	1	23.1-121			4.34	29
Pyridine	0.500	ND	0.151	0.164	30.1	32.7	1	10.0-77.8			8.28	38.8
2-Methylphenol	0.500	ND	0.290	0.289	58.0	57.9	1	10.0-133			0.260	40
3&4-Methyl Phenol	0.500	ND	0.315	0.312	63.1	62.4	1	17.4-100			1.02	27.7
Pentachlorophenol	0.500	ND	0.311	0.340	62.2	68.1	1	10.0-108			9.06	40
2,4,5-Trichlorophenol	0.500	ND	0.394	0.414	78.7	82.8	1	30.6-120			5.00	33.8
2,4,6-Trichlorophenol	0.500	ND	0.394	0.406	78.8	81.2	1	19.1-114			3.00	29.9
(S) Nitrobenzene-d5					54.8	56.4		218-123				
(S) 2-Fluorobiphenyl					62.8	66.8		29.5-131				
(S) p-Terphenyl-d14					70.7	76.3		29.3-137				
(S) Phenol-d5					36.9	36.1		5.00-70.1				
(S) 2-Fluorophenol					48.8	49.1		10.0-77.9				
(S) 2,4,6-Tribromophenol					71.6	79.3		11.2-130				

<sup>6</sup>Cc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

# GLOSSARY OF TERMS



## Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND,U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.
SDL	Sample Detection Limit.
MQL	Method Quantitation Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.

Qualifier	Description
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

# ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE. 

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- AI
- 9 Sc

## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-39S	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

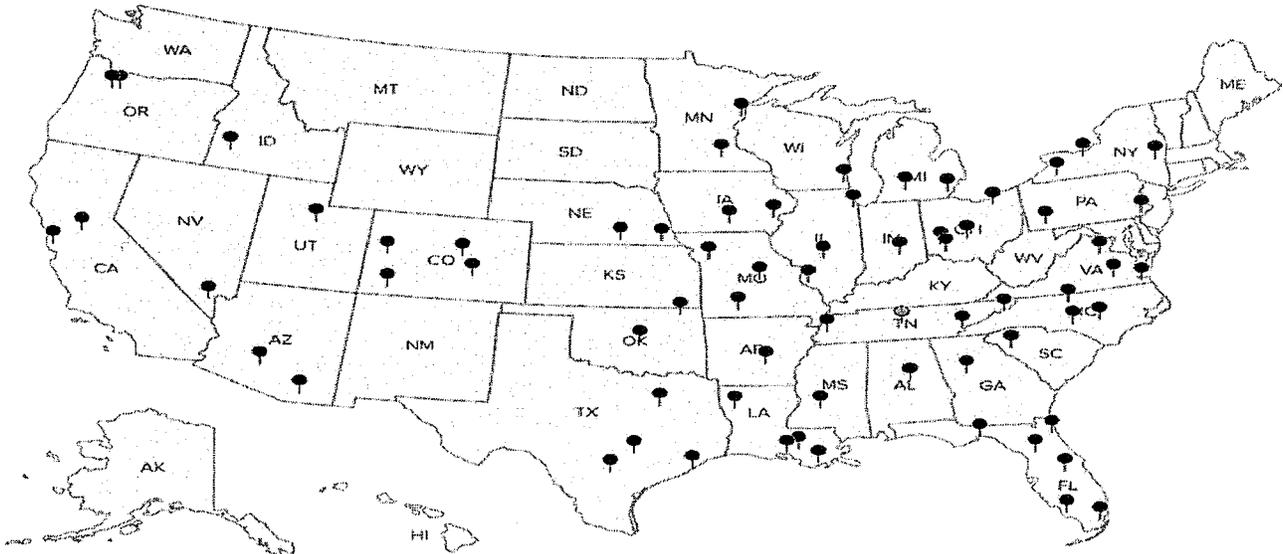
<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>\*\*</sup> Accreditation not applicable

## Third Party & Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA	100789
Canada	1461.01	DOD	1461.01
EPA-Crypto	TN00003	USDA	S-67674

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



ACCOUNT:  
Badger Laboratories & Engineering, Inc.

PROJECT:

SDG:  
L796360

DATE/TIME:  
11/03/15 07:10

PAGE:  
13 of 16

# BADGER LABORATORIES & ENGINEERING CO., INC.

## SAMPLE RECEIPT FORM

1511331

### CLIENT INFORMATION

COMPANY: Appvion Inc.  
 NAME: Dave Schoenleber  
 ADDRESS: 825 E. Wisconsin Ave.  
 PHONE/FAX: 920-991-8858  
 P.O. #: 427392  
 PROJECT/SITE: Appleton Plant  
 REPORT & BILL TO: Dave Schoenleber  
 ADDITIONAL REPORTS TO:                     

**TURN AROUND TIME:**  
 Normal  
 Rush (Approval \_\_\_\_\_)

**SAMPLE TYPE:**  
 Groundwater  
 Wastewater  
 WPDES  
 Cooling Water  
 Drinking Water  
 Solid Waste  
 Oil  
 Other \_\_\_\_\_  
 Lab Filtered  
 Field Filtered  
 Grab  
 Composite  
 Flow Proportional  
 Time Proportional

Customer Sample ID	DATE REC'D	BL & E REPORT #	BL & E SAMPLE #	TEMP	# of Containers	Ice Y/N	DELIVERY METHOD				PRESERVATION				ANALYTICAL REQUESTS	pH ok	EP		
							BL&E	CLIENT	UPS	OTHER	PIF	PIL	NON-PRES	H2SO4				HNO3	NAOH
<u>Waste Water</u>	<u>11/3/11</u>	<u>11331</u>	<u>26376</u>	<u>-</u>	<u>1</u>	<u>N</u>	<u>X</u>					<u>X</u>					<u>Attached</u>		
<u>Treatment Sludge</u>																	<u>Protocol A</u>		

### CHAIN OF CUSTODY RECORD

<b>FILLED IN BY CUSTOMER</b> SAMPLED BY: <u>Dave Schoenleber</u> DATE/TIME SAMPLED: <u>10/26/11 1:30pm</u> RELINQUISHED BY: <u>                    </u>	<b>FILLED IN BY BADGER LABS &amp; ENG</b> RECEIVED BY: <u>                    </u> DATE/TIME RECEIVED: <u>                    </u>	<u>Test for Outagamie County</u> <u>Protocol A - Attached</u>
--	--	--

- \* Temperature over 4°C are above EPA/DNR Protocol unless received on ice. picked up w/tes ww
- \* EP= If pH was not correct, extra preservation was added until correct pH was achieved.
- \* PIF= Preserved in field.
- \* PIL= Preserved in lab.

**Outagamie County Landfill**  
**Brown Outagamie Winnebago Counties**  
**Analytical Protocol/Acceptance Criteria**  
**Protocol A**

(Foundry process waste; municipal, hospital and boiler ash; ink wastes; paint wastes and paint sludges; metal treatment/preparation sludges; waste glues and adhesives; ceramic production/manufacturing waste; soils contaminated with heavy metals.)

Analytical Parameter	Acceptance Criteria
pH	2.0 ≤ pH ≤ 12.5
Total solids	≥ 40%
Free liquids	0%
Flash point (closed cup)	>140°F
Chlorine	<1%
TCLP metals <sup>1</sup>	
arsenic	TCLP <5.0 mg/l
barium	TCLP <100.0 mg/l
cadmium	TCLP <1.0 mg/l
chromium	TCLP <5.0 mg/l
lead	TCLP <5.0 mg/l
mercury	TCLP <0.2 mg/l
selenium	TCLP <1.0 mg/l
silver	TCLP <5.0 mg/l
Total available sulfide	<500 mg/kg
Total available cyanide	<250 mg/kg
Phenol	<2000 mg/l
TCLP organics <sup>1</sup>	
benzene	TCLP <0.5 mg/l
carbon tetrachloride	TCLP <0.5 mg/l
chlorobenzene	TCLP <100.0 mg/l
chloroform	TCLP <6.0 mg/l
o - cresol <sup>2</sup>	TCLP <200.0 mg/l
m - cresol <sup>2</sup>	TCLP <200.0 mg/l
p - cresol <sup>2</sup>	TCLP <200.0 mg/l
1,4 - dichlorobenzene	TCLP <7.5 mg/l
1,2 - dichloroethane	TCLP <0.5 mg/l
1,1 - dichloroethene	TCLP <0.7 mg/l
2,4 - dinitrotoluene	TCLP <0.13 mg/l
hexachlorobenzene	TCLP <0.13 mg/l
hexachlorobutadiene	TCLP <0.5 mg/l
hexachloroethane	TCLP <3.0 mg/l
methyl ethyl ketone	TCLP <200.0 mg/l



**Outagamie County Recycling & Solid Waste  
Brown Outagamie Winnebago Counties  
SPECIAL WASTE DISPOSAL APPLICATION**

**A. Generator Information**

Name Clearwater Paper - Neenah  
 Contact Person Katie Byrum  
 Email Address katie.byrum@clearwaterpaper.com  
 Phone Number 920-727-3912  
 Site Address (where material is generated)  
249 N Lake St  
Neenah, WI 54956

**B. Billing Information**

*(In order to be billed, you must fill out a credit application)*

Name Clearwater Paper - Neenah  
 Contact Person David Woelz  
 Email Address david.woelz@clearwaterpaper.com  
 Phone 920-727-3943  
 Fax Number \_\_\_\_\_  
 Billing Address \_\_\_\_\_

**C. Consultant Information**

Name N/A  
 Contact Person \_\_\_\_\_  
 Email Address \_\_\_\_\_  
 Phone Number \_\_\_\_\_  
 Fax Number \_\_\_\_\_  
 Address \_\_\_\_\_

**D. Hauler Information**

Name Advanced Disposal  
 Contact Person Patrick Coughlin  
 Phone Number 920-685-6666  
 Address 250 Adler Ave/PO Box 337  
Omro, WI 54963

**E. Waste Information**

Waste Name Sludge - Primary Clarifier  
 Process Used to Generate Waste Paper Making and Water Treatment  
 Waste Category Number C - Paper Mill Sludge Waste  
 Total Anticipated Waste Volume (include units) 400 ton/mo  
 Frequency of Disposal 6x/week  
 Name of Lab Performing Analysis Badger Labs  
 Date of Most Recent Analysis June 2013  
 Physical State @ 25°C Solid  
 Color gray Odor none  
 Comments \_\_\_\_\_

\*For all waste types, attach available pertinent documents, MSDSs, technical bulletins, etc. List attachments here:  
Lab Analytics from Badger Labs 8/2016

**F. Generator Warranty**

The generator warrants, represents, and certifies that this waste is not hazardous waste as specified by NR600 or 40CFR261, that his material does not contain more than 50 ppm of PCB materials, and that this information is representative of the waste.

[Signature] Sr. Mill Manager 8/29/16  
 Generator's Signature Title Date

**Instructions:**

- For Category A, B, and, C Wastes: Complete Section I
- For Category D Wastes: Complete Section II
- For Category E Wastes: Complete Section III

*Outagamie County Internal Use Only:*

- BC Customer
- OC Customer
- WC Customer

### Section I

For Category A, B, and C Wastes, complete the following and attach laboratory report:

#### Analytical Information

Parameter	Acceptance Level (mg/l)	Lab Result
% Solids	≥ 40% (A&B)	_____
	≥ 20% (C)	42.4%
% Free Liquids (paint filter test)	0%	0%
Flash Point	> 140°F	_____
pH	2.0 ≤ pH ≤ 12.5	7.3
Total available sulfide	<500 mg/kg	67.0 mg/kg
Total available cyanide	<250 mg/kg	<0.084 mg/kg
Arsenic	< 5.0	<0.005 mg/l
Barium	< 100.0	0.25 mg/l
Cadmium	< 1.0	<0.01 mg/l
Chromium	< 5.0	<0.02 mg/l
Lead	< 5.0	<0.03 mg/l
Mercury	< 0.2	<0.0002 mg/l
Selenium	< 1.0	<0.009 mg/l
Silver	< 5.0	<0.01 mg/l
% Chlorine	< 1%	0.02%
Phenol	< 2000	0.06 mg/l
Benzene	< 0.5	<0.0500 mg/l
Carbon tetrachloride	< 0.5	<0.0500 mg/l
Chlorobenzene	< 100.0	<0.0500 mg/l
Chloroform	< 6.0	<0.250 mg/l
Cresol	< 200.0	_____
1,4-Dichlorobenzene	< 7.5	<0.100 mg/l
1,2-Dichloroethane	< 0.5	<0.0500 mg/l
1,1-Dichloroethylene	< 0.7	<0.0500 mg/l
2,4-Dinitrotoluene	< 0.3	<0.100 mg/l
Hexachlorobenzene	< 0.13	<0.100 mg/l
Hexachlorobutadiene	< 0.5	<0.100 mg/l
Hexachloroethane	< 3.0	<0.100 mg/l
Methyl ethyl ketone	< 200.0	_____
Nitrobenzene	< 2.0	_____
Pentachlorophenol	< 100.0	_____
Pyridine	< 5.0	_____
Tetrachloroethylene	< 0.7	_____
Trichloroethylene	< 0.5	_____
2,4,5-Trichlorophenol	< 400.0	_____
2,4,6-Trichlorophenol	< 2.0	_____
Vinyl Chloride	< 0.2	_____

For Category B and C Wastes, complete the following and attach laboratory report:

PCB (Arochlor 1016, 1221, 1232, 1242, 1248, 1254, 1260)

### Section II

For Category D Wastes, complete the following and attach laboratory report:

#### Analytical Information

Parameter	Acceptance Level	Lab Result
<b>a. All Soils</b>		
Lead	Total <100 mg/kg or TCLP <5 mg/l	_____
<b>b. Gasoline or Diesel</b>		
(analyze all parameters in a., plus the following):		
DRO	<2000 ppm	_____
or GRO	<2000 ppm	_____
Benzene	Total <10 mg/kg Or TCLP <0.5 mg/l	_____
<b>c. Waste Oil or Unknown Petroleum Waste</b>		
(analyze all parameters in a., plus the following):		
DRO	<2000 ppm	_____
or GRO	<2000 ppm	_____
Cadmium	Total <20 mg/kg Or TCLP <1 mg/l	_____

### Section III

For Category E Wastes, complete the following and attach laboratory report:

#### Analytical Information

Parameter	Acceptance Level (mg/l)	Lab Result
pH	2.0 ≤ pH ≤ 12.5	_____
% Solids	≥ 20%	_____
% Free liquids	0%	_____
TCLP metals		_____
Arsenic	< 5.0	_____
Barium	< 100.0	_____
Cadmium	< 1.0	_____
Chromium	< 5.0	_____
Lead	< 5.0	_____
Mercury	< 0.2	_____
Selenium	< 1.0	_____
Silver	< 5.0	_____
Total available sulfide	< 500 mg/kg	_____

### Section IV

For Category F Wastes, include the following information and attach MSDS(s), technical bulletin(s), or other pertinent information regarding the waste stream. Indicate the waste type, the source of the waste stream, the reason for disposal, the physical state of the material, and describe the process from which the waste was generated.



# BADGER LABORATORIES & ENGINEERING INC.

501 WEST BELL STREET • NEENAH, WISCONSIN 54956-4868 • EST. 1966  
(920) 729-1100 • FAX (920) 729-4945 • 1-800-776-7196

CLEARWATER PAPER  
249 N LAKE ST  
NEENAH, WI 54956

Report Number: 16008119  
Report Date: 8/10/2016  
Sampled By: Client  
Emailed: 8/10/16

Attn: KATIE BYRUM/BILL ANSTETT/DAVE DRZEWIECKI

PO#: 1025155  
# Samples: 1

Sample Number: 46018445  
Description: SLUDGE  
Sample Date: 7/18/2016  
Date Received: 7/18/2016

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
CHLORINE	0.02	%	0.02	0.02		SW-846-5050	08/04/16	
CYANIDE, TOTAL	<0.084	ppm	0.084	0.280	12	EPA335.4	07/25/16	
CYANIDE-AM. TO CL2	<0.084	ppm	0.084	0.280	12	SM4500CN-G	07/25/16	
FLASH POINT	--SEE ATTACHED ESC REPORT--							
FREE LIQUIDS	0.0	%	0	0		SW 846 9095	08/03/16	
METALS DIGESTION	DONE		0	0		SM3030E	07/22/16	
PCB, TOTAL	--SEE ATTACHED ESC REPORT--							
PHENOL, TOTAL	0.06	mg/l	0.05	0.17	1	EPA420.4	08/08/16	
pH-LAB	7.3	S.U.	0	0		SW846-9045C	07/20/16	
SULFIDE	--SEE ATTACHED ESC REPORT--							
TCLP ARSENIC	<0.005	mg/l	0.005	0.017	5	SM3113B	07/26/16	
TCLP BARIUM	0.25	mg/l	0.03	0.08	1	SM3111D	07/28/16	
TCLP CADMIUM	<0.01	mg/l	0.01	0.03	1	SM3111B	07/27/16	
TCLP CHROMIUM	<0.02	mg/l	0.02	0.06	1	SM3111B	07/27/16	
TCLP EXTRACTION	DONE		0	0		SW846-1311	07/22/16	
TCLP LEAD	<0.03	mg/l	0.03	0.10	1	SM3111B	07/27/16	
TCLP MERCURY	<0.0002	mg/l	0.0002	0.0008	1	SM3112B	07/26/16	
TCLP ORGANICS	--SEE ATTACHED ESC REPORT--							
TCLP SELENIUM	<0.009	mg/l	0.009	0.030	5	SM3113B	07/26/16	
TCLP SILVER	<0.01	mg/l	0.01	0.03	1	SM3111B	07/27/16	
TOTAL SOLIDS	42.8	%	0.010	0.010		SM2540B	07/20/16	

All LOD/LOQs adjusted for dilution and/or solids content.

BADGER LABS & ENGINEERING  
WDNR Certified Lab #445023150  
Approved By:

JMW:rt

WI DNR Certified Lab #445023150  
WI Reg. Engineers (Corp.) #CE00601  
WI DATCP Certified #205 (Bacteria-Water)

Members  
WI Environmental Labs; Am. Chemical Soc.;  
T.A.P.P.I.; WI Food Processors Assn.;  
Wisc. Paper Council

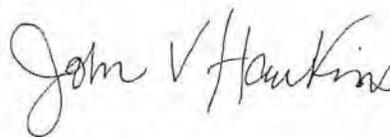
August 01, 2016

## Badger Laboratories & Engineering, Inc.

Sample Delivery Group: L848577  
Samples Received: 07/21/2016  
Project Number:  
Description:

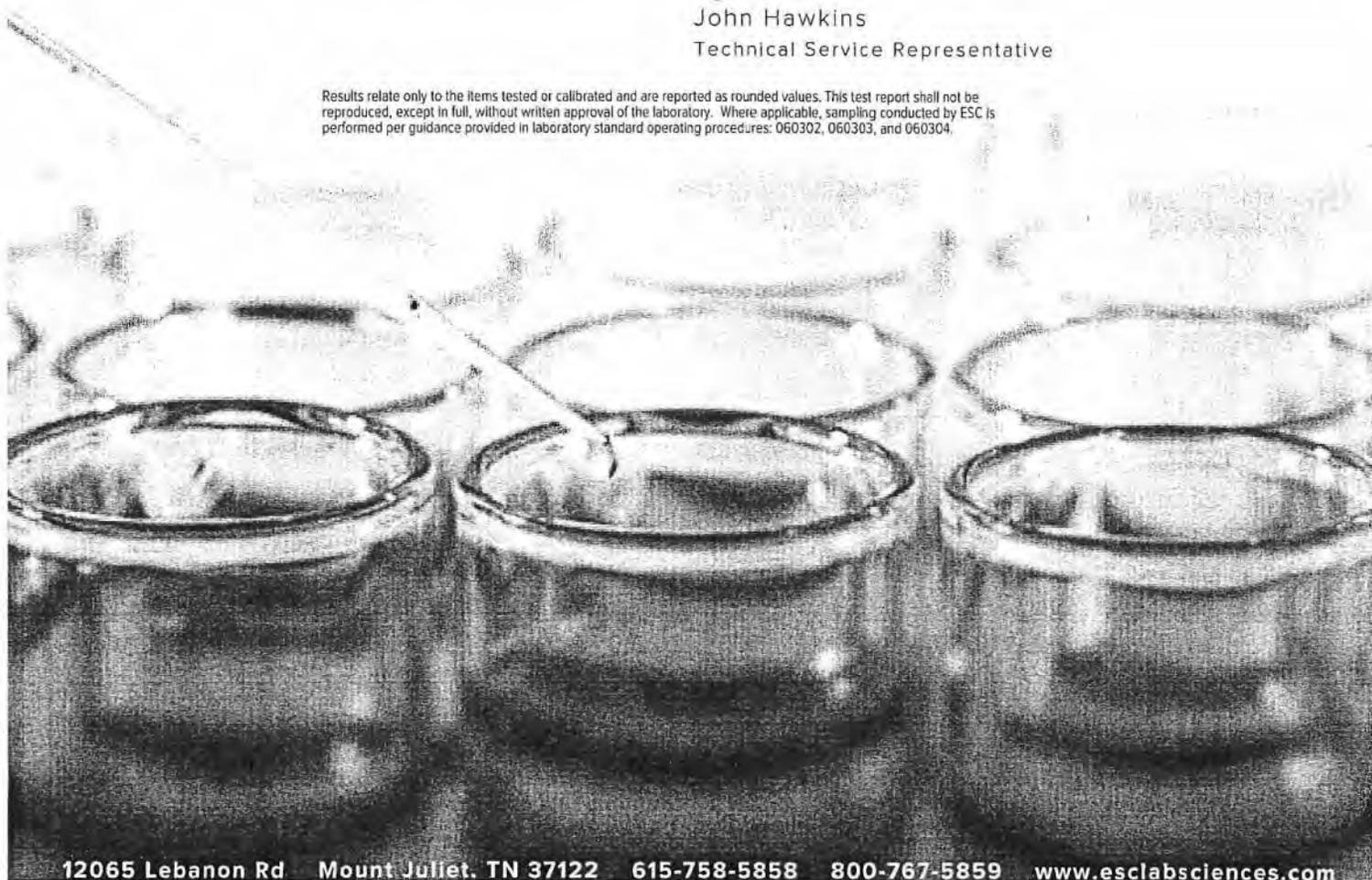
Report To: Jeff Wagner  
501 West Bell Street  
Neenah, WI 54956

Entire Report Reviewed By:



John Hawkins  
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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# SAMPLE SUMMARY

ONE LAB. NATIONWIDE.

18445 L848577-01 Solid Collected by \_\_\_\_\_ Collected date/time 07/18/16 00:00 Received date/time 07/21/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Polychlorinated Biphenyls (GC) by Method 8082	WG891943	3	07/25/16 22:29	07/26/16 14:59	LKD
Total Solids by Method 2540 G-2011	WG892868	1	07/27/16 09:17	07/27/16 09:27	MEL
Wet Chemistry by Method 9030B	WG893594	1	07/28/16 19:00	07/28/16 20:10	JLJ

18445 L848577-02 Waste Collected by \_\_\_\_\_ Collected date/time 07/18/16 00:00 Received date/time 07/21/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Preparation by Method 1311	WG892468	1	07/26/16 12:37	07/26/16 12:38	BG
Preparation by Method 1311	WG892919	1	07/27/16 10:32	07/27/16 10:33	BG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG893216	1	07/28/16 21:14	07/29/16 16:30	SNR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG892961	1	07/28/16 03:35	07/28/16 03:35	ACG

18460 L848577-03 Solid Collected by \_\_\_\_\_ Collected date/time 07/15/16 00:00 Received date/time 07/21/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Total Solids by Method 2540 G-2011	WG892868	1	07/27/16 09:17	07/27/16 09:27	MEL
Wet Chemistry by Method 9030B	WG893594	1	07/28/16 19:00	07/28/16 20:10	JLJ

- 1 P
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins  
Technical Service Representative

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

Sample Handling and Receiving

Analysis was performed from an improper container for the following samples.

<u>ESC Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L848577-01	18445	8082

18445

Collected date/time: 07/18/16 00:00

## SAMPLE RESULTS - 01

L848577

ONE LAB. NATIONWIDE.



## Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	42.4		1	07/27/2016 09:27	WG892868

## Wet Chemistry by Method 9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	67.0		25.0	1	07/28/2016 20:10	WG893594

## Polychlorinated Biphenyls (GC) by Method 8082

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
PCB 1016	ND		0.0351	3	07/26/2016 14:59	WG891943
PCB 1221	ND		0.0537	3	07/26/2016 14:59	WG891943
PCB 1232	ND		0.0417	3	07/26/2016 14:59	WG891943
PCB 1242	ND		0.0318	3	07/26/2016 14:59	WG891943
PCB 1248	ND		0.0315	3	07/26/2016 14:59	WG891943
PCB 1254	ND		0.0471	3	07/26/2016 14:59	WG891943
PCB 1260	ND		0.0495	3	07/26/2016 14:59	WG891943
(S) Decachlorobiphenyl	61.3		10.0-143		07/26/2016 14:59	WG891943
(S) Tetrachloro-m-xylene	78.3		29.2-144		07/26/2016 14:59	WG891943

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

18445

Collected date/time: 07/18/16 00:00

## SAMPLE RESULTS - 02

L848577

ONE LAB. NATIONWIDE



Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/27/2016 10:32:03 AM	WG892919
TCLP ZHE Extraction	-		7/26/2016 12:37:09 PM	WG892468

## Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.0500	0.50	1	07/28/2016 03:35	WG892961
Carbon tetrachloride	ND		0.0500	0.50	1	07/28/2016 03:35	WG892961
Chlorobenzene	ND		0.0500	100	1	07/28/2016 03:35	WG892961
Chloroform	ND		0.250	6	1	07/28/2016 03:35	WG892961
1,2-Dichloroethane	ND		0.0500	0.50	1	07/28/2016 03:35	WG892961
1,1-Dichloroethene	ND		0.0500	0.70	1	07/28/2016 03:35	WG892961
2-Butanone (MEK)	ND		0.500	200	1	07/28/2016 03:35	WG892961
Tetrachloroethene	ND		0.0500	0.70	1	07/28/2016 03:35	WG892961
Trichloroethene	ND		0.0500	0.50	1	07/28/2016 03:35	WG892961
Vinyl chloride	ND		0.0500	0.20	1	07/28/2016 03:35	WG892961
(S) Toluene-d8	106		90.0-115	114		07/28/2016 03:35	WG892961
(S) Dibromofluoromethane	102		79.0-121	125		07/28/2016 03:35	WG892961
(S) o,o,a-Trifluorotoluene	106		90.4-116	114		07/28/2016 03:35	WG892961
(S) 4-Bromofluorobenzene	101		80.1-120	128		07/28/2016 03:35	WG892961

## Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result mg/l	Qualifier	RDL mg/l	Limit mg/l	Dilution	Analysis date / time	Batch
1,4-Dichlorobenzene	ND		0.100	7.50	1	07/29/2016 16:30	WG893216
2,4-Dinitrotoluene	ND		0.100	0.13	1	07/29/2016 16:30	WG893216
Hexachlorobenzene	ND		0.100	0.13	1	07/29/2016 16:30	WG893216
Hexachloro-1,3-butadiene	ND		0.100	0.50	1	07/29/2016 16:30	WG893216
Hexachloroethane	ND		0.100	3	1	07/29/2016 16:30	WG893216
Nitrobenzene	ND		0.100	2	1	07/29/2016 16:30	WG893216
Pyridine	ND		0.100	5	1	07/29/2016 16:30	WG893216
3&4-Methyl Phenol	ND		0.100	400	1	07/29/2016 16:30	WG893216
2-Methylphenol	ND		0.100	200	1	07/29/2016 16:30	WG893216
Pentachlorophenol	ND		0.100	100	1	07/29/2016 16:30	WG893216
2,4,5-Trichlorophenol	ND		0.100	400	1	07/29/2016 16:30	WG893216
2,4,6-Trichlorophenol	ND		0.100	2	1	07/29/2016 16:30	WG893216
(S) 2-Fluorophenol	41.0		10.0-77.9	87		07/29/2016 16:30	WG893216
(S) Phenol-d5	28.5		5.00-70.1	67		07/29/2016 16:30	WG893216
(S) Nitrobenzene-d5	47.3		21.8-123	120		07/29/2016 16:30	WG893216
(S) 2-Fluorobiphenyl	61.2		29.5-131	122		07/29/2016 16:30	WG893216
(S) 2,4,6-Tribromophenol	90.3		11.2-130	148		07/29/2016 16:30	WG893216
(S) p-Terphenyl-d14	89.8		29.3-137	149		07/29/2016 16:30	WG893216

3&4 methyl phenol + 2-methylphenol = o-, m, p-cresol.

Form asks for Cresol - non-detect for both parameters = <.100 + <.100 =

<.200 reported in form. KBynum 8/25/16

↑  
total cresol

WG892868

Total Solids by Method 2540 G-2011

QUALITY CONTROL SUMMARY

L848577-01,03

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) R3152777-1 07/27/16 09:27

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000200			

Cp

Tc

Ss

L848956-01 Original Sample (OS) • Duplicate (DUP)

(OS) L848956-01 07/27/16 09:27 • (DUP) R3152777-3 07/27/16 09:27

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Total Solids	67.2	67.5	1	0.498		5

Cn

Sr

Laboratory Control Sample (LCS)

(LCS) R3152777-2 07/27/16 09:27

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Qc

GI

Al

Sc

18460

Collected date/time: 07/15/16 00:00

# SAMPLE RESULTS - 03

L848577

ONE LAB. NATIONWIDE.



## Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	44.3		1	07/27/2016 09:27	WG892063

## Wet Chemistry by Method 9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	61.0		25.0	1	07/28/2016 20:10	WG893594

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

WG893594

Wet Chemistry by Method 9030B

QUALITY CONTROL SUMMARY

L848577-01.03

ONE LAB. NATIONWIDE 

Method Blank (MB)

(MB) WG893594-1 07/28/16 20:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Sulfide	U		7.63	25.0

Cp

Tc

Ss

L848577-03 Original Sample (OS) • Duplicate (DUP)

(OS) L848577-03 07/28/16 20:10 • (DUP) WG893594-4 07/28/16 20:10

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfide	61.0	66.0	1	7.87		20

Cn

Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG893594-2 07/28/16 20:10 • (LCSD) WG893594-3 07/28/16 20:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Sulfide	100	79.0	72.8	79.0	72.8	70.0-130			8.17	20

Qc

Gl

Al

Sc

WG892961

Volatile Organic Compounds (GC/MS) by Method 8260B

QUALITY CONTROL SUMMARY

L848577-02

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) R3152874-3 07/27/16 23:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0167	0.0500
Carbon tetrachloride	U		0.0167	0.0500
Chlorobenzene	U		0.0167	0.0500
Chloroform	U		0.0833	0.250
1,2-Dichloroethane	U		0.0167	0.0500
1,1-Dichloroethene	U		0.0167	0.0500
2-Butanone (MEK)	U		0.167	0.500
Tetrachloroethene	U		0.0167	0.0500
Trichloroethene	U		0.0167	0.0500
Vinyl chloride	U		0.0167	0.0500
(S) Toluene-d8	108			90.0-115
(S) Dibromofluoromethane	102			79.0-121
(S) o,a,a-Trifluorotoluene	105			90.4-116
(S) 4-Bromofluorobenzene	103			80.1-120

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3152874-1 07/27/16 21:44 • (LCSD) R3152874-2 07/27/16 22:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0228	0.0227	91.2	90.9	73.0-122			0.300	20
Carbon tetrachloride	0.0250	0.0243	0.0235	97.2	93.9	70.9-129			3.48	20
Chlorobenzene	0.0250	0.0250	0.0246	99.8	98.6	79.7-122			1.24	20
Chloroform	0.0250	0.0235	0.0236	94.1	94.5	73.2-125			0.390	20
1,2-Dichloroethane	0.0250	0.0251	0.0253	100	101	65.3-126			0.890	20
1,1-Dichloroethene	0.0250	0.0240	0.0239	95.8	95.8	60.6-133			0.0200	20
2-Butanone (MEK)	0.125	0.126	0.124	101	98.9	46.4-155			1.74	20
Tetrachloroethene	0.0250	0.0242	0.0244	96.7	97.5	73.5-130			0.900	20
Trichloroethene	0.0250	0.0251	0.0248	101	99.1	79.5-121			1.52	20
Vinyl chloride	0.0250	0.0264	0.0261	105	105	61.5-134			0.900	20
(S) Toluene-d8				107	106	90.0-115				
(S) Dibromofluoromethane				107	105	79.0-121				
(S) o,a,a-Trifluorotoluene				105	106	90.4-116				
(S) 4-Bromofluorobenzene				102	101	80.1-120				

WG892961

Volatile Organic Compounds (GC/MS) by Method 8260B

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.



LB48577-02

L848569-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L848569-02 07/28/16 00:59 • (MS) R3152874-4 07/27/16 23:21 • (MSD) R3152874-5 07/27/16 23:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	1.25	ND	1.23	1.29	98.1	103	1	58.6-133			4.96	20
Carbon tetrachloride	1.25	ND	1.22	1.34	97.9	107	1	60.6-139			8.78	20
Chlorobenzene	1.25	ND	1.36	1.42	109	114	1	70.1-130			4.57	20
Chloroform	1.25	ND	1.28	1.35	102	108	1	66.1-133			5.08	20
1,2-Dichloroethane	1.25	ND	1.34	1.39	107	111	1	60.7-132			3.94	20
1,1-Dichloroethene	1.25	ND	1.30	1.36	104	109	1	48.8-144			4.47	20
2-Butanone (MEK)	6.25	ND	4.95	5.23	74.9	79.3	1	45.0-156			5.47	20.8
Tetrachloroethene	1.25	ND	1.33	1.38	106	111	1	57.4-141			3.92	20
Trichloroethene	1.25	ND	1.36	1.42	109	114	1	48.9-148			4.13	20
Vinyl chloride	1.25	ND	1.28	1.36	102	109	1	44.3-143			6.01	20
(S) Toluene-d8					108	107		90.0-115				
(S) Dibromofluoromethane					106	105		79.0-121				
(S) o,o,a-Trifluorotoluene					106	104		90.4-116				
(S) 4-Bromofluorobenzene					101	101		80.1-120				

Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>N</sup>Al

<sup>9</sup>Sc

WG891943

Polychlorinated Biphenyls (GC) by Method 8082

QUALITY CONTROL SUMMARY

L848577-01

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) R3152453-3 07/26/16 10:15

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.00350	0.0117
PCB 1221	U		0.00537	0.0179
PCB 1232	U		0.00417	0.0139
PCB 1242	U		0.00318	0.0106
PCB 1248	U		0.00315	0.0105
PCB 1254	U		0.00472	0.0157
PCB 1260	U		0.00494	0.0165
(S) Decachlorobiphenyl	114			10.0-143
(S) Tetrachloro-m-xylene	104			29.2-144

- Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 GI
- 8 AI
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3152453-1 07/26/16 09:46 • (LCSD) R3152453-2 07/26/16 10:00

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	0.161	0.139	96.8	83.6	46.5-120			14.7	27
PCB 1016	0.167	0.154	0.130	92.1	77.7	46.3-117			16.9	27.5
(S) Decachlorobiphenyl				113	87.5	10.0-143				
(S) Tetrachloro-m-xylene				106	81.2	29.2-144				

L849002-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L849002-05 07/26/16 13:48 • (MS) R3152453-4 07/26/16 13:19 • (MSD) R3152453-5 07/26/16 13:34

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	ND	0.124	0.122	74.5	73.1	1	24.6-127			1.86	20
PCB 1016	0.167	ND	0.135	0.133	80.8	80.0	1	23.9-147			0.970	25.8
(S) Decachlorobiphenyl					61.6	65.4		10.0-143				
(S) Tetrachloro-m-xylene					89.6	86.4		29.2-144				

WG893216

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

QUALITY CONTROL SUMMARY

L848577-02

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) R3153267-3 07/29/16 12:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1,4-Dichlorobenzene	U		0.0333	0.100
2,4-Dinitrotoluene	U		0.0333	0.100
Hexachlorobenzene	U		0.0333	0.100
Hexachloro-1,3-butadiene	U		0.0333	0.100
Hexachloroethane	U		0.0333	0.100
Nitrobenzene	U		0.0333	0.100
Pyridine	U		0.0333	0.100
2-Methylphenol	U		0.0333	0.100
3&4-Methyl Phenol	U		0.0333	0.100
Pentachlorophenol	U		0.0333	0.100
2,4,5-Trichlorophenol	U		0.0333	0.100
2,4,6-Trichlorophenol	U		0.0333	0.100
(S) Nitrobenzene-d5	58.2			21.8-123
(S) 2-Fluorobiphenyl	72.2			29.5-131
(S) p-Terphenyl-d14	83.1			29.3-137
(S) Phenol-d5	34.8			5.00-70.1
(S) 2-Fluorophenol	50.0			10.0-77.9
(S) 2,4,6-Tribromophenol	80.7			11.2-130

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3153267-1 07/29/16 11:15 • (LCSD) R3153267-2 07/29/16 11:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	0.0500	0.0293	0.0318	58.7	63.6	21.0-89.4			7.97	32.6
2,4-Dinitrotoluene	0.0500	0.0423	0.0426	84.7	85.3	31.2-105			0.660	22
Hexachlorobenzene	0.0500	0.0412	0.0444	82.4	88.8	38.5-116			7.45	20.1
Hexachloro-1,3-butadiene	0.0500	0.0365	0.0394	73.0	78.7	16.1-104			7.52	31.2
Hexachloroethane	0.0500	0.0267	0.0300	53.5	60.1	16.5-89.8			11.6	30.7
Nitrobenzene	0.0500	0.0287	0.0325	57.4	65.0	31.4-106			12.5	25.7
Pyridine	0.0500	0.00859	0.00948	17.2	19.0	13.5-58.9			9.83	32.5
2-Methylphenol	0.0500	0.0267	0.0284	53.4	56.9	26.4-86.9			6.29	26.5
3&4-Methyl Phenol	0.0500	0.0296	0.0317	59.2	63.5	27.9-92.0			7.02	27
Pentachlorophenol	0.0500	0.0352	0.0376	70.4	75.1	10.0-97.4			6.45	35.1
2,4,5-Trichlorophenol	0.0500	0.0417	0.0445	83.5	89.1	34.9-112			6.51	23.9
2,4,6-Trichlorophenol	0.0500	0.0389	0.0435	77.8	87.1	29.8-107			11.3	24.1
(S) Nitrobenzene-d5				67.1	70.8	21.8-123				
(S) 2-Fluorobiphenyl				77.8	80.3	29.5-131				
(S) p-Terphenyl-d14				90.1	91.9	29.3-137				

WG893216

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.



L848577-02

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3153267-1 07/29/16 11:15 • (LCSD) R3153267-2 07/29/16 11:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
(S) Phenol-d5				37.2	39.8	5.00-70.1				
(S) 2-Fluorophenol				52.1	58.0	10.0-77.9				
(S) 2,4,6-Tribromophenol				100	101	11.2-130				

L849237-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L849237-01 07/29/16 16:53 • (MS) R3153267-4 07/29/16 17:16 • (MSD) R3153267-5 07/29/16 17:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	0.500	ND	0.278	0.271	55.6	54.3	1	14.0-104			2.34	36.4
2,4-Dinitrotoluene	0.500	ND	0.414	0.402	82.8	80.4	1	16.2-135			2.93	20.6
Hexachlorobenzene	0.500	ND	0.423	0.411	84.6	82.3	1	31.9-135			2.84	20
Hexachloro-1,3-butadiene	0.500	ND	0.353	0.328	70.6	65.5	1	15.7-109			7.47	37.6
Hexachloroethane	0.500	ND	0.257	0.256	51.3	51.2	1	10.4-105			0.230	40
Nitrobenzene	0.500	ND	0.275	0.269	54.9	53.7	1	23.1-121			2.26	29
Pyridine	0.500	ND	0.0989	0.103	19.8	20.5	1	10.0-77.8			3.74	38.8
2-Methylphenol	0.500	ND	0.257	0.252	51.4	50.5	1	10.0-133			1.74	40
3&4-Methyl Phenol	0.500	ND	0.295	0.288	59.0	57.6	1	17.4-100			2.49	27.7
Pentachlorophenol	0.500	ND	0.375	0.375	75.0	74.9	1	10.0-108			0.0700	40
2,4,5-Trichlorophenol	0.500	ND	0.415	0.421	83.0	84.3	1	30.6-120			1.53	33.8
2,4,6-Trichlorophenol	0.500	ND	0.390	0.409	78.0	81.8	1	19.1-114			4.66	29.9
(S) Nitrobenzene-d5					62.0	57.7		21.8-123				
(S) 2-Fluorobiphenyl					72.2	69.0		29.5-131				
(S) p-Terphenyl-d14					87.8	82.8		29.3-137				
(S) Phenol-d5					36.3	34.6		5.00-70.1				
(S) 2-Fluorophenol					49.2	48.0		10.0-77.9				
(S) 2,4,6-Tribromophenol					99.6	98.2		11.2-130				

- Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



## Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
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The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.



# ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.  
 \* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>1,4</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	AZLA
Nebraska	NE-05-15-05		



## Third Party & Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA	100789
A2LA - ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA-Crypto	TN00003		

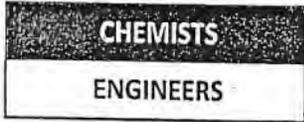
<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>6</sup> Accreditation not applicable

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



16008119



# BADGER LABORATORIES & ENGINEERING, INC.

501 WEST BELL STREET - NEENAH, WISCONSIN 54956-4868 - EST. 1966  
 (920) 729-1100 - Fax (920) 729-4945 - 1-800-776-7196

## SAMPLE RECEIPT FORM

### CLIENT INFORMATION

COMPANY: Clear Water Paper  
 NAME: Bill Anstett  
 ADDRESS: \_\_\_\_\_  
 FAX/PHONE/EMAIL: \_\_\_\_\_  
 P.O. #: \_\_\_\_\_  
 PROJECT/SITE: \_\_\_\_\_  
 REPORT & BILL TO: \_\_\_\_\_  
 ADDITIONAL REPORTS TO: \_\_\_\_\_

### TURN AROUND TIME:

- Normal  
 Other TAT\*

\*REQUIRES PRIOR LAB APPROVAL \_\_\_\_\_

### SAMPLE TYPE:

- Groundwater  Lab Filtered  
 Wastewater  Field Filtered  
 WPDES  Grab  
 Cooling Water  Composite  
 Drinking Water  Flow Proportional  
 Solid Waste  Time Proportional  
 Oil  
 Other Sludge

CUSTOMER SAMPLE ID	SAMPLE DATE/TIME	DATE REC'D	BL & E REPORT #	BL & E SAMPLE #	TEMP *	CONTAINER S	Ice Y/N	DELIVERY METHOD				PRESERVATION				ANALYTICAL REQUESTS	pH ok	EP				
								BLAE	CLIENT	UPS	OTHER	PIF	PIL	NON-PRES	H2SO4				HNO3	NaOH	OTHER	
Sludge	7-18-16 7am	7/18	8119	1848	-	J	N		X				X						list			

### CHAIN OF CUSTODY RECORD

<b>FILLED IN BY CUSTOMER</b> SAMPLED BY: <u>Bill Anstett</u> DATE/TIME SAMPLED: <u>7-18-16 7am</u> RELINQUISHED BY: <u>Bill Anstett</u>	<b>FILLED IN BY BADGER LABS &amp; ENG</b> RECEIVED BY: <u>[Signature]</u> DATE/TIME RECEIVED: <u>7-18-2016 10:40</u> LOGGED IN: <u>[Signature]</u>
--	---

\* Temperature over 6°C are above EPA/DNR Protocol unless received on Ice.  
 \* EP= If pH was not correct, extra preservation was added until correct pH was achieved; H2SO4/HNO3 adjusted to pH <2.0; NaOH >12.0  
 \* PIF= Preserved in field.  
 \* PIL= Preserved in lab.



June 28, 2017

Chad Doverspike  
BROWN CO PORT & SOLID WASTE  
2561 S Broadway  
Green Bay, WI 54304

RE: Project: FRF SLUDGE  
Pace Project No.: 40151526

Dear Chad Doverspike:

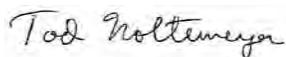
Enclosed are the analytical results for sample(s) received by the laboratory on June 13, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

%Chlorine subcontracted to EMT Labs which is certified for that analysis.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Tod Noltemeyer  
tod.noltemeyer@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: FRF SLUDGE  
Pace Project No.: 40151526

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### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601  
L-A-B DOD-ELAP Accreditation #: L2417  
Alabama Certification #: 41590  
Arizona Certification #: AZ0734  
Arkansas Certification  
California Certification #: 04222CA  
Colorado Certification  
Connecticut Certification #: PH-0694  
Delaware Certification  
Florida/TNI Certification #: E87683  
Georgia Certification #: C040  
Guam Certification  
Hawaii Certification  
Idaho Certification  
Illinois Certification  
Indiana Certification  
Iowa Certification #: 391  
Kansas/TNI Certification #: E-10358  
Kentucky Certification #: 90133  
Louisiana DHH/TNI Certification #: LA140008  
Louisiana DEQ/TNI Certification #: 4086  
Maine Certification #: PA00091  
Maryland Certification #: 308  
Massachusetts Certification #: M-PA1457  
Michigan/PADEP Certification  
Missouri Certification #: 235

Montana Certification #: Cert 0082  
Nebraska Certification #: NE-05-29-14  
Nevada Certification #: PA014572015-1  
New Hampshire/TNI Certification #: 2976  
New Jersey/TNI Certification #: PA 051  
New Mexico Certification #: PA01457  
New York/TNI Certification #: 10888  
North Carolina Certification #: 42706  
North Dakota Certification #: R-190  
Oregon/TNI Certification #: PA200002  
Pennsylvania/TNI Certification #: 65-00282  
Puerto Rico Certification #: PA01457  
Rhode Island Certification #: 65-00282  
South Dakota Certification  
Tennessee Certification #: TN2867  
Texas/TNI Certification #: T104704188-14-8  
Utah/TNI Certification #: PA014572015-5  
USDA Soil Permit #: P330-14-00213  
Vermont Dept. of Health: ID# VT-0282  
Virgin Island/PADEP Certification  
Virginia/VELAP Certification #: 460198  
Washington Certification #: C868  
West Virginia DEP Certification #: 143  
West Virginia DHHR Certification #: 9964C  
Wisconsin Certification  
Wyoming Certification #: 8TMS-L

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: FRF SLUDGE

Pace Project No.: 40151526

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
40151526001	FRF #1	Solid	06/13/17 13:30	06/13/17 14:00

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: FRF SLUDGE

Pace Project No.: 40151526

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40151526001	FRF #1	EPA 8082	BDS	10	PASI-G
		EPA 6010	DLB	7	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 8270	RJN	19	PASI-G
		EPA 8260	LAP	13	PASI-G
		ASTM D2974-87	SSM	1	PASI-G
		EPA 1010	DEY	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 9095	DEY	1	PASI-G
		EPA 9014	PAS	1	PASI-PA
		SM4500S2F-00	PAS	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE

Pace Project No.: 40151526

---

**Method:** EPA 8082

**Description:** 8082 GCS PCB

**Client:** BROWN CO PORT & SOLID WASTE

**Date:** June 28, 2017

**General Information:**

1 sample was analyzed for EPA 8082. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3541 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE

Pace Project No.: 40151526

---

**Method:** EPA 6010

**Description:** 6010 MET ICP, TCLP

**Client:** BROWN CO PORT & SOLID WASTE

**Date:** June 28, 2017

**General Information:**

1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE  
Pace Project No.: 40151526

---

**Method:** EPA 7470  
**Description:** 7470 Mercury, TCLP  
**Client:** BROWN CO PORT & SOLID WASTE  
**Date:** June 28, 2017

### General Information:

1 sample was analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 258908

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40151516002,40151526001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1525797)
  - Mercury
- MS (Lab ID: 1525799)
  - Mercury
- MSD (Lab ID: 1525798)
  - Mercury

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE  
Pace Project No.: 40151526

---

**Method:** EPA 8270  
**Description:** 8270 MSSV TCLP Sep Funnel  
**Client:** BROWN CO PORT & SOLID WASTE  
**Date:** June 28, 2017

**General Information:**

1 sample was analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE  
Pace Project No.: 40151526

---

**Method:** EPA 8260  
**Description:** 8260 MSV TCLP  
**Client:** BROWN CO PORT & SOLID WASTE  
**Date:** June 28, 2017

### General Information:

1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: 258621

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results may be biased high.

- LCS (Lab ID: 1523789)
- Chloroform

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 258621

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s):  
40151453001,40151516001,40151526001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1523961)
- Chloroform

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE

Pace Project No.: 40151526

---

**Method:** EPA 1010

**Description:** 1010 Flashpoint,Closed Cup

**Client:** BROWN CO PORT & SOLID WASTE

**Date:** June 28, 2017

**General Information:**

1 sample was analyzed for EPA 1010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE

Pace Project No.: 40151526

---

**Method:** EPA 9040

**Description:** 9040 pH

**Client:** BROWN CO PORT & SOLID WASTE

**Date:** June 28, 2017

### General Information:

1 sample was analyzed for EPA 9040. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- FRF #1 (Lab ID: 40151526001)

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

### Additional Comments:

Analyte Comments:

QC Batch: 259165

1q: Due to the sample matrix, DI water was added to this sample on a one to one basis and the sample was stirred before analysis.

- FRF #1 (Lab ID: 40151526001)
  - pH

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE

Pace Project No.: 40151526

---

**Method:** EPA 9095

**Description:** 9095 Paint Filter Liquid Test

**Client:** BROWN CO PORT & SOLID WASTE

**Date:** June 28, 2017

**General Information:**

1 sample was analyzed for EPA 9095. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE

Pace Project No.: 40151526

---

**Method:** EPA 9014

**Description:** 733C S Reactive Cyanide

**Client:** BROWN CO PORT & SOLID WASTE

**Date:** June 28, 2017

**General Information:**

1 sample was analyzed for EPA 9014. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with SW-846 7.3.3.2 with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: FRF SLUDGE

Pace Project No.: 40151526

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**Method:** SM4500S2F-00

**Description:** 734S Reactive Sulfide

**Client:** BROWN CO PORT & SOLID WASTE

**Date:** June 28, 2017

**General Information:**

1 sample was analyzed for SM4500S2F-00. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with SW-846 7.3.4.2 with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: FRF SLUDGE  
Pace Project No.: 40151526

Sample: FRF #1 Lab ID: 40151526001 Collected: 06/13/17 13:30 Received: 06/13/17 14:00 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082 GCS PCB</b>									
Analytical Method: EPA 8082 Preparation Method: EPA 3541									
PCB-1016 (Aroclor 1016)	<49.4	ug/kg	98.7	49.4	1	06/15/17 12:32	06/15/17 20:46	12674-11-2	
PCB-1221 (Aroclor 1221)	<49.4	ug/kg	98.7	49.4	1	06/15/17 12:32	06/15/17 20:46	11104-28-2	
PCB-1232 (Aroclor 1232)	<49.4	ug/kg	98.7	49.4	1	06/15/17 12:32	06/15/17 20:46	11141-16-5	
PCB-1242 (Aroclor 1242)	311	ug/kg	98.7	49.4	1	06/15/17 12:32	06/15/17 20:46	53469-21-9	
PCB-1248 (Aroclor 1248)	<49.4	ug/kg	98.7	49.4	1	06/15/17 12:32	06/15/17 20:46	12672-29-6	
PCB-1254 (Aroclor 1254)	<49.4	ug/kg	98.7	49.4	1	06/15/17 12:32	06/15/17 20:46	11097-69-1	
PCB-1260 (Aroclor 1260)	<49.4	ug/kg	98.7	49.4	1	06/15/17 12:32	06/15/17 20:46	11096-82-5	
PCB, Total	311	ug/kg	98.7	49.4	1	06/15/17 12:32	06/15/17 20:46	1336-36-3	
<b>Surrogates</b>									
Tetrachloro-m-xylene (S)	66	%	50-102		1	06/15/17 12:32	06/15/17 20:46	877-09-8	
Decachlorobiphenyl (S)	70	%	53-105		1	06/15/17 12:32	06/15/17 20:46	2051-24-3	
<b>6010 MET ICP, TCLP</b>									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Leachate Method/Date: EPA 1311; 06/15/17 13:57									
Arsenic	<0.042	mg/L	0.12	0.042	1	06/19/17 09:59	06/20/17 11:49	7440-38-2	
Barium	0.28	mg/L	0.075	0.025	1	06/19/17 09:59	06/20/17 11:49	7440-39-3	
Cadmium	<0.0066	mg/L	0.025	0.0066	1	06/19/17 09:59	06/20/17 11:49	7440-43-9	
Chromium	<0.013	mg/L	0.050	0.013	1	06/19/17 09:59	06/20/17 11:49	7440-47-3	
Lead	<0.022	mg/L	0.065	0.022	1	06/19/17 09:59	06/20/17 11:49	7439-92-1	
Selenium	<0.083	mg/L	0.25	0.083	1	06/19/17 09:59	06/20/17 11:49	7782-49-2	
Silver	<0.017	mg/L	0.050	0.017	1	06/19/17 09:59	06/20/17 11:49	7440-22-4	
<b>7470 Mercury, TCLP</b>									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Leachate Method/Date: EPA 1311; 06/15/17 13:57									
Mercury	<0.13	ug/L	0.42	0.13	1	06/19/17 07:40	06/19/17 12:49	7439-97-6	M0
<b>8270 MSSV TCLP Sep Funnel</b>									
Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Leachate Method/Date: EPA 1311; 06/15/17 13:57									
1,4-Dichlorobenzene	<18.8	ug/L	62.5	18.8	1	06/19/17 07:50	06/19/17 16:29	106-46-7	
2,4,5-Trichlorophenol	<8.4	ug/L	28.0	8.4	1	06/19/17 07:50	06/19/17 16:29	95-95-4	
2,4,6-Trichlorophenol	<21.1	ug/L	70.4	21.1	1	06/19/17 07:50	06/19/17 16:29	88-06-2	
2,4-Dinitrotoluene	<7.9	ug/L	26.4	7.9	1	06/19/17 07:50	06/19/17 16:29	121-14-2	
2-Methylphenol(o-Cresol)	<8.7	ug/L	28.9	8.7	1	06/19/17 07:50	06/19/17 16:29	95-48-7	
3&4-Methylphenol(m&p Cresol)	<15.6	ug/L	52.0	15.6	1	06/19/17 07:50	06/19/17 16:29		
Hexachloro-1,3-butadiene	<24.6	ug/L	82.0	24.6	1	06/19/17 07:50	06/19/17 16:29	87-68-3	
Hexachlorobenzene	<16.9	ug/L	56.4	16.9	1	06/19/17 07:50	06/19/17 16:29	118-74-1	
Hexachloroethane	<26.6	ug/L	88.6	26.6	1	06/19/17 07:50	06/19/17 16:29	67-72-1	
Nitrobenzene	<14.5	ug/L	48.3	14.5	1	06/19/17 07:50	06/19/17 16:29	98-95-3	
Pentachlorophenol	<14.3	ug/L	47.8	14.3	1	06/19/17 07:50	06/19/17 16:29	87-86-5	
Phenol	<6.0	ug/L	20.0	6.0	1	06/19/17 07:50	06/19/17 16:29	108-95-2	
Pyridine	<17.9	ug/L	59.6	17.9	1	06/19/17 07:50	06/19/17 16:29	110-86-1	
<b>Surrogates</b>									
Nitrobenzene-d5 (S)	76	%	53-100		1	06/19/17 07:50	06/19/17 16:29	4165-60-0	
2-Fluorobiphenyl (S)	83	%	59-109		1	06/19/17 07:50	06/19/17 16:29	321-60-8	
Terphenyl-d14 (S)	80	%	59-108		1	06/19/17 07:50	06/19/17 16:29	1718-51-0	

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## ANALYTICAL RESULTS

Project: FRF SLUDGE

Pace Project No.: 40151526

**Sample: FRF #1**      **Lab ID: 40151526001**      Collected: 06/13/17 13:30      Received: 06/13/17 14:00      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8270 MSSV TCLP Sep Funnel</b>									
Analytical Method: EPA 8270    Preparation Method: EPA 3510									
Leachate Method/Date: EPA 1311; 06/15/17 13:57									
<b>Surrogates</b>									
Phenol-d6 (S)	31	%	18-120		1	06/19/17 07:50	06/19/17 16:29	13127-88-3	
2-Fluorophenol (S)	47	%	27-67		1	06/19/17 07:50	06/19/17 16:29	367-12-4	
2,4,6-Tribromophenol (S)	107	%	65-140		1	06/19/17 07:50	06/19/17 16:29	118-79-6	
<b>8260 MSV TCLP</b>									
Analytical Method: EPA 8260    Leachate Method/Date: EPA 1311; 06/14/17 12:56									
1,1-Dichloroethene	<4.1	ug/L	10.0	4.1	10		06/15/17 12:00	75-35-4	
1,2-Dichloroethane	<1.7	ug/L	10.0	1.7	10		06/15/17 12:00	107-06-2	
2-Butanone (MEK)	<29.8	ug/L	200	29.8	10		06/15/17 12:00	78-93-3	
Benzene	<5.0	ug/L	10.0	5.0	10		06/15/17 12:00	71-43-2	
Carbon tetrachloride	<5.0	ug/L	10.0	5.0	10		06/15/17 12:00	56-23-5	
Chlorobenzene	<5.0	ug/L	10.0	5.0	10		06/15/17 12:00	108-90-7	
Chloroform	<25.0	ug/L	50.0	25.0	10		06/15/17 12:00	67-66-3	L1
Tetrachloroethene	<5.0	ug/L	10.0	5.0	10		06/15/17 12:00	127-18-4	
Trichloroethene	<3.3	ug/L	10.0	3.3	10		06/15/17 12:00	79-01-6	
Vinyl chloride	<1.8	ug/L	10.0	1.8	10		06/15/17 12:00	75-01-4	
<b>Surrogates</b>									
Toluene-d8 (S)	91	%	70-130		10		06/15/17 12:00	2037-26-5	
4-Bromofluorobenzene (S)	117	%	61-130		10		06/15/17 12:00	460-00-4	
Dibromofluoromethane (S)	116	%	67-130		10		06/15/17 12:00	1868-53-7	
<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87									
Percent Moisture	49.4	%	0.10	0.10	1		06/14/17 15:06		
<b>1010 Flashpoint,Closed Cup</b>									
Analytical Method: EPA 1010									
Flashpoint	>210	deg F			1		06/15/17 14:21		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
pH	8.4	Std. Units	0.10	0.010	1		06/20/17 10:40		1q,H6
<b>9095 Paint Filter Liquid Test</b>									
Analytical Method: EPA 9095									
Free Liquids	Pass	no units			1		06/15/17 16:07		
<b>733C S Reactive Cyanide</b>									
Analytical Method: EPA 9014    Preparation Method: SW-846 7.3.3.2									
Cyanide, Reactive	<0.79	mg/kg	2.0	0.79	1	06/16/17 14:18	06/16/17 23:06		
<b>734S Reactive Sulfide</b>									
Analytical Method: SM4500S2F-00    Preparation Method: SW-846 7.3.4.2									
Sulfide, Reactive	<19.7	mg/kg	19.7	19.7	1	06/16/17 14:18	06/16/17 22:01		

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: FRF SLUDGE  
Pace Project No.: 40151526

QC Batch: 258908 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury TCLP  
Associated Lab Samples: 40151526001

METHOD BLANK: 1525795 Matrix: Water  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	06/19/17 12:25	

METHOD BLANK: 1523835 Matrix: Water  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	06/19/17 12:42	

METHOD BLANK: 1523921 Matrix: Water  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	06/19/17 12:58	

METHOD BLANK: 1523955 Matrix: Water  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	06/19/17 13:05	

LABORATORY CONTROL SAMPLE: 1525796

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1525797 1525798

Parameter	Units	40151516002 Result	MS	MSD	MS	MSD	MS	MSD	% Rec	Max	Qual
			Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits	RPD	
Mercury	ug/L	<0.00013 mg/L	5	5	6.9	6.7	138	134	85-115	3	20 M0

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

MATRIX SPIKE SAMPLE:		1525799					
Parameter	Units	40151526001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	<0.13	5	7.3	145	85-115	M0

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

QC Batch: 258929

Analysis Method: EPA 6010

QC Batch Method: EPA 3010

Analysis Description: 6010 MET TCLP

Associated Lab Samples: 40151526001

METHOD BLANK: 1525856

Matrix: Water

Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0083	0.025	06/20/17 11:28	
Barium	mg/L	<0.0050	0.015	06/20/17 11:28	
Cadmium	mg/L	<0.0013	0.0050	06/20/17 11:28	
Chromium	mg/L	<0.0025	0.010	06/20/17 11:28	
Lead	mg/L	<0.0043	0.013	06/20/17 11:28	
Selenium	mg/L	<0.017	0.050	06/20/17 11:28	
Silver	mg/L	<0.0033	0.010	06/20/17 11:28	

METHOD BLANK: 1523832

Matrix: Solid

Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.042	0.12	06/20/17 11:46	
Barium	mg/L	<0.025	0.075	06/20/17 11:46	
Cadmium	mg/L	<0.0066	0.025	06/20/17 11:46	
Chromium	mg/L	<0.013	0.050	06/20/17 11:46	
Lead	mg/L	<0.022	0.065	06/20/17 11:46	
Selenium	mg/L	<0.083	0.25	06/20/17 11:46	
Silver	mg/L	<0.017	0.050	06/20/17 11:46	

METHOD BLANK: 1523833

Matrix: Solid

Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0083	0.025	06/20/17 12:08	
Barium	mg/L	<0.0050	0.015	06/20/17 12:08	
Cadmium	mg/L	<0.0013	0.0050	06/20/17 12:08	
Chromium	mg/L	<0.0025	0.010	06/20/17 12:08	
Lead	mg/L	<0.0043	0.013	06/20/17 12:08	
Selenium	mg/L	<0.017	0.050	06/20/17 12:08	
Silver	mg/L	<0.0033	0.010	06/20/17 12:08	

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### QUALITY CONTROL DATA

Project: FRF SLUDGE  
Pace Project No.: 40151526

METHOD BLANK: 1523919 Matrix: Solid  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.042	0.12	06/20/17 11:59	
Barium	mg/L	<0.025	0.075	06/20/17 11:59	
Cadmium	mg/L	<0.0066	0.025	06/20/17 11:59	
Chromium	mg/L	<0.013	0.050	06/20/17 11:59	
Lead	mg/L	<0.022	0.065	06/20/17 11:59	
Selenium	mg/L	<0.083	0.25	06/20/17 11:59	
Silver	mg/L	<0.017	0.050	06/20/17 11:59	

METHOD BLANK: 1523953 Matrix: Solid  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.042	0.12	06/20/17 12:03	
Barium	mg/L	<0.025	0.075	06/20/17 12:03	
Cadmium	mg/L	<0.0066	0.025	06/20/17 12:03	
Chromium	mg/L	<0.013	0.050	06/20/17 12:03	
Lead	mg/L	<0.022	0.065	06/20/17 12:03	
Selenium	mg/L	<0.083	0.25	06/20/17 12:03	
Silver	mg/L	<0.017	0.050	06/20/17 12:03	

METHOD BLANK: 1523954 Matrix: Solid  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0083	0.025	06/20/17 12:18	
Barium	mg/L	<0.0050	0.015	06/20/17 12:18	
Cadmium	mg/L	<0.0013	0.0050	06/20/17 12:18	
Chromium	mg/L	<0.0025	0.010	06/20/17 12:18	
Lead	mg/L	<0.0043	0.013	06/20/17 12:18	
Selenium	mg/L	<0.017	0.050	06/20/17 12:18	
Silver	mg/L	<0.0033	0.010	06/20/17 12:18	

LABORATORY CONTROL SAMPLE: 1525857

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	.5	0.40	80	80-120	
Barium	mg/L	.5	0.43	86	80-120	
Cadmium	mg/L	.5	0.41	83	80-120	
Chromium	mg/L	.5	0.44	88	80-120	
Lead	mg/L	.5	0.42	85	80-120	

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### QUALITY CONTROL DATA

Project: FRF SLUDGE  
Pace Project No.: 40151526

LABORATORY CONTROL SAMPLE: 1525857

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Selenium	mg/L	.5	0.41	82	80-120	
Silver	mg/L	.25	0.21	85	80-120	

MATRIX SPIKE SAMPLE: 1525858

Parameter	Units	40151526001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.4	94	75-125	
Barium	mg/L	0.28	2.5	2.6	94	75-125	
Cadmium	mg/L	<0.0066	2.5	2.4	96	75-125	
Chromium	mg/L	<0.013	2.5	2.4	95	75-125	
Lead	mg/L	<0.022	2.5	2.4	94	75-125	
Selenium	mg/L	<0.083	2.5	2.5	98	75-125	
Silver	mg/L	<0.017	1.2	1.2	98	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1525859 1525860

Parameter	Units	40151588002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	<0.042	2.5	2.5	2.3	2.3	92	92	75-125	0	20	
Barium	mg/L	0.87	2.5	2.5	3.2	3.2	95	95	75-125	0	20	
Cadmium	mg/L	<0.0066	2.5	2.5	2.4	2.4	95	96	75-125	1	20	
Chromium	mg/L	0.075	2.5	2.5	2.5	2.5	98	98	75-125	1	20	
Lead	mg/L	<0.022	2.5	2.5	2.4	2.4	95	96	75-125	1	20	
Selenium	mg/L	<0.083	2.5	2.5	2.4	2.4	95	97	75-125	2	20	
Silver	mg/L	<0.017	1.2	1.2	1.2	1.2	97	98	75-125	1	20	

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

QC Batch: 258621 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV TCLP  
Associated Lab Samples: 40151526001

METHOD BLANK: 1523788 Matrix: Water  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	<0.41	1.0	06/15/17 06:20	
1,2-Dichloroethane	ug/L	<0.17	1.0	06/15/17 06:20	
2-Butanone (MEK)	ug/L	<3.0	20.0	06/15/17 06:20	
Benzene	ug/L	<0.50	1.0	06/15/17 06:20	
Carbon tetrachloride	ug/L	<0.50	1.0	06/15/17 06:20	
Chlorobenzene	ug/L	<0.50	1.0	06/15/17 06:20	
Chloroform	ug/L	<2.5	5.0	06/15/17 06:20	
Tetrachloroethene	ug/L	<0.50	1.0	06/15/17 06:20	
Trichloroethene	ug/L	<0.33	1.0	06/15/17 06:20	
Vinyl chloride	ug/L	<0.18	1.0	06/15/17 06:20	
4-Bromofluorobenzene (S)	%	115	61-130	06/15/17 06:20	
Dibromofluoromethane (S)	%	116	67-130	06/15/17 06:20	
Toluene-d8 (S)	%	91	70-130	06/15/17 06:20	

METHOD BLANK: 1523273 Matrix: Solid  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	<4.1	10.0	06/15/17 12:23	
1,2-Dichloroethane	ug/L	<1.7	10.0	06/15/17 12:23	
2-Butanone (MEK)	ug/L	<29.8	200	06/15/17 12:23	
Benzene	ug/L	<5.0	10.0	06/15/17 12:23	
Carbon tetrachloride	ug/L	<5.0	10.0	06/15/17 12:23	
Chlorobenzene	ug/L	<5.0	10.0	06/15/17 12:23	
Chloroform	ug/L	<25.0	50.0	06/15/17 12:23	
Tetrachloroethene	ug/L	<5.0	10.0	06/15/17 12:23	
Trichloroethene	ug/L	<3.3	10.0	06/15/17 12:23	
Vinyl chloride	ug/L	<1.8	10.0	06/15/17 12:23	
4-Bromofluorobenzene (S)	%	108	61-130	06/15/17 12:23	
Dibromofluoromethane (S)	%	114	67-130	06/15/17 12:23	
Toluene-d8 (S)	%	98	70-130	06/15/17 12:23	

LABORATORY CONTROL SAMPLE: 1523789

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	50	57.5	115	75-130	
1,2-Dichloroethane	ug/L	50	58.3	117	70-131	
2-Butanone (MEK)	ug/L		<3.0			

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

LABORATORY CONTROL SAMPLE: 1523789

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Benzene	ug/L	50	63.2	126	73-145	
Carbon tetrachloride	ug/L	50	60.7	121	70-133	
Chlorobenzene	ug/L	50	53.6	107	70-130	
Chloroform	ug/L	50	60.9	122	80-121	L1
Tetrachloroethene	ug/L	50	50.1	100	70-130	
Trichloroethene	ug/L	50	60.1	120	70-130	
Vinyl chloride	ug/L	50	65.5	131	57-136	
4-Bromofluorobenzene (S)	%			114	61-130	
Dibromofluoromethane (S)	%			111	67-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1523959 1523960

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40151516001 Result	Spike Conc.	Spike Conc.	MS Result						
1,1-Dichloroethene	ug/L	<0.0041 mg/L	500	500	557	558	111	112	75-136	0	20
1,2-Dichloroethane	ug/L	<0.0017 mg/L	500	500	576	573	115	115	70-131	1	20
2-Butanone (MEK)	ug/L	<0.030 mg/L			<29.8	<29.8					20
Benzene	ug/L	<0.0050 mg/L	500	500	613	621	123	124	73-145	1	20
Carbon tetrachloride	ug/L	<0.0050 mg/L	500	500	588	593	118	119	70-134	1	20
Chlorobenzene	ug/L	<0.0050 mg/L	500	500	543	543	109	109	70-130	0	20
Chloroform	ug/L	<0.025 mg/L	500	500	579	592	116	118	80-121	2	20
Tetrachloroethene	ug/L	<0.0050 mg/L	500	500	502	492	100	98	70-130	2	20
Trichloroethene	ug/L	<0.0033 mg/L	500	500	612	605	122	121	70-130	1	20
Vinyl chloride	ug/L	<0.0018 mg/L	500	500	616	637	123	127	56-143	3	20
4-Bromofluorobenzene (S)	%						109	115	61-130		
Dibromofluoromethane (S)	%						107	110	67-130		
Toluene-d8 (S)	%						101	100	70-130		

MATRIX SPIKE SAMPLE: 1523961

Parameter	Units	40151453001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	<4.1	500	598	120	75-136	
1,2-Dichloroethane	ug/L	<1.7	500	591	118	70-131	
2-Butanone (MEK)	ug/L	<29.8		<29.8			
Benzene	ug/L	<5.0	500	639	128	73-145	
Carbon tetrachloride	ug/L	<5.0	500	638	128	70-134	

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

MATRIX SPIKE SAMPLE:		1523961					
Parameter	Units	40151453001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Chlorobenzene	ug/L	<5.0	500	559	112	70-130	
Chloroform	ug/L	<25.0	500	622	124	80-121	M0
Tetrachloroethene	ug/L	<5.0	500	518	104	70-130	
Trichloroethene	ug/L	<3.3	500	622	124	70-130	
Vinyl chloride	ug/L	<1.8	500	661	132	56-143	
4-Bromofluorobenzene (S)	%				126	61-130	
Dibromofluoromethane (S)	%				113	67-130	
Toluene-d8 (S)	%				99	70-130	

MATRIX SPIKE SAMPLE:		1523962					
Parameter	Units	40151526001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	<4.1	500	591	118	75-136	
1,2-Dichloroethane	ug/L	<1.7	500	567	113	70-131	
2-Butanone (MEK)	ug/L	<29.8		<29.8			
Benzene	ug/L	<5.0	500	634	127	73-145	
Carbon tetrachloride	ug/L	<5.0	500	607	121	70-134	
Chlorobenzene	ug/L	<5.0	500	540	108	70-130	
Chloroform	ug/L	<25.0	500	606	121	80-121	
Tetrachloroethene	ug/L	<5.0	500	501	100	70-130	
Trichloroethene	ug/L	<3.3	500	610	122	70-130	
Vinyl chloride	ug/L	<1.8	500	692	138	56-143	
4-Bromofluorobenzene (S)	%				120	61-130	
Dibromofluoromethane (S)	%				111	67-130	
Toluene-d8 (S)	%				96	70-130	

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### QUALITY CONTROL DATA

Project: FRF SLUDGE  
Pace Project No.: 40151526

QC Batch: 258693 Analysis Method: EPA 8082  
QC Batch Method: EPA 3541 Analysis Description: 8082 GCS PCB  
Associated Lab Samples: 40151526001

METHOD BLANK: 1524083 Matrix: Solid  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	<25.0	50.0	06/15/17 22:51	
PCB-1221 (Aroclor 1221)	ug/kg	<25.0	50.0	06/15/17 22:51	
PCB-1232 (Aroclor 1232)	ug/kg	<25.0	50.0	06/15/17 22:51	
PCB-1242 (Aroclor 1242)	ug/kg	<25.0	50.0	06/15/17 22:51	
PCB-1248 (Aroclor 1248)	ug/kg	<25.0	50.0	06/15/17 22:51	
PCB-1254 (Aroclor 1254)	ug/kg	<25.0	50.0	06/15/17 22:51	
PCB-1260 (Aroclor 1260)	ug/kg	<25.0	50.0	06/15/17 22:51	
Decachlorobiphenyl (S)	%	75	53-105	06/15/17 22:51	
Tetrachloro-m-xylene (S)	%	67	50-102	06/15/17 22:51	

LABORATORY CONTROL SAMPLE: 1524084

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg		<25.0			
PCB-1221 (Aroclor 1221)	ug/kg		<25.0			
PCB-1232 (Aroclor 1232)	ug/kg		<25.0			
PCB-1242 (Aroclor 1242)	ug/kg		<25.0			
PCB-1248 (Aroclor 1248)	ug/kg		<25.0			
PCB-1254 (Aroclor 1254)	ug/kg		<25.0			
PCB-1260 (Aroclor 1260)	ug/kg	500	387	77	59-106	
Decachlorobiphenyl (S)	%			79	53-105	
Tetrachloro-m-xylene (S)	%			70	50-102	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1524085 1524086

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40151620001	Spike Conc.	Spike Conc.	Result						
PCB-1016 (Aroclor 1016)	ug/kg	<29.8			<29.8	<29.8					20
PCB-1221 (Aroclor 1221)	ug/kg	<29.8			<29.8	<29.8					20
PCB-1232 (Aroclor 1232)	ug/kg	<29.8			<29.8	<29.8					20
PCB-1242 (Aroclor 1242)	ug/kg	66.6			62.8	71.4			13		20
PCB-1248 (Aroclor 1248)	ug/kg	<29.8			<29.8	<29.8					20
PCB-1254 (Aroclor 1254)	ug/kg	<29.8			<29.8	<29.8					20
PCB-1260 (Aroclor 1260)	ug/kg	<29.8	596	596	440	439	74	74	51-109	0	20
Decachlorobiphenyl (S)	%						73	72	53-105		
Tetrachloro-m-xylene (S)	%						67	68	50-102		

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### QUALITY CONTROL DATA

Project: FRF SLUDGE  
Pace Project No.: 40151526

QC Batch: 258922 Analysis Method: EPA 8270  
QC Batch Method: EPA 3510 Analysis Description: 8270 TCLP MSSV  
Associated Lab Samples: 40151526001

METHOD BLANK: 1525838 Matrix: Water  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	<3.8	12.5	06/19/17 13:16	
2,4,5-Trichlorophenol	ug/L	<1.7	5.6	06/19/17 13:16	
2,4,6-Trichlorophenol	ug/L	<4.2	14.1	06/19/17 13:16	
2,4-Dinitrotoluene	ug/L	<1.6	5.3	06/19/17 13:16	
2-Methylphenol(o-Cresol)	ug/L	<1.7	5.8	06/19/17 13:16	
3&4-Methylphenol(m&p Cresol)	ug/L	<3.1	10.4	06/19/17 13:16	
Hexachloro-1,3-butadiene	ug/L	<4.9	16.4	06/19/17 13:16	
Hexachlorobenzene	ug/L	<3.4	11.3	06/19/17 13:16	
Hexachloroethane	ug/L	<5.3	17.7	06/19/17 13:16	
Nitrobenzene	ug/L	<2.9	9.7	06/19/17 13:16	
Pentachlorophenol	ug/L	<2.9	9.6	06/19/17 13:16	
Phenol	ug/L	<1.2	4.0	06/19/17 13:16	
Pyridine	ug/L	<3.6	11.9	06/19/17 13:16	
2,4,6-Tribromophenol (S)	%	107	65-140	06/19/17 13:16	
2-Fluorobiphenyl (S)	%	87	59-109	06/19/17 13:16	
Nitrobenzene-d5 (S)	%	82	53-100	06/19/17 13:16	
Phenol-d6 (S)	%	28	18-120	06/19/17 13:16	

METHOD BLANK: 1523834 Matrix: Water  
Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	<18.8	62.5	06/19/17 16:50	
2,4,5-Trichlorophenol	ug/L	<8.4	28.0	06/19/17 16:50	
2,4,6-Trichlorophenol	ug/L	<21.1	70.4	06/19/17 16:50	
2,4-Dinitrotoluene	ug/L	<7.9	26.4	06/19/17 16:50	
2-Methylphenol(o-Cresol)	ug/L	<8.7	28.9	06/19/17 16:50	
3&4-Methylphenol(m&p Cresol)	ug/L	<15.6	52.0	06/19/17 16:50	
Hexachloro-1,3-butadiene	ug/L	<24.6	82.0	06/19/17 16:50	
Hexachlorobenzene	ug/L	<16.9	56.4	06/19/17 16:50	
Hexachloroethane	ug/L	<26.6	88.6	06/19/17 16:50	
Nitrobenzene	ug/L	<14.5	48.3	06/19/17 16:50	
Pentachlorophenol	ug/L	<14.3	47.8	06/19/17 16:50	
Phenol	ug/L	<6.0	20.0	06/19/17 16:50	
Pyridine	ug/L	<17.9	59.6	06/19/17 16:50	
2,4,6-Tribromophenol (S)	%	105	65-140	06/19/17 16:50	
2-Fluorobiphenyl (S)	%	75	59-109	06/19/17 16:50	
Nitrobenzene-d5 (S)	%	73	53-100	06/19/17 16:50	
Phenol-d6 (S)	%	22	18-120	06/19/17 16:50	

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

METHOD BLANK: 1523920

Matrix: Water

Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	<18.8	62.5	06/19/17 17:12	
2,4,5-Trichlorophenol	ug/L	<8.4	28.0	06/19/17 17:12	
2,4,6-Trichlorophenol	ug/L	<21.1	70.4	06/19/17 17:12	
2,4-Dinitrotoluene	ug/L	<7.9	26.4	06/19/17 17:12	
2-Methylphenol(o-Cresol)	ug/L	<8.7	28.9	06/19/17 17:12	
3&4-Methylphenol(m&p Cresol)	ug/L	<15.6	52.0	06/19/17 17:12	
Hexachloro-1,3-butadiene	ug/L	<24.6	82.0	06/19/17 17:12	
Hexachlorobenzene	ug/L	<16.9	56.4	06/19/17 17:12	
Hexachloroethane	ug/L	<26.6	88.6	06/19/17 17:12	
Nitrobenzene	ug/L	<14.5	48.3	06/19/17 17:12	
Pentachlorophenol	ug/L	<14.3	47.8	06/19/17 17:12	
Phenol	ug/L	<6.0	20.0	06/19/17 17:12	
Pyridine	ug/L	<17.9	59.6	06/19/17 17:12	
2,4,6-Tribromophenol (S)	%	112	65-140	06/19/17 17:12	
2-Fluorobiphenyl (S)	%	78	59-109	06/19/17 17:12	
Nitrobenzene-d5 (S)	%	76	53-100	06/19/17 17:12	
Phenol-d6 (S)	%	24	18-120	06/19/17 17:12	

LABORATORY CONTROL SAMPLE: 1525839

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	50	36.9	74	44-84	
2,4,5-Trichlorophenol	ug/L	50	56.4	113	63-127	
2,4,6-Trichlorophenol	ug/L	50	56.6	113	65-125	
2,4-Dinitrotoluene	ug/L	50	60.9	122	68-137	
2-Methylphenol(o-Cresol)	ug/L	50	37.1	74	54-103	
3&4-Methylphenol(m&p Cresol)	ug/L	50	30.6	61	50-95	
Hexachloro-1,3-butadiene	ug/L	50	42.7	85	57-100	
Hexachlorobenzene	ug/L	50	49.5	99	70-130	
Hexachloroethane	ug/L	50	34.9	70	41-130	
Nitrobenzene	ug/L	50	46.1	92	70-130	
Pentachlorophenol	ug/L	50	46.7	93	57-121	
Phenol	ug/L	50	22.1	44	25-120	
Pyridine	ug/L	50	9.8J	20	10-79	
2,4,6-Tribromophenol (S)	%			125	65-140	
2-Fluorobiphenyl (S)	%			99	59-109	
Nitrobenzene-d5 (S)	%			94	53-100	
Phenol-d6 (S)	%			35	18-120	

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

MATRIX SPIKE SAMPLE: 1525840		40151516001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	<0.019 mg/L	250	188	75	42-96	
2,4,5-Trichlorophenol	ug/L	<0.0084 mg/L	250	217	87	49-127	
2,4,6-Trichlorophenol	ug/L	<0.021 mg/L	250	251	100	52-125	
2,4-Dinitrotoluene	ug/L	<0.0079 mg/L	250	278	111	56-137	
2-Methylphenol(o-Cresol)	ug/L	<0.0087 mg/L	250	192	77	29-103	
3&4-Methylphenol(m&p Cresol)	ug/L	<0.016 mg/L	250	156	62	21-95	
Hexachloro-1,3-butadiene	ug/L	<0.025 mg/L	250	222	89	52-100	
Hexachlorobenzene	ug/L	<0.017 mg/L	250	237	95	67-130	
Hexachloroethane	ug/L	<0.027 mg/L	250	170	68	41-130	
Nitrobenzene	ug/L	<0.015 mg/L	250	215	86	61-130	
Pentachlorophenol	ug/L	<0.014 mg/L	250	232	93	44-134	
Phenol	ug/L	<6.0	250	98.6	39	16-120	
Pyridine	ug/L	<0.018 mg/L	250	60.3	24	10-79	
2,4,6-Tribromophenol (S)	%				116	65-140	
2-Fluorobiphenyl (S)	%				87	59-109	
Nitrobenzene-d5 (S)	%				86	53-100	
Phenol-d6 (S)	%				33	18-120	

MATRIX SPIKE SAMPLE: 1525841		40151453001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	<18.8	250	183	73	42-96	
2,4,5-Trichlorophenol	ug/L	<8.4	250	248	99	49-127	
2,4,6-Trichlorophenol	ug/L	<21.1	250	275	110	52-125	
2,4-Dinitrotoluene	ug/L	<7.9	250	293	117	56-137	
2-Methylphenol(o-Cresol)	ug/L	<8.7	250	178	71	29-103	
3&4-Methylphenol(m&p Cresol)	ug/L	<15.6	250	162	65	21-95	
Hexachloro-1,3-butadiene	ug/L	<24.6	250	206	83	52-100	
Hexachlorobenzene	ug/L	<16.9	250	228	91	67-130	
Hexachloroethane	ug/L	<26.6	250	162	65	41-130	
Nitrobenzene	ug/L	<14.5	250	216	87	61-130	
Pentachlorophenol	ug/L	<14.3	250	241	96	44-134	
Phenol	ug/L	<6.0	250	99.9	40	16-120	
Pyridine	ug/L	<17.9	250	25.6J	10	10-79	
2,4,6-Tribromophenol (S)	%				120	65-140	
2-Fluorobiphenyl (S)	%				93	59-109	
Nitrobenzene-d5 (S)	%				93	53-100	
Phenol-d6 (S)	%				34	18-120	

MATRIX SPIKE SAMPLE: 1525842		40151526001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	<18.8	250	165	66	42-96	
2,4,5-Trichlorophenol	ug/L	<8.4	250	274	110	49-127	

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

MATRIX SPIKE SAMPLE:	1525842	40151526001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
2,4,6-Trichlorophenol	ug/L	<21.1	250	280	112	52-125	
2,4-Dinitrotoluene	ug/L	<7.9	250	294	118	56-137	
2-Methylphenol(o-Cresol)	ug/L	<8.7	250	183	73	29-103	
3&4-Methylphenol(m&p Cresol)	ug/L	<15.6	250	159	64	21-95	
Hexachloro-1,3-butadiene	ug/L	<24.6	250	195	78	52-100	
Hexachlorobenzene	ug/L	<16.9	250	232	93	67-130	
Hexachloroethane	ug/L	<26.6	250	149	60	41-130	
Nitrobenzene	ug/L	<14.5	250	212	85	61-130	
Pentachlorophenol	ug/L	<14.3	250	265	106	44-134	
Phenol	ug/L	<6.0	250	107	43	16-120	
Pyridine	ug/L	<17.9	250	83.8	34	10-79	
2,4,6-Tribromophenol (S)	%				121	65-140	
2-Fluorobiphenyl (S)	%				82	59-109	
Nitrobenzene-d5 (S)	%				81	53-100	
Phenol-d6 (S)	%				34	18-120	

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**QUALITY CONTROL DATA**

Project: FRF SLUDGE

Pace Project No.: 40151526

QC Batch: 258542

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 40151526001

SAMPLE DUPLICATE: 1523157

Parameter	Units	40151370034 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.0	18.8	4	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

---

QC Batch: 258650	Analysis Method: EPA 1010
QC Batch Method: EPA 1010	Analysis Description: 1010 Flash Point, Closed Cup
Associated Lab Samples: 40151526001	

---

LABORATORY CONTROL SAMPLE: 1523890

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Flashpoint	deg F		80.8			

---

SAMPLE DUPLICATE: 1524596

Parameter	Units	10391860001 Result	Dup Result	RPD	Max RPD	Qualifiers
Flashpoint	deg F	>210	>210			C4

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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**QUALITY CONTROL DATA**

Project: FRF SLUDGE

Pace Project No.: 40151526

QC Batch: 259165 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40151526001

SAMPLE DUPLICATE: 1526648

Parameter	Units	40151803006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.2	7.3	1	20	H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

**REPORT OF LABORATORY ANALYSIS**

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

---

QC Batch: 258751	Analysis Method: EPA 9095
QC Batch Method: EPA 9095	Analysis Description: 9095 PAINT FILTER LIQUID TEST
Associated Lab Samples: 40151526001	

---

METHOD BLANK: 1524455 Matrix: Solid

Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Free Liquids	no units	Fail		06/15/17 15:32	

LABORATORY CONTROL SAMPLE: 1524456

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Free Liquids	no units		Pass			

SAMPLE DUPLICATE: 1524457

Parameter	Units	40151516002 Result	Dup Result	RPD	Max RPD	Qualifiers
Free Liquids	no units	Pass	Pass			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

QC Batch: 262127

Analysis Method: EPA 9014

QC Batch Method: SW-846 7.3.3.2

Analysis Description: 733C Reactive Cyanide

Associated Lab Samples: 40151526001

METHOD BLANK: 1290868

Matrix: Solid

Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide, Reactive	mg/kg	<0.40	0.99	06/16/17 22:57	

LABORATORY CONTROL SAMPLE: 1290869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide, Reactive	mg/kg	101	<0.40	0	0-8	

SAMPLE DUPLICATE: 1290870

Parameter	Units	40151526001 Result	Dup Result	RPD	Max RPD	Qualifiers
Cyanide, Reactive	mg/kg	<0.79	<0.79		20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: FRF SLUDGE

Pace Project No.: 40151526

QC Batch: 262126

Analysis Method: SM4500S2F-00

QC Batch Method: SW-846 7.3.4.2

Analysis Description: 734S Reactive Sulfide

Associated Lab Samples: 40151526001

METHOD BLANK: 1290865

Matrix: Solid

Associated Lab Samples: 40151526001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Reactive	mg/kg	<9.9	9.9	06/16/17 22:01	

LABORATORY CONTROL SAMPLE: 1290866

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Reactive	mg/kg	201	52.3	26	0-52	

SAMPLE DUPLICATE: 1290867

Parameter	Units	40151526001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Reactive	mg/kg	<19.7	<19.6		20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: FRF SLUDGE

Pace Project No.: 40151526

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-G Pace Analytical Services - Green Bay

PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

1q Due to the sample matrix, DI water was added to this sample on a one to one basis and the sample was stirred before analysis.

C4 Sample container did not meet EPA or method requirements.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results may be biased high.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: FRF SLUDGE

Pace Project No.: 40151526

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40151526001	FRF #1	EPA 3541	258693	EPA 8082	258694
40151526001	FRF #1	EPA 3010	258929	EPA 6010	259129
40151526001	FRF #1	EPA 7470	258908	EPA 7470	258931
40151526001	FRF #1	EPA 3510	258922	EPA 8270	259012
40151526001	FRF #1	EPA 8260	258621		
40151526001	FRF #1	ASTM D2974-87	258542		
40151526001	FRF #1	EPA 1010	258650		
40151526001	FRF #1	EPA 9040	259165		
40151526001	FRF #1	EPA 9095	258751		
40151526001	FRF #1	SW-846 7.3.3.2	262127	EPA 9014	262199
40151526001	FRF #1	SW-846 7.3.4.2	262126	SM4500S2F-00	262197

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: Brown County  
 Branch/Location: Port & Resource Recovery  
 Project Contact: Chad Dowaspica  
 Phone: (920) 492-4955  
 Project Number: \_\_\_\_\_  
 Project Name: FRF Sludge  
 Project State: NC  
 Sampled By (Print): Chad Dowaspica  
 Sampled By (Sign): [Signature]  
 PO #: \_\_\_\_\_ Regulatory Program: \_\_\_\_\_



UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

40151526

### CHAIN OF CUSTODY

**\*Preservation Codes**  
 A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?  
(YES/NO)  
 PRESERVATION  
(CODE)\*

Y/N	Pick Letter	Analyses Requested	Matrix Codes																	
			A	B	C	D	E	F	G	H	I	J								
N	N	✓ Protocol B-TECP																		

Quote #: \_\_\_\_\_  
 Mail To Contact: \_\_\_\_\_  
 Mail To Company: \_\_\_\_\_  
 Mail To Address: \_\_\_\_\_  
 Invoice To Contact: \_\_\_\_\_  
 Invoice To Company: \_\_\_\_\_  
 Invoice To Address: \_\_\_\_\_  
 Invoice To Phone: \_\_\_\_\_

**Data Package Options** (billable)  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air W = Water  
 B = Biota DW = Drinking Water  
 C = Charcoal GW = Ground Water  
 O = Oil SW = Surface Water  
 S = Soil WW = Waste Water  
 Sl = Sludge WP = Wipe

PACE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX
		DATE	TIME	
001	FRF #1	6/13	1:30	S

**CLIENT COMMENTS**  
 \_\_\_\_\_

**LAB COMMENTS (Lab Use Only)**  
 7-402ag<sup>th</sup>

**Profile #**  
 \_\_\_\_\_

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)  
 Date Needed: \_\_\_\_\_

Transmit Prelim Rush Results by (complete what you want): \_\_\_\_\_

Relinquished By: <u>[Signature]</u>	Date/Time: <u>6/13/17 2:00pm</u>	Received By: <u>[Signature]</u>	Date/Time: <u>6/13/17 1400</u>
Relinquished By: _____	Date/Time: _____	Received By: _____	Date/Time: _____
Relinquished By: _____	Date/Time: _____	Received By: _____	Date/Time: _____
Relinquished By: _____	Date/Time: _____	Received By: _____	Date/Time: _____

Electronics: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

Samples on HOLD are subject to special pricing and release of liability

PACE Project No. 40151526

Receipt Temp = ROT°C

Sample Receipt pH  
 OK / Adjusted

Cooler Custody Seal  
 Present / Not Present  
 Intact / Not Intact



Sample Condition Upon Receipt

Pace Analytical Services, LLC. - Green Bay WI
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #

WO#: 40151526



Client Name: Brown Co

Courier: Fed Ex UPS Client Pace Other:

Tracking #:

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Custody Seal on Samples Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer Used NA Type of Ice Wet Blue Dry None Samples on ice, cooling process has begun

Cooler Temperature Uncorr: /Corr: (RO) Biological Tissue is Frozen: yes

Temp Blank Present: yes no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 6/13/17
Initials: [Signature]

Comments:

Table with 15 rows of inspection criteria and checkboxes. Includes items like Chain of Custody Present, Short Hold Time Analysis, and Containers Intact.

Client Notification/ Resolution:
Person Contacted: Date/Time:
Comments/ Resolution:

Project Manager Review: [Signature] Date: 6/13/17

## Analytical Report

Tod Noltenmeyer  
Pace Analytical Services, Inc.  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

June 20, 2017

Work Order: 17F0534

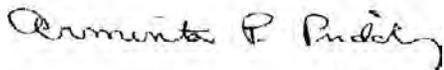
RE: Green Bay  
FRF Sludge / 40151526

Dear Tod Noltenmeyer:

Enclosed are the analytical reports for the EMT Work Order listed. Also included with this analytical report is a copy of the chain of custody associated with these samples. If you have any questions, please contact me.

Sincerely,

Approved by,



Arminta Priddy  
Project Manager  
847.967.6666  
apriddy@emt.com

Approved for release: 6/20/2017 2:42:56PM



Matthew Gregory  
Technical Manager

The contents of this report apply to the sample(s) analyzed. No duplication is allowed except in its entirety. Detection and Reporting limits are adjusted for sample size used, dilutions and moisture content, if applicable.

State of Wisconsin Dept of Natural Resources, Cert No. 999888890

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### Sample Summary

<u>Sample ID</u>	<u>Laboratory ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
FRF#1	17F0534-01	Solid	06/13/17 13:30	06/15/17 10:00

## Case Narrative

**Client:** Pace Analytical Services, Inc.

**Date:** 06/20/2017

**Project:** Green Bay  
FRF Sludge / 40151526

**Work Order:** 17F0534

---

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

Sample results only relate to the sample(s) received at the laboratory and analytes of interest tested.

**Work Order: 17F0534**

The samples were received on 06/15/17 10:00. The samples arrived in good condition and properly preserved. The temperature of the cooler at receipt was

<u>Cooler</u>	<u>Temp C°</u>
Default Cooler	6.8

Refer to Qualifiers and Definitions for quality and analytical clarifications or deviations.



8100 N. Austin Avenue Morton Grove, IL 60053-3203 P 847.967.6666 800.246.0663 F 847.967.6735 www.emt.com

### Client Sample Results

**Client:** Pace Analytical Services, Inc.  
**Project:** Green Bay  
 FRF Sludge / 40151526  
**Work Order:** 17F0534

**Client Sample ID:** FRF#1  
**Report Date:** 06/20/2017  
**Collection Date:** 06/13/2017 13:30  
**Matrix:** Solid  
**Lab ID:** 17F0534-01

Analyses	Result	EMT Reporting		Qual	Units	MDL	Date/Time Analyzed	Batch	Analyst	DF
		Limit								
<b>Anions by Ion Chromatography</b>										
Method: SW9056A / SW5050										
Chlorine	0.0318	0.231	J		% dry	0.0139	06/19/17 14:11	B7F0638	NB1	5
<b>Wet Chemistry</b>										
Method: SM2540G										
Total Solids	49.9	0.100			%(Percent)	0.00700	06/19/17 06:12	B7F0665	CP1	1

## Dates Report

**Client:** Pace Analytical Services, Inc.

**Report Date:** 06/20/2017

**Project:** Green Bay  
FRF Sludge / 40151526

**Work Order:** 17F0534

Sample ID	Client Sample ID	Collection	Matrix	Test Name	Leached Prep Date	Prep Date	Analysis Date	Batch ID	Sequence
17F0534-01	FRF#1	06/13/17	Solid	Chlorine, Percent		06/19/17 08:30	06/19/17 14:11	B7F0638	S7F0383
				Total Solids / Percent Moisture		06/19/17 06:00	06/19/17 06:12	B7F0665	

### Quality Control

**Client:** Pace Analytical Services, Inc.  
**Project:** Green Bay  
 FRF Sludge / 40151526  
**Work Order:** 17F0534

**Report Date:** 06/20/2017  
**Matrix:** Solid

#### Anions by Ion Chromatography

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual	DF
<b>Batch: B7F0638 - SW5050</b>											
<b>Blank (B7F0638-BLK1)</b> <span style="float: right;"><i>Prepared: 06/19/2017 08:30 Analyzed: 06/19/2017 09:59</i></span>											
Chlorine	< 0.00000600	0.000100	% wet								1
<b>Blank (B7F0638-BLK2)</b> <span style="float: right;"><i>Prepared: 06/19/2017 08:30 Analyzed: 06/19/2017 11:23</i></span>											
Chlorine	< 0.000582	0.00970	% wet								1
<b>LCS (B7F0638-BS1)</b> <span style="float: right;"><i>Prepared: 06/19/2017 08:30 Analyzed: 06/19/2017 10:27</i></span>											
Chlorine	0.0000235	0.000100	% wet	0.00002000		117	80-120			J	1
<b>LCS (B7F0638-BS2)</b> <span style="float: right;"><i>Prepared: 06/19/2017 08:30 Analyzed: 06/19/2017 10:55</i></span>											
Chlorine	0.000494	0.000100	% wet	0.0005000		98.7	80-120				1
<b>Duplicate (B7F0638-DUP1)</b> <span style="float: right;"><b>Source: 17F0534-01</b> <i>Prepared: 06/19/2017 08:30 Analyzed: 06/19/2017 14:39</i></span>											
Chlorine	0.0280	0.209	% dry		0.0318			12.9	20	J	5
<b>Reference (B7F0638-SRM1)</b> <span style="float: right;"><i>Prepared: 06/19/2017 08:30 Analyzed: 06/19/2017 11:51</i></span>											
Chlorine	0.00339	0.0188	% wet	0.008400		40.4	50-150			S, J	1
<b>Reference (B7F0638-SRM2)</b> <span style="float: right;"><i>Prepared: 06/19/2017 08:30 Analyzed: 06/19/2017 12:19</i></span>											
Chlorine	0.0372	0.0189	% wet	0.03800		97.9	50-150				1

### Quality Control

(Continued)

**Client:** Pace Analytical Services, Inc.

**Report Date:** 06/20/2017

**Project:** Green Bay  
FRF Sludge / 40151526

**Matrix:** Solid

**Work Order:** 17F0534

### Wet Chemistry

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual	DF
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	------	----

**Batch: B7F0665**
**Blank (B7F0665-BLK1)**
*Prepared: 06/19/2017 06:00 Analyzed: 06/19/2017 06:16*

Total Solids	< 0.100	0.100	%								1
--------------	---------	-------	---	--	--	--	--	--	--	--	---

**LCS (B7F0665-BS1)**
*Prepared: 06/19/2017 06:00 Analyzed: 06/19/2017 06:18*

Total Solids	0.190	0.100	%	0.2000		94.8	88.3-107				1
--------------	-------	-------	---	--------	--	------	----------	--	--	--	---

**Duplicate (B7F0665-DUP1)**
**Source: 17F0464-01**
*Prepared: 06/19/2017 06:00 Analyzed: 06/19/2017 06:20*

Total Solids	85.4	0.100	%		86.0			0.695	5		1
--------------	------	-------	---	--	------	--	--	-------	---	--	---

**Certified Analyses included in this Report**

Analyte	CAS #	Certifications
<b>SM2540G in Solid</b>		
Total Solids	Moist	WDNR

**List of Certifications**

Code	Description	Number	Expires
AKDEC	State of Alaska, Dept. Environmental Conservation	UST-105	07/16/2017
CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L14-56	04/30/2018
DoD	Department of Defense, Accredited by PJLA	L14-55	04/30/2018
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	003674	07/27/2017
ISO	ISO/IEC 17025, Accredited by PJLA	L14-56	04/30/2018
LELAP	State of Louisiana, NELAP Accredited Lab No. 171344	05015	06/30/2017
NJDEP	State of New Jersey, NELAP Accredited Lab No. IL010	NLC160001	06/30/2017
WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2017

### Qualifiers and Definitions

Item	Description
J	Estimated Value
S	The recovery is outside of the laboratory control limits.
%Rec	Percent Recovery
MDL	In the state of Wisconsin MDL is equivalent to LOD; in all other applications MDL is equivalent to MDL.





**Outagamie County Recycling & Solid Waste  
Brown Outagamie Winnebago Counties  
SPECIAL WASTE DISPOSAL APPLICATION**

**A. Generator Information**

Name Neenah Paper, Appleton, WI  
 Contact Person Dave Linden  
 Email Address dave.linden@neenah.com  
 Phone Number 920-738-8396  
 Site Address (where material is generated)  
430 E South Island St.  
Appleton, WI 54915

**B. Billing Information**

*(In order to be billed, you must fill out a credit application)*

Name Neenah Paper - Accounts Payable  
 Contact Person Jennifer Healy  
 Email Address jennifer.healy@neenah.com  
 Phone 920-738-8380  
 Fax Number 920-721-1332  
 Billing Address  
1376 Kimberly Drive  
Neenah, WI 54956

**C. Consultant Information**

Name \_\_\_\_\_  
 Contact Person \_\_\_\_\_  
 Email Address \_\_\_\_\_  
 Phone Number \_\_\_\_\_  
 Fax Number \_\_\_\_\_  
 Address \_\_\_\_\_

**D. Hauler Information**

Name Vans Waste  
 Contact Person Jeff Vander Heiden  
 Phone Number 920-687-2632  
 Address N 2061 Vandenbroeck Rd  
Kaukauna, WI 54130

**E. Waste Information**

Waste Name Paper Mill Sludge  
 Process Used to Generate Waste paper making  
 Waste Category Number \_\_\_\_\_  
 Total Anticipated Waste Volume (include units) 1439 ton/yr  
 Frequency of Disposal 2-3x/week  
 Name of Lab Performing Analysis Badger Labs  
 Date of Most Recent Analysis 8-1-10  
 Physical State @ 25°C solid  
 Color Varies Odor none  
 Comments \_\_\_\_\_

\*For all waste types, attach available pertinent documents, MSDSs, technical bulletins, etc. List attachments here:

Lab results

**F. Generator Warranty**

The generator warrants, represents, and certifies that this waste is not hazardous waste as specified by NR600 or 40CFR261, that his material does not contain more than 50 ppm of PCB materials, and that this information is representative of the waste.

Generator's Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

**Instructions:**

For Category A, B, and, C Wastes: Complete Section I

For Category D Wastes: Complete Section II

For Category E Wastes: Complete Section III

Outagamie County Internal Use Only:

- BC Customer
- OC Customer
- WC Customer

**Section I**

For Category A, B, and C Wastes, complete the following and attach laboratory report:

**Analytical Information**

Parameter	Acceptance Level (mg/l)	Lab Result
% Solids	≥ 40% (A&B) ≥ 20% (C)	39.5
% Free Liquids (paint filter test)	0%	0.0
Flash Point	> 140°F	7170
pH	2.0 ≤ pH ≤ 12.5	7.0
Total available sulfide	<500 mg/kg	73.0
Total available cyanide	<250 mg/kg	< 0.026
Arsenic	< 5.0	< 0.005
Barium	< 100.0	0.17
Cadmium	< 1.0	< 0.01
Chromium	< 5.0	< 0.02
Lead	< 5.0	< 0.03
Mercury	< 0.2	< 0.0002
Selenium	< 1.0	< 0.009
Silver	< 5.0	< 0.01
% Chlorine	< 1%	< 0.02
Phenol	< 2000	0.06
Benzene	< 0.5	ND
Carbon tetrachloride	< 0.5	ND
Chlorobenzene	< 100.0	ND
Chloroform	< 6.0	ND
Cresol	< 200.0	ND
1,4-Dichlorobenzene	< 7.5	ND
1,2-Dichloroethane	< 0.5	ND
1,1-Dichloroethylene	< 0.7	ND
2,4-Dinitrotoluene	< 0.3	ND
Hexachlorobenzene	< 0.13	ND
Hexachlorobutadiene	< 0.5	ND
Hexachloroethane	< 3.0	ND
Methyl ethyl ketone	< 200.0	ND
Nitrobenzene	< 2.0	ND
Pentachlorophenol	< 100.0	ND
Pyridine	< 5.0	ND
Tetrachloroethylene	< 0.7	ND
Trichloroethylene	< 0.5	ND
2,4,5-Trichlorophenol	< 400.0	ND
2,4,6-Trichlorophenol	< 2.0	ND
Vinyl Chloride	< 0.2	ND

For Category B and C Wastes, complete the following and attach laboratory report:

PCB (Arochlor 1016, 1221, 1232, 1242, 1248, 1254, 1260)

**Section II**

For Category D Wastes, complete the following and attach laboratory report:

**Analytical Information**

Parameter	Acceptance Level	Lab Result
<b>a. All Soils</b>		
Lead	Total <100 mg/kg or TCLP <5 mg/l	
<b>b. Gasoline or Diesel</b> (analyze all parameters in a., plus the following):		
DRO	<2000 ppm	
or GRO	<2000 ppm	
Benzene	Total <10 mg/kg Or TCLP <0.5 mg/l	
<b>c. Waste Oil or Unknown Petroleum Waste</b> (analyze al parameters in a., plus the following):		
DRO	<2000 ppm	
or GRO	<2000 ppm	
Cadmium	Total <20 mg/kg Or TCLP <1 mg/l	

**Section III**

For Category E Wastes, complete the following and attach laboratory report:

**Analytical Information**

Parameter	Acceptance Level (mg/l)	Lab Result
pH	2.0 ≤ pH ≤ 12.5	
% Solids	≥ 20%	
% Free liquids	0%	
TCLP metals		
Arsenic	< 5.0	
Barium	< 100.0	
Cadmium	< 1.0	
Chromium	< 5.0	
Lead	< 5.0	
Mercury	< 0.2	
Selenium	< 1.0	
Silver	< 5.0	
Total available sulfide	< 500 mg/kg	

**Section IV**

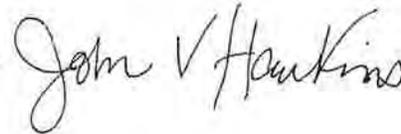
For Category F Wastes, include the following information and attach MSDS(s), technical bulletin(s), or other pertinent information regarding the waste stream. Indicate the waste type, the source of the waste stream, the reason for disposal, the physical state of the material, and describe the process from which the waste was generated.

## Badger Laboratories & Engineering, Inc.

Sample Delivery Group: L848569  
Samples Received: 07/21/2016  
Project Number:  
Description:

Report To: Jeff Wagner  
501 West Bell Street  
Neenah, WI 54956

Entire Report Reviewed By:



John Hawkins  
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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# SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



Collected by: \_\_\_\_\_ Collected date/time: 07/20/16 00:00 Received date/time: 07/21/16 09:00

## 18555 L848569-01 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Polychlorinated Biphenyls (GC) by Method 8082	WG891275	1.5	07/22/16 00:44	07/22/16 18:36	LKD
Total Solids by Method 2540 G-2011	WG892868	1	07/27/16 09:17	07/27/16 09:27	MEL
Wet Chemistry by Method 9030B	WG893594	1	07/28/16 19:00	07/28/16 20:10	JLJ

Collected by: \_\_\_\_\_ Collected date/time: 07/20/16 00:00 Received date/time: 07/21/16 09:00

## 18555 L848569-02 Waste

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Preparation by Method 1311	WG892468	1	07/26/16 12:37	07/26/16 12:38	BG
Preparation by Method 1311	WG892919	1	07/27/16 10:32	07/27/16 10:33	BG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG893216	1	07/28/16 21:14	07/29/16 15:09	JF
Volatile Organic Compounds (GC/MS) by Method 8260B	WG892961	1	07/28/16 00:59	07/28/16 00:59	ACG
Wet Chemistry by Method D93/1010A	WG891428	1	07/22/16 12:20	07/22/16 12:20	MZ

Collected by: \_\_\_\_\_ Collected date/time: 07/20/16 00:00 Received date/time: 07/21/16 09:00

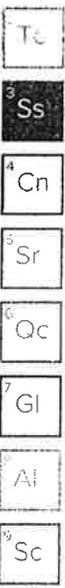
## 18556 L848569-03 Solid

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Polychlorinated Biphenyls (GC) by Method 8082	WG891275	1.5	07/22/16 00:44	07/22/16 18:48	LKD
Total Solids by Method 2540 G-2011	WG892868	1	07/27/16 09:17	07/27/16 09:27	MEL
Wet Chemistry by Method 9030B	WG893594	1	07/28/16 19:00	07/28/16 20:10	JLJ

Collected by: \_\_\_\_\_ Collected date/time: 07/20/16 00:00 Received date/time: 07/21/16 09:00

## 18556 L848569-04 Waste

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Preparation by Method 1311	WG892468	1	07/26/16 12:37	07/26/16 12:38	BG
Preparation by Method 1311	WG892919	1	07/27/16 10:32	07/27/16 10:33	BG
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG893216	1	07/28/16 21:14	07/29/16 15:32	SNR
Volatile Organic Compounds (GC/MS) by Method 8260B	WG892961	1	07/28/16 03:15	07/28/16 03:15	ACG
Wet Chemistry by Method D93/1010A	WG891428	1	07/22/16 12:20	07/22/16 12:20	MZ





All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins  
Technical Service Representative

- 1
- 2
- 3 Tc
- 4 Ss
- 5 Cn
- 6 Sr
- 7 Qc
- 8 Gl
- 9 Al
- 0 Sc



Total Solids by Method 2540 G-2011

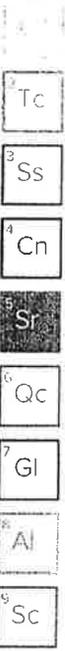
Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	39.8		1	07/27/2016 09:27	WG892868

Wet Chemistry by Method 9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	36.4		25.0	1	07/28/2016 20:10	WG893594

Polychlorinated Biphenyls (GC) by Method 8082

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
PCB 1016	ND	J3	0.0176	1.5	07/22/2016 18:36	WG891275
PCB 1221	ND		0.0269	1.5	07/22/2016 18:36	WG891275
PCB 1232	ND		0.0209	1.5	07/22/2016 18:36	WG891275
PCB 1242	ND		0.0159	1.5	07/22/2016 18:36	WG891275
PCB 1248	ND		0.0158	1.5	07/22/2016 18:36	WG891275
PCB 1254	ND		0.0236	1.5	07/22/2016 18:36	WG891275
PCB 1260	ND	J3	0.0248	1.5	07/22/2016 18:36	WG891275
(S) Decochlorobiphenyl	59.0		10.0-143		07/22/2016 18:36	WG891275
(S) Tetrochloro-m-xylene	76.7		29.2-144		07/22/2016 18:36	WG891275



18555

Collected date/time: 07/20/16 00:00

## SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

L848569

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/27/2016 10:32:03 AM	WG892919
TCLP ZHE Extraction	-		7/26/2016 12:37:09 PM	WG892468

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
ignitability	DNI at 170 F		1	07/22/2016 12:20	WG891428

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
Benzene	ND		0.0500	0.50	1	07/28/2016 00:59	WG892961
Carbon tetrachloride	ND		0.0500	0.50	1	07/28/2016 00:59	WG892961
Chlorobenzene	ND		0.0500	100	1	07/28/2016 00:59	WG892961
Chloroform	ND		0.250	6	1	07/28/2016 00:59	WG892961
1,2-Dichloroethane	ND		0.0500	0.50	1	07/28/2016 00:59	WG892961
1,1-Dichloroethene	ND		0.0500	0.70	1	07/28/2016 00:59	WG892961
2-Butanone (MEK)	ND		0.500	200	1	07/28/2016 00:59	WG892961
Tetrachloroethene	ND		0.0500	0.70	1	07/28/2016 00:59	WG892961
Trichloroethene	ND		0.0500	0.50	1	07/28/2016 00:59	WG892961
Vinyl chloride	ND		0.0500	0.20	1	07/28/2016 00:59	WG892961
(S) Toluene-d8	107		90.0-115	114		07/28/2016 00:59	WG892961
(S) Dibromofluoromethone	104		79.0-121	125		07/28/2016 00:59	WG892961
(S) $\alpha,\alpha,\alpha$ -Trifluorotoluene	105		90.4-116	114		07/28/2016 00:59	WG892961
(S) 4-Bromofluorobenzene	101		80.1-120	128		07/28/2016 00:59	WG892961

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
1,4-Dichlorobenzene	ND		0.100	7.50	1	07/29/2016 15:09	WG893216
2,4-Dinitrotoluene	ND		0.100	0.13	1	07/29/2016 15:09	WG893216
Hexachlorobenzene	ND		0.100	0.13	1	07/29/2016 15:09	WG893216
Hexachloro-1,3-butadiene	ND		0.100	0.50	1	07/29/2016 15:09	WG893216
Hexachloroethane	ND		0.100	3	1	07/29/2016 15:09	WG893216
Nitrobenzene	ND		0.100	2	1	07/29/2016 15:09	WG893216
Pyridine	ND		0.100	5	1	07/29/2016 15:09	WG893216
3&4-Methyl Phenol	ND		0.100	400	1	07/29/2016 15:09	WG893216
2-Methylphenol	ND		0.100	200	1	07/29/2016 15:09	WG893216
Pentachlorophenol	ND		0.100	100	1	07/29/2016 15:09	WG893216
2,4,5-Trichlorophenol	ND		0.100	400	1	07/29/2016 15:09	WG893216
2,4,6-Trichlorophenol	ND		0.100	2	1	07/29/2016 15:09	WG893216
(S) 2-Fluorophenol	53.4		10.0-77.9	87		07/29/2016 15:09	WG893216
(S) Phenol-d5	36.8		5.00-70.1	67		07/29/2016 15:09	WG893216
(S) Nitrobenzene-d5	64.3		21.8-123	120		07/29/2016 15:09	WG893216
(S) 2-Fluorobiphenyl	71.3		29.5-131	122		07/29/2016 15:09	WG893216
(S) 2,4,6-Tribromophenol	99.2		11.2-130	148		07/29/2016 15:09	WG893216
(S) p-Terphenyl-d14	87.6		29.3-137	149		07/29/2016 15:09	WG893216

18556

Collected date/time: 07/20/16 00:00

SAMPLE RESULTS - 03

L848569

ONE LAB. NATIONWIDE



Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	38.5		1	07/27/2016 09:27	WG892868

Wet Chemistry by Method 9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	73.0		25.0	1	07/28/2016 20:10	WG893594

Polychlorinated Biphenyls (GC) by Method 8082

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
PCB 1016	ND	J3	0.0176	1.5	07/22/2016 18:48	WG891275
PCB 1221	ND		0.0269	1.5	07/22/2016 18:48	WG891275
PCB 1232	ND		0.0209	1.5	07/22/2016 18:48	WG891275
PCB 1242	ND		0.0159	1.5	07/22/2016 18:48	WG891275
PCB 1248	ND		0.0158	1.5	07/22/2016 18:48	WG891275
PCB 1254	ND		0.0236	1.5	07/22/2016 18:48	WG891275
PCB 1260	ND	J3	0.0248	1.5	07/22/2016 18:48	WG891275
(S) Decachlorobiphenyl	67.3		10.0-143		07/22/2016 18:48	WG891275
(S) Tetrachloro-m-xylene	91.3		29.2-144		07/22/2016 18:48	WG891275

Tc

Ss

Cn

Sr

Qc

Gl

Al

Sc

18556

Collected date/time: 07/20/16 00:00

## SAMPLE RESULTS - 04

L848569

ONE LAB. NATIONWIDE.



Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/27/2016 10:32:03 AM	WG892919
TCLP ZHE Extraction	-		7/26/2016 12:37:09 PM	WG892468

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170 F		1	07/22/2016 12:20	WG891428

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
Benzene	ND		0.0500	0.50	1	07/28/2016 03:15	WG892961
Carbon tetrachloride	ND		0.0500	0.50	1	07/28/2016 03:15	WG892961
Chlorobenzene	ND		0.0500	100	1	07/28/2016 03:15	WG892961
Chloroform	ND		0.250	6	1	07/28/2016 03:15	WG892961
1,2-Dichloroethane	ND		0.0500	0.50	1	07/28/2016 03:15	WG892961
1,1-Dichloroethene	ND		0.0500	0.70	1	07/28/2016 03:15	WG892961
2-Butanone (MEK)	ND		0.500	200	1	07/28/2016 03:15	WG892961
Tetrachloroethene	ND		0.0500	0.70	1	07/28/2016 03:15	WG892961
Trichloroethene	ND		0.0500	0.50	1	07/28/2016 03:15	WG892961
Vinyl chloride	ND		0.0500	0.20	1	07/28/2016 03:15	WG892961
(S) Toluene-d8	107		90.0-115	114		07/28/2016 03:15	WG892961
(S) Dibromofluoromethane	103		79.0-121	125		07/28/2016 03:15	WG892961
(S) o,o,a-Trifluorotoluene	105		90.4-116	114		07/28/2016 03:15	WG892961
(S) 4-Bromofluorobenzene	103		80.1-120	128		07/28/2016 03:15	WG892961

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
1,4-Dichlorobenzene	ND		0.100	7.50	1	07/29/2016 15:32	WG893216
2,4-Dinitrotoluene	ND		0.100	0.13	1	07/29/2016 15:32	WG893216
Hexachlorobenzene	ND		0.100	0.13	1	07/29/2016 15:32	WG893216
Hexachloro-1,3-butadiene	ND		0.100	0.50	1	07/29/2016 15:32	WG893216
Hexachloroethane	ND		0.100	3	1	07/29/2016 15:32	WG893216
Nitrobenzene	ND		0.100	2	1	07/29/2016 15:32	WG893216
Pyridine	ND		0.100	5	1	07/29/2016 15:32	WG893216
3&4-Methyl Phenol	ND		0.100	400	1	07/29/2016 15:32	WG893216
2-Methylphenol	ND		0.100	200	1	07/29/2016 15:32	WG893216
Pentachlorophenol	ND		0.100	100	1	07/29/2016 15:32	WG893216
2,4,5-Trichlorophenol	ND		0.100	400	1	07/29/2016 15:32	WG893216
2,4,6-Trichlorophenol	ND		0.100	2	1	07/29/2016 15:32	WG893216
(S) 2-Fluorophenol	44.9		10.0-77.9	87		07/29/2016 15:32	WG893216
(S) Phenol-d5	32.4		5.00-70.1	67		07/29/2016 15:32	WG893216
(S) Nitrobenzene-d5	53.8		21.8-123	120		07/29/2016 15:32	WG893216
(S) 2-Fluorobiphenyl	66.3		29.5-131	122		07/29/2016 15:32	WG893216
(S) 2,4,6-Tribromophenol	88.4		11.2-130	148		07/29/2016 15:32	WG893216
(S) p-Terphenyl-d14	85.6		29.3-137	149		07/29/2016 15:32	WG893216

WG892868

Total Solids by Method 2540 G-2011

QUALITY CONTROL SUMMARY

L848569-01,03

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) R3152777-1 07/27/16 09:27

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000200			

L848956-01 Original Sample (OS) • Duplicate (DUP)

(OS) L848956-01 07/27/16 09:27 • (DUP) R3152777-3 07/27/16 09:27

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Total Solids	67.2	67.5	1	0.498		5

Laboratory Control Sample (LCS)

(LCS) R3152777-2 07/27/16 09:27

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

WG893594

Wet Chemistry by Method 9030B

QUALITY CONTROL SUMMARY

L848569-01,03

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) WG893594-1 07/28/16 20:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Sulfide	U		7.63	25.0

L848577-03 Original Sample (OS) • Duplicate (DUP)

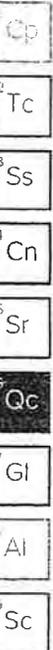
(OS) L848577-03 07/28/16 20:10 • (DUP) WG893594-4 07/28/16 20:10

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfide	61.0	66.0	1	7.87		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG893594-2 07/28/16 20:10 • (LCSD) WG893594-3 07/28/16 20:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Sulfide	100	79.0	72.8	79.0	72.8	70.0-130			8.17	20



WG891428

Wet Chemistry by Method D93/1010A

QUALITY CONTROL SUMMARY

L848569-02.04

ONE LAB NATIONWIDE.



L848569-02 Original Sample (OS) • Duplicate (DUP)

(OS) L848569-02 07/22/16 12:20 • (DUP) WG891428-3 07/22/16 12:20

Analyte	Original Result Deg. F	DUP Result Deg. F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ignitability	DNI at 170 F	DNI at 170 F	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG891428-1 07/22/16 12:20 • (LCSD) WG891428-2 07/22/16 12:20

Analyte	Spike Amount Deg. F	LCS Result Deg. F	LCSD Result Deg. F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ignitability	82.0	82.9	82.9	101	101	93.0-107			0.000	20

- 1 Cd
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

WG892961

Volatile Organic Compounds (GC/MS) by Method 8260B

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.



L848569-02,04

Method Blank (MB)

(MB) R3152874-3 07/27/16 23:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Benzene	U		0.0167	0.0500
Carbon tetrachloride	U		0.0167	0.0500
Chlorobenzene	U		0.0167	0.0500
Chloroform	U		0.0833	0.250
1,2-Dichloroethane	U		0.0167	0.0500
1,1-Dichloroethene	U		0.0167	0.0500
2-Butanone (MEK)	U		0.167	0.500
Tetrachloroethene	U		0.0167	0.0500
Trichloroethene	U		0.0167	0.0500
Vinyl chloride	U		0.0167	0.0500
(S) Toluene-d8	108			90.0-115
(S) Dibromofluoromethane	102			79.0-121
(S) a,a,a-Trifluorotoluene	105			90.4-116
(S) 4-Bromofluorobenzene	103			80.1-120

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3152874-1 07/27/16 21:44 • (LCSD) R3152874-2 07/27/16 22:03

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Benzene	0.0250	0.0228	0.0227	91.2	90.9	73.0-122			0.300	20
Carbon tetrachloride	0.0250	0.0243	0.0235	97.2	93.9	70.9-129			3.48	20
Chlorobenzene	0.0250	0.0250	0.0246	99.8	98.6	79.7-122			1.24	20
Chloroform	0.0250	0.0235	0.0236	94.1	94.5	73.2-125			0.390	20
1,2-Dichloroethane	0.0250	0.0251	0.0253	100	101	65.3-126			0.890	20
1,1-Dichloroethene	0.0250	0.0240	0.0239	95.8	95.8	60.6-133			0.0200	20
2-Butanone (MEK)	0.125	0.126	0.124	101	98.9	46.4-155			1.74	20
Tetrachloroethene	0.0250	0.0242	0.0244	96.7	97.5	73.5-130			0.900	20
Trichloroethene	0.0250	0.0251	0.0248	101	99.1	79.5-121			1.52	20
Vinyl chloride	0.0250	0.0264	0.0261	105	105	61.5-134			0.900	20
(S) Toluene-d8				107	106	90.0-115				
(S) Dibromofluoromethane				107	105	79.0-121				
(S) a,a,a-Trifluorotoluene				105	106	90.4-116				
(S) 4-Bromofluorobenzene				102	101	80.1-120				

WG892961

Volatile Organic Compounds (GC/MS) by Method 8260B

QUALITY CONTROL SUMMARY

L848569-02.04

ONE LAB. NATIONWIDE.



L848569-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L848569-02 07/28/16 00:59 • (MS) R3152874-4 07/27/16 23:21 • (MSD) R3152874-5 07/27/16 23:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	1.25	ND	1.23	1.29	98.1	103	1	58.6-133			4.96	20
Carbon tetrachloride	1.25	ND	1.22	1.34	97.9	107	1	60.6-139			8.78	20
Chlorobenzene	1.25	ND	1.36	1.42	109	114	1	70.1-130			4.57	20
Chloroform	1.25	ND	1.28	1.35	102	108	1	66.1-133			5.08	20
1,2-Dichloroethane	1.25	ND	1.34	1.39	107	111	1	60.7-132			3.94	20
1,1-Dichloroethene	1.25	ND	1.30	1.36	104	109	1	48.8-144			4.47	20
2-Butanone (MEK)	6.25	ND	4.95	5.23	74.9	79.3	1	45.0-156			5.47	20.8
Tetrachloroethene	1.25	ND	1.33	1.38	106	111	1	57.4-141			3.92	20
Trichloroethene	1.25	ND	1.36	1.42	109	114	1	48.9-148			4.13	20
Vinyl chloride	1.25	ND	1.28	1.36	102	109	1	44.3-143			6.01	20
(S) Toluene-d8					108	107		90.0-115				
(S) Dibromofluoromethane					106	105		79.0-121				
(S) o,o,o-Trifluorotoluene					106	104		90.4-116				
(S) 4-Bromofluorobenzene					101	101		80.1-120				

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Method Blank (MB)

(MB) R3151699-1 07/22/16 09:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.00350	0.0117
PCB 1221	U		0.00537	0.0179
PCB 1232	U		0.00417	0.0139
PCB 1242	U		0.00318	0.0106
PCB 1248	U		0.00315	0.0105
PCB 1254	U		0.00472	0.0157
PCB 1260	U		0.00494	0.0165
(S) Decochlorobiphenyl	87.0			10.0-143
(S) Tetrachloro-m-xylene	91.7			29.2-144

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

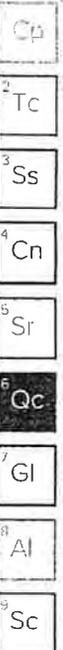
(LCS) R3151699-2 07/22/16 09:16 • (LCSD) R3151699-3 07/22/16 09:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	0.124	0.166	74.5	99.6	46.5-120		J3	28.8	27
PCB 1016	0.167	0.111	0.150	66.5	89.7	46.3-117		J3	29.8	27.5
(S) Decochlorobiphenyl				89.7	100	10.0-143				
(S) Tetrachloro-m-xylene				96.8	102	29.2-144				

L848452-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L848452-01 07/22/16 19:00 • (MS) R3151699-4 07/22/16 19:13 • (MSD) R3151699-5 07/22/16 19:25

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	ND	0.139	0.147	83.2	88.0	1	24.6-127			5.67	20
PCB 1016	0.167	ND	0.180	0.215	86.2	103	1	23.9-147			18.0	25.8
(S) Decochlorobiphenyl					66.4	74.2		10.0-143				
(S) Tetrachloro-m-xylene					84.4	87.0		29.2-144				



WG893216

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.



L848569-02.04

Method Blank (MB)

(MB) R3153267-3 07/29/16 12:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1,4-Dichlorobenzene	U		0.0333	0.100
2,4-Dinitrotoluene	U		0.0333	0.100
Hexachlorobenzene	U		0.0333	0.100
Hexachloro-1,3-butadiene	U		0.0333	0.100
Hexachloroethane	U		0.0333	0.100
Nitrobenzene	U		0.0333	0.100
Pyridine	U		0.0333	0.100
2-Methylphenol	U		0.0333	0.100
3&4-Methyl Phenol	U		0.0333	0.100
Pentachlorophenol	U		0.0333	0.100
2,4,5-Trichlorophenol	U		0.0333	0.100
2,4,6-Trichlorophenol	U		0.0333	0.100
(S) Nitrobenzene-d5	58.2			21.8-123
(S) 2-Fluorobiphenyl	72.2			29.5-131
(S) p-Terphenyl-d14	83.1			29.3-137
(S) Phenol-d5	34.8			5.00-70.1
(S) 2-Fluorophenol	50.0			10.0-77.9
(S) 2,4,6-Tribromophenol	80.7			11.2-130

Cp  
 Tc  
 Ss  
 Cn  
 Sr  
 Qc  
 Gl  
 Al  
 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3153267-1 07/29/16 11:15 • (LCSD) R3153267-2 07/29/16 11:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	0.0500	0.0293	0.0318	58.7	63.6	21.0-89.4			7.97	32.6
2,4-Dinitrotoluene	0.0500	0.0423	0.0426	84.7	85.3	31.2-105			0.660	22
Hexachlorobenzene	0.0500	0.0412	0.0444	82.4	88.8	38.5-116			7.45	20.1
Hexachloro-1,3-butadiene	0.0500	0.0365	0.0394	73.0	78.7	16.1-104			7.52	31.2
Hexachloroethane	0.0500	0.0267	0.0300	53.5	60.1	16.5-89.8			11.6	30.7
Nitrobenzene	0.0500	0.0287	0.0325	57.4	65.0	31.4-106			12.5	25.7
Pyridine	0.0500	0.00859	0.00948	17.2	19.0	13.5-58.9			9.83	32.5
2-Methylphenol	0.0500	0.0267	0.0284	53.4	56.9	26.4-86.9			6.29	26.5
3&4-Methyl Phenol	0.0500	0.0296	0.0317	59.2	63.5	27.9-92.0			7.02	27
Pentachlorophenol	0.0500	0.0352	0.0376	70.4	75.1	10.0-97.4			6.45	35.1
2,4,5-Trichlorophenol	0.0500	0.0417	0.0445	83.5	89.1	34.9-112			6.51	23.9
2,4,6-Trichlorophenol	0.0500	0.0389	0.0435	77.8	87.1	29.8-107			11.3	24.1
(S) Nitrobenzene-d5				67.1	70.8	21.8-123				
(S) 2-Fluorobiphenyl				77.8	80.3	29.5-131				
(S) p-Terphenyl-d14				90.1	91.9	29.3-137				

WG893216

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

QUALITY CONTROL SUMMARY

L848569-02.04

ONE LAB. NATIONWIDE.



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3153267-1 07/29/16 11:15 • (LCSD) R3153267-2 07/29/16 11:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
(S) Phenol-d5				37.2	39.8	5.00-70.1				
(S) 2-Fluorophenol				52.1	58.0	10.0-77.9				
(S) 2,4,6-Tribromophenol				100	101	11.2-130				

L849237-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L849237-01 07/29/16 16:53 • (MS) R3153267-4 07/29/16 17:16 • (MSD) R3153267-5 07/29/16 17:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	0.500	ND	0.278	0.271	55.6	54.3	1	14.0-104			2.34	36.4
2,4-Dinitrotoluene	0.500	ND	0.414	0.402	82.8	80.4	1	16.2-135			2.93	20.6
Hexachlorobenzene	0.500	ND	0.423	0.411	84.6	82.3	1	31.9-135			2.84	20
Hexachloro-1,3-butadiene	0.500	ND	0.353	0.328	70.6	65.5	1	15.7-109			7.47	37.6
Hexachloroethane	0.500	ND	0.257	0.256	51.3	51.2	1	10.4-105			0.230	40
Nitrobenzene	0.500	ND	0.275	0.269	54.9	53.7	1	23.1-121			2.26	29
Pyridine	0.500	ND	0.0989	0.103	19.8	20.5	1	10.0-77.8			3.74	38.8
2-Methylphenol	0.500	ND	0.257	0.252	51.4	50.5	1	10.0-133			1.74	40
3&4-Methyl Phenol	0.500	ND	0.295	0.288	59.0	57.6	1	17.4-100			2.49	27.7
Pentachlorophenol	0.500	ND	0.375	0.375	75.0	74.9	1	10.0-108			0.0700	40
2,4,5-Trichlorophenol	0.500	ND	0.415	0.421	83.0	84.3	1	30.6-120			1.53	33.8
2,4,6-Trichlorophenol	0.500	ND	0.390	0.409	78.0	81.8	1	19.1-114			4.66	29.9
(S) Nitrobenzene-d5					62.0	57.7		21.8-123				
(S) 2-Fluorobiphenyl					72.2	69.0		29.5-131				
(S) p-Terphenyl-d14					87.8	82.8		29.3-137				
(S) Phenol-d5					36.3	34.6		5.00-70.1				
(S) 2-Fluorophenol					49.2	48.0		10.0-77.9				
(S) 2,4,6-Tribromophenol					99.6	98.2		11.2-130				

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Oc
- 7 Gl
- 8 Al
- 9 Sc



Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.

7 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

# ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE. \* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AJ30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

## Third Party & Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA	100789
A2LA - ISO 17025 <sup>5</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	5-67674
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>na</sup> Accreditation not applicable

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. ESC Lab Sciences performs all testing at our central laboratory.



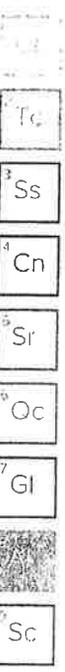
ACCOUNT:  
Badger Laboratories & Engineering, Inc.

PROJECT:

SDG:  
L848569

DATE/TIME:  
08/01/16 15:33

PAGE:  
18 of 23





# BADGER LABORATORIES & ENGINEERING INC.

501 WEST BELL STREET • NEENAH, WISCONSIN 54956-4888 • EST. 1966

(920) 729-1100 • FAX (920) 729-4945 • 1-800-776-7196

NEENAH PAPER INC-NEENAH MILL  
135 N COMMERCIAL ST  
NEENAH, WI 54956-

Report Number: 16008170  
Report Date: 8/10/2016  
Sampled By: Client  
Emailed: 8/10/16

Attn: MR. STEVEN HAGGLUND

PO#: 333242966  
# Samples: 2

Sample Number: 46018SSS  
Description: NEENAH SLUDGE  
Sample Date: 7/20/2016  
Date Received: 7/20/2016

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
CHLORINE	<0.02	%	0.02	0.02		SW-846-S0S0	08/04/16	
CYANIDE, TOTAL	0.098	ppm	0.086	0.286	12	EPA33S.4	07/25/16	
CYANIDE-AM. TO CL2	0.098	ppm	0.086	0.286	12	SM4500CN-G	07/26/16	
FLASH POINT	--SEE ATTACHED ESC REPORT--							
FREE LIQUIDS	0.0	%	0	0		SW 846 909S	08/03/16	
METALS DIGESTION	DONE		0	0		SM3030E	07/22/16	
PCB, TOTAL	--SEE ATTACHED ESC REPORT--							
PHENOL, TOTAL	<0.05	mg/l	0.05	0.17	1	EPA420.4	08/08/16	
pH-LAB	7.7	S.U.	0	0		SW846-904SC	07/21/16	
SULFIDE	--SEE ATTACHED ESC REPORT--							
TCLP ARSENIC	<0.005	mg/l	0.005	0.017	5	SM3113B	07/26/16	
TCLP BARIUM	0.30	mg/l	0.03	0.08	1	SM3111D	07/28/16	
TCLP CADMIUM	<0.01	mg/l	0.01	0.03	1	SM3111B	07/27/16	
TCLP CHROMIUM	<0.02	mg/l	0.02	0.06	1	SM3111B	07/27/16	
TCLP EXTRACTION	DONE		0	0		SW846-1311	07/22/16	
TCLP LEAD	<0.03	mg/l	0.03	0.10	1	SM3111B	07/27/16	
TCLP MERCURY	<0.0002	mg/l	0.0002	0.0008	1	SM3112B	07/26/16	
TCLP ORGANICS	--SEE ATTACHED ESC REPORT--							
TCLP SELENIUM	<0.009	mg/l	0.009	0.030	5	SM3113B	07/26/16	
TCLP SILVER	0.02	mg/l	0.01	0.03	1	SM3111B	07/27/16	
TOTAL SOLIDS	36.0	%	0.010	0.010		SM2540B	07/25/16	

WI DNR Certified Lab #445023150  
WI Reg. Engineers (Corp.) #CE00601  
WI DATCP Certified #205 (Bacteria-Water)

Members  
WI Environmental Labs; Am. Chemical Soc.;  
T.A.P.P.I.; WI Food Processors Assn.;  
Wisc. Paper Council



# BADGER LABORATORIES & ENGINEERING INC.

501 WEST BELL STREET • NEENAH, WISCONSIN 54956-4868 • EST. 1966

(920) 729-1100 • FAX (920) 729-4945 • 1-800-776-7196

Sample Number: 46018556  
Description: APPLETON SLUDGE  
Sample Date: 7/20/2016  
Date Received: 7/20/2016

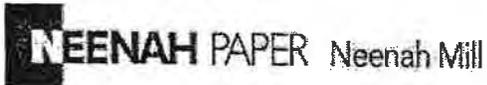
Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
CHLORINE	<0.02	%	0.02	0.02		5W-846-5050	08/04/16	
CYANIDE, TOTAL	<0.086	ppm	0.086	0.286	12	EPA335.4	07/25/16	
CYANIDE-AM. TO CL2	<0.086	ppm	0.086	0.286	12	5M4500CN-G	07/25/16	
FLASH POINT	--SEE ATTACHED E5C REPORT--							
FREE LIQUIDS	0.0	%	0	0		5W 846 9095	08/03/16	
METALS DIGESTION	DONE		0	0		5M3030E	07/22/16	
PCB, TOTAL	--SEE ATTACHED E5C REPORT--							
PHENOL, TOTAL	0.06	mg/l	0.05	0.17	1	EPA420.4	08/08/16	
pH-LAB	7.0	S.U.	0	0		5W846-9045C	07/21/16	
SULFIDE	--SEE ATTACHED E5C REPORT--							
TCLP ARSENIC	<0.005	mg/l	0.005	0.017	5	5M3113B	07/26/16	
TCLP BARIUM	0.17	mg/l	0.03	0.08	1	5M3111D	07/28/16	
TCLP CADMIUM	<0.01	mg/l	0.01	0.03	1	5M3111B	07/27/16	
TCLP CHROMIUM	<0.02	mg/l	0.02	0.06	1	5M3111B	07/27/16	
TCLP EXTRACTION	DONE		0	0		5W846-1311	07/22/16	
TCLP LEAD	<0.03	mg/l	0.03	0.10	1	5M3111B	07/27/16	
TCLP MERCURY	<0.0002	mg/l	0.0002	0.0008	1	5M3112B	07/26/16	
TCLP ORGANICS	--SEE ATTACHED E5C REPORT--							
TCLP SELENIUM	<0.009	mg/l	0.009	0.030	5	5M3113B	07/26/16	
TCLP SILVER	<0.01	mg/l	0.01	0.03	1	5M3111B	07/27/16	
TOTAL SOLIDS	39.5	%	0.010	0.010		5M2540B	07/25/16	

All LOD/LOQs adjusted for dilution and/or solids content.

BADGER LABS & ENGINEERING  
WDNR Certified Lab #445023150  
Approved By:

JMW:rt





**NEENAH PAPER WWTP SAMPLE  
CHAIN OF CUSTODY RECORD**

<u>SAMPLE(S) SOURCE INFORMATION</u>	
NEENAH PAPER CONTACT:	STEVEN HAGGLUND
ADDRESS:	NEENAH PAPER INC. - NEENAH MILL 135 NORTH COMMERCIAL STREET P. O. BOX 2003 NEENAH, WISCONSIN 54957-2003
CONTACT PHONE NUMBER:	(920) 721-1065
WWTP OPERATOR PHONE NUMBER:	(920) 721-1049      Daily 7am - 3pm
FAX NUMBER:	678-784-7261
PURCHASE ORDER:	<del>333449936</del> Exp. <del>2-28-2016</del>

<u>DESTINATION/TESTING LAB INFORMATION</u>	
LAB NAME AND ADDRESS:	BADGER LABS AND ENGINEERING 501 WEST BELL STREET NEENAH, WISCONSIN 54957-1392
LAB PHONE NUMBER:	(920) 729-1100
LAB CONTACT PERSON:	JEFF WAGNER

Sampled by: Signature	Date	Time	Sample Type		Preservation	Sample ID (must match sample label)	Analyte
			Grab	Comp			
<i>St Hagglund</i>	7-20-16	10:30	X		None	Neenah Sludge	TCLP
<i>St Hagglund</i>	7-20-16	11:10	X		None	Appleton Sludge	TCLP

Relinquished by: (signature)	Date:	Time:	
<i>St Hagglund</i>	7-20-16	12:15	Neenah Paper

Delivered to: (signature)	Date:	Time:	
<i>JP Thorne</i>	7-20-16	12:15	Badger Labs

**RETURN THIS FORM WITH TEST RESULTS**

**MAXIMUM CONCENTRATION OF CONTAMINANTS FOR TOXICITY CHARACTERISTIC**

Contaminant	Regulatory Level (mg/l.)
Arsenic	5.0
Barium	100.0
Benzene	0.5
Cadmium	1.0
Carbon tetrachloride	0.5
Chlordane	0.03
Chlorobenzene	100.0
Chloroform	6.0
Chromium	5.0
o-Cresol	200.0
m-Cresol	200.0
p-Cresol	200.0
Cresol	200.0
2-4-D	10.0
1,4-Dichlorobenzene	7.5
1,2-Dichloroethane	0.5
1,1-Dichloroethylene	0.7
2,4-dinitrotoluene	0.13
Endrin	0.02
Heptachlor (and its hydroxide)	0.008
Hexachlorobenzene	0.13
Hexachloro-1,3-butadiene	0.5
Hexachloroethane	3.0
Lead	5.0
Lindane	0.4
Mercury	0.2
Methoxychlor	10.0
Methyl ethyl ketone	200.0
Nitrobenzene	2.0
Pentachloroephenol	100.0
Pyridine	5.0
Selenium	1.0
Silver	5.0
Tetrachloroethylene	0.7
Toxaphene	0.5
Trichloroethylene	0.5
2,4,5-Trichloroephenol	400.0
2,4,6-Trichloroephenol	2.0
2,4,5-TP (Silvex)	1.0
Vinyl chloride	0.2



**Outagamie County Recycling & Solid Waste  
Brown Outagamie Winnebago Counties  
SPECIAL WASTE DISPOSAL APPLICATION**

**A. Generator Information**

Name Neenah Paper - Neenah Mill  
 Contact Person Steve Hagglund  
 Email Address steven.hagglund@neenah.com  
 Phone Number 920-721-1025  
 Site Address (where material is generated)  
135 North Commercial St.  
Neenah, WI 54956

**B. Billing Information**

*(In order to be billed, you must fill out a credit application)*

Name Neenah Paper - Accounts Payable  
 Contact Person Jennifer Healy  
 Email Address jennifer.healy@neenah.com  
 Phone 920-738-8380  
 Fax Number 920-721-1332  
 Billing Address  
1376 Kimberly Drive  
Neenah, WI 54956

**C. Consultant Information**

Name \_\_\_\_\_  
 Contact Person \_\_\_\_\_  
 Email Address \_\_\_\_\_  
 Phone Number \_\_\_\_\_  
 Fax Number \_\_\_\_\_  
 Address \_\_\_\_\_

**D. Hauler Information**

Name Vans Waste  
 Contact Person Jeff Vander Heiden  
 Phone Number 920-681-2632  
 Address N2061 Vandenberg Road  
Kaukauna, WI 54130

**E. Waste Information**

Waste Name Paper Mill Sludge  
 Process Used to Generate Waste Paper Making  
 Waste Category Number \_\_\_\_\_  
 Total Anticipated Waste Volume (include units) 3265 ton/yr  
 Frequency of Disposal 4x/week  
 Name of Lab Performing Analysis Badger Labs  
 Date of Most Recent Analysis 8-1-16  
 Physical State @ 25°C solid  
 Color Varies Odor Varies/none  
 Comments \_\_\_\_\_

\*For all waste types, attach available pertinent documents, MSDSs, technical bulletins, etc. List attachments here:

lab results

**F. Generator Warranty**

The generator warrants, represents, and certifies that this waste is not hazardous waste as specified by NR600 or 40CFR261, that his material does not contain more than 50 ppm of PCB materials, and that this information is representative of the waste.

Generator's Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

**Instructions:**

- For Category A, B, and, C Wastes: Complete Section I
- For Category D Wastes: Complete Section II
- For Category E Wastes: Complete Section III

Outagamie County Internal Use Only:

- BC Customer
- OC Customer
- WC Customer

**Section I**

For Category A, B, and C Wastes, complete the following and attach laboratory report:

**Analytical Information**

Parameter	Acceptance Level (mg/l)	Lab Result
% Solids	≥ 40% (A&B) ≥ 20% (C)	36
% Free Liquids (paint filter test)	0%	0
Flash Point	> 140°F	7170
pH	2.0 ≤ pH ≤ 12.5	7.7
Total available sulfide	<500 mg/kg	36.4
Total available cyanide	<250 mg/kg	0.095
Arsenic	< 5.0	< 0.005
Barium	< 100.0	0.30
Cadmium	< 1.0	< 0.01
Chromium	< 5.0	< 0.02
Lead	< 5.0	< 0.03
Mercury	< 0.2	< 0.0002
Selenium	< 1.0	< 0.009
Silver	< 5.0	0.02
% Chlorine	< 1%	< 0.02
Phenol	< 2000	< 0.05
Benzene	< 0.5	ND
Carbon tetrachloride	< 0.5	ND
Chlorobenzene	< 100.0	ND
Chloroform	< 6.0	ND
Cresol	< 200.0	
1,4-Dichlorobenzene	< 7.5	ND
1,2-Dichloroethane	< 0.5	ND
1,1-Dichloroethylene	< 0.7	ND
2,4-Dinitrotoluene	< 0.3	ND
Hexachlorobenzene	< 0.13	ND
Hexachlorobutadiene	< 0.5	ND
Hexachloroethane	< 3.0	ND
Methyl ethyl ketone	< 200.0	
Nitrobenzene	< 2.0	ND
Pentachlorophenol	< 100.0	ND
Pyridine	< 5.0	ND
Tetrachloroethylene	< 0.7	ND
Trichloroethylene	< 0.5	ND
2,4,5-Trichlorophenol	< 400.0	ND
2,4,6-Trichlorophenol	< 2.0	ND
Vinyl Chloride	< 0.2	ND

For Category B and C Wastes, complete the following and attach laboratory report:

PCB (Arochlor 1016, 1221, 1232, 1242, 1248, 1254, 1260)

**Section II**

For Category D Wastes, complete the following and attach laboratory report:

**Analytical Information**

Parameter	Acceptance Level	Lab Result
<b>a. All Soils</b>		
Lead	Total <100 mg/kg or TCLP <5 mg/l	
<b>b. Gasoline or Diesel</b> (analyze all parameters in a., plus the following):		
DRO	<2000 ppm	
or GRO	<2000 ppm	
Benzene	Total <10 mg/kg Or TCLP <0.5 mg/l	
<b>c. Waste Oil or Unknown Petroleum Waste</b> (analyze al parameters in a., plus the following):		
DRO	<2000 ppm	
or GRO	<2000 ppm	
Cadmium	Total <20 mg/kg Or TCLP <1 mg/l	

**Section III**

For Category E Wastes, complete the following and attach laboratory report:

**Analytical Information**

Parameter	Acceptance Level (mg/l)	Lab Result
pH	2.0 ≤ pH ≤ 12.5	
% Solids	≥ 20%	
% Free liquids	0%	
TCLP metals		
Arsenic	< 5.0	
Barium	< 100.0	
Cadmium	< 1.0	
Chromium	< 5.0	
Lead	< 5.0	
Mercury	< 0.2	
Selenium	< 1.0	
Silver	< 5.0	
Total available sulfide	< 500 mg/kg	

**Section IV**

For Category F Wastes, include the following information and attach MSDS(s), technical bulletin(s), or other pertinent information regarding the waste stream. Indicate the waste type, the source of the waste stream, the reason for disposal, the physical state of the material, and describe the process from which the waste was generated.

August 01, 2016

## Badger Laboratories & Engineering, Inc.

Sample Delivery Group: L848569  
Samples Received: 07/21/2016  
Project Number:  
Description:

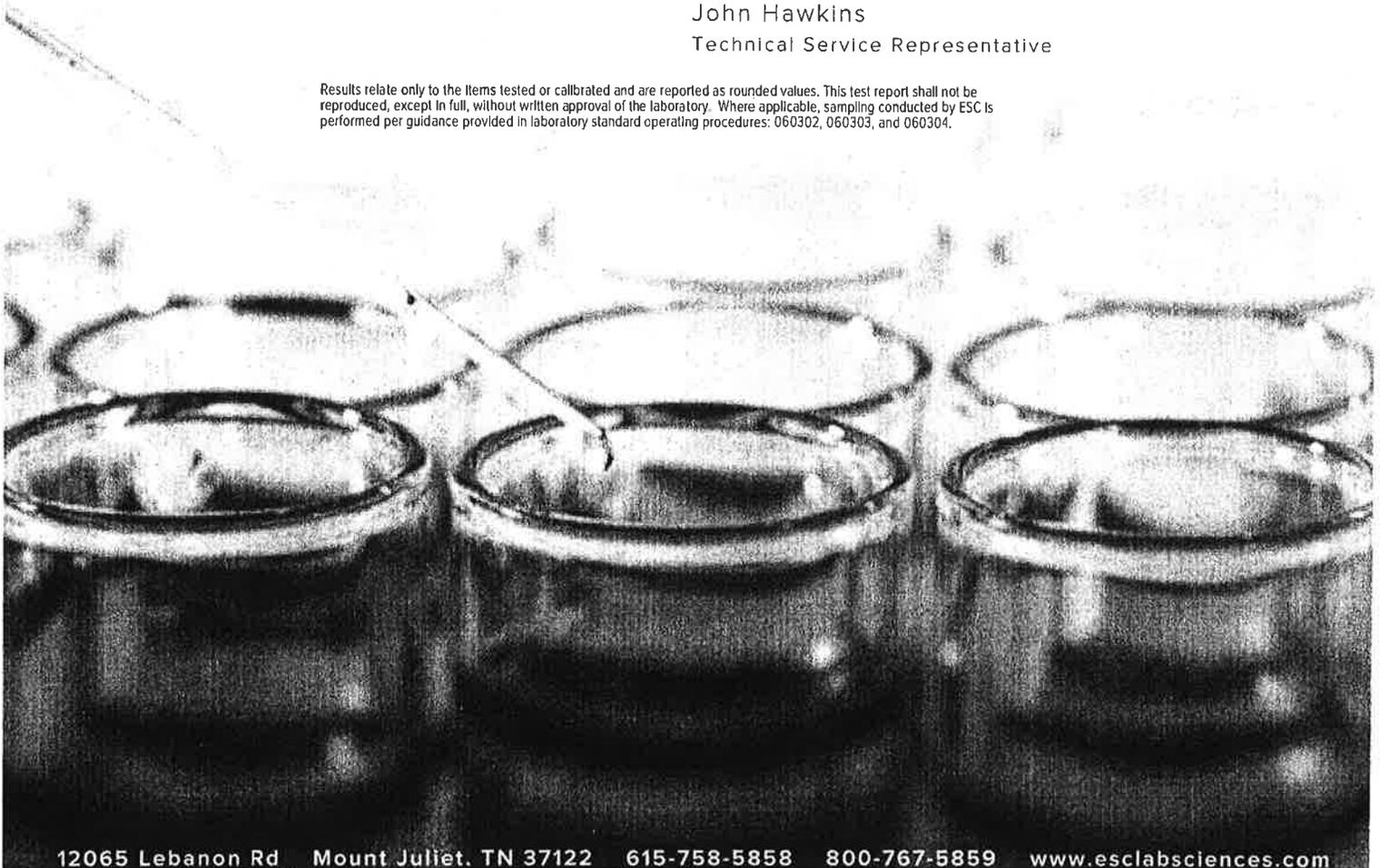
Report To: Jeff Wagner  
501 West Bell Street  
Neenah, WI 54956

Entire Report Reviewed By:



John Hawkins  
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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# SAMPLE SUMMARY

ONE LAB. NATIONWIDE



						Collected by	Collected date/time	Received date/time
18555 L848569-01 Solid							07/20/16 00:00	07/21/16 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst			
Polychlorinated Biphenyls (GC) by Method 8082	WG891275	1.5	07/22/16 00:44	07/22/16 18:36	LKD			
Total Solids by Method 2540 G-2011	WG892868	1	07/27/16 09:17	07/27/16 09:27	MEL			
Wet Chemistry by Method 90308	WG893594	1	07/28/16 19:00	07/28/16 20:10	JLJ			

						Collected by	Collected date/time	Received date/time
18555 L848569-02 Waste							07/20/16 00:00	07/21/16 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst			
Preparation by Method 1311	WG892468	1	07/26/16 12:37	07/26/16 12:38	BG			
Preparation by Method 1311	WG892919	1	07/27/16 10:32	07/27/16 10:33	BG			
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG893216	1	07/28/16 21:14	07/29/16 15:09	JF			
Volatile Organic Compounds (GC/MS) by Method 8260B	WG892961	1	07/28/16 00:59	07/28/16 00:59	ACG			
Wet Chemistry by Method 093/1010A	WG891428	1	07/22/16 12:20	07/22/16 12:20	MZ			

						Collected by	Collected date/time	Received date/time
18556 L848569-03 Solid							07/20/16 00:00	07/21/16 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst			
Polychlorinated Biphenyls (GC) by Method 8082	WG891275	1.5	07/22/16 00:44	07/22/16 18:48	LKD			
Total Solids by Method 2540 G-2011	WG892868	1	07/27/16 09:17	07/27/16 09:27	MEL			
Wet Chemistry by Method 90308	WG893594	1	07/28/16 19:00	07/28/16 20:10	JLJ			

						Collected by	Collected date/time	Received date/time
18556 L848569-04 Waste							07/20/16 00:00	07/21/16 09:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst			
Preparation by Method 1311	WG892468	1	07/26/16 12:37	07/26/16 12:38	BG			
Preparation by Method 1311	WG892919	1	07/27/16 10:32	07/27/16 10:33	BG			
Semi Volatile Organic Compounds (GC/MS) by Method 8270C	WG893216	1	07/28/16 21:14	07/29/16 15:32	SNR			
Volatile Organic Compounds (GC/MS) by Method 8260B	WG892961	1	07/28/16 03:15	07/28/16 03:15	ACG			
Wet Chemistry by Method D93/1010A	WG891428	1	07/22/16 12:20	07/22/16 12:20	MZ			





All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

John Hawkins  
Technical Service Representative



18555

Collected date/time: 07/20/16 00:00

## SAMPLE RESULTS - 01

L848569

ONE LAB, NATIONWIDE



## Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	39.8		1	07/27/2016 09:27	WG892868

## Wet Chemistry by Method 9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	36.4		25.0	1	07/28/2016 20:10	WG893594

## Polychlorinated Biphenyls (GC) by Method 8082

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
PCB 1016	ND	J3	0.0176	1.5	07/22/2016 18:36	WG891275
PCB 1221	ND		0.0269	1.5	07/22/2016 18:36	WG891275
PCB 1232	ND		0.0209	1.5	07/22/2016 18:36	WG891275
PCB 1242	ND		0.0159	1.5	07/22/2016 18:36	WG891275
PCB 1248	ND		0.0158	1.5	07/22/2016 18:36	WG891275
PCB 1254	ND		0.0236	1.5	07/22/2016 18:36	WG891275
PCB 1260	ND	J3	0.0248	1.5	07/22/2016 18:36	WG891275
(S) Decachlorobiphenyl	59.0		10.0-143		07/22/2016 18:36	WG891275
(S) Tetrachloro-m-xylene	76.7		29.2-144		07/22/2016 18:36	WG891275

Ct

Tc

Ss

Cn

Sr

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Gl

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Sc

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Badger Laboratories &amp; Engineering, Inc.

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## SAMPLE RESULTS - 02

ONE LAB, NATIONWIDE.



Collected date/time: 07/20/16 00:00

LB48569

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/27/2016 10:32:03 AM	WG892919
TCLP ZHE Extraction	-		7/26/2016 12:37:09 PM	WG892468

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170 F		1	07/22/2016 12:20	WG891428

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
Benzene	ND		0.0500	0.50	1	07/28/2016 00:59	WG892961
Carbon tetrachloride	ND		0.0500	0.50	1	07/28/2016 00:59	WG892961
Chlorobenzene	ND		0.0500	100	1	07/28/2016 00:59	WG892961
Chloroform	ND		0.250	6	1	07/28/2016 00:59	WG892961
1,2-Dichloroethane	ND		0.0500	0.50	1	07/28/2016 00:59	WG892961
1,1-Dichloroethene	ND		0.0500	0.70	1	07/28/2016 00:59	WG892961
2-Butanone (MEK)	ND		0.500	200	1	07/28/2016 00:59	WG892961
Tetrachloroethene	ND		0.0500	0.70	1	07/28/2016 00:59	WG892961
Trichloroethene	ND		0.0500	0.50	1	07/28/2016 00:59	WG892961
Vinyl chloride	ND		0.0500	0.20	1	07/28/2016 00:59	WG892961
(S) Toluene-d8	107		90.0-115	114		07/28/2016 00:59	WG892961
(S) Dibromofluoromethone	104		79.0-121	125		07/28/2016 00:59	WG892961
(S) a,o,a-Trifluorotoluene	105		90.4-116	114		07/28/2016 00:59	WG892961
(S) 4-Bromofluorobenzene	101		80.1-120	128		07/28/2016 00:59	WG892961

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
1,4-Dichlorobenzene	ND		0.100	7.50	1	07/29/2016 15:09	WG893216
2,4-Dinitrotoluene	ND		0.100	0.13	1	07/29/2016 15:09	WG893216
Hexachlorobenzene	ND		0.100	0.13	1	07/29/2016 15:09	WG893216
Hexachloro-1,3-butadiene	ND		0.100	0.50	1	07/29/2016 15:09	WG893216
Hexachloroethane	ND		0.100	3	1	07/29/2016 15:09	WG893216
Nitrobenzene	ND		0.100	2	1	07/29/2016 15:09	WG893216
Pyridine	ND		0.100	5	1	07/29/2016 15:09	WG893216
3&4-Methyl Phenol	ND		0.100	400	1	07/29/2016 15:09	WG893216
2-Methylphenol	ND		0.100	200	1	07/29/2016 15:09	WG893216
Pentachlorophenol	ND		0.100	100	1	07/29/2016 15:09	WG893216
2,4,5-Trichlorophenol	ND		0.100	400	1	07/29/2016 15:09	WG893216
2,4,6-Trichlorophenol	ND		0.100	2	1	07/29/2016 15:09	WG893216
(S) 2-Fluorophenol	53.4		10.0-77.9	87		07/29/2016 15:09	WG893216
(S) Phenol-d5	36.8		5.00-70.1	67		07/29/2016 15:09	WG893216
(S) Nitrobenzene-d5	64.3		21.8-123	120		07/29/2016 15:09	WG893216
(S) 2-Fluorobiphenyl	71.3		29.5-131	122		07/29/2016 15:09	WG893216
(S) 2,4,6-Tribromophenol	99.2		11.2-130	148		07/29/2016 15:09	WG893216
(S) p-Terphenyl-d14	87.6		29.3-137	149		07/29/2016 15:09	WG893216

ACCOUNT:

Badger Laboratories &amp; Engineering, Inc.

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Collected date/time: 07/20/16 00:00

## SAMPLE RESULTS - 03

L848569

ONE LAB. NATIONWIDE



## Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	38.5		1	07/27/2016 09:27	WG892868

Tc

## Wet Chemistry by Method 9030B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	73.0		25.0	1	07/28/2016 20:10	WG893594

Ss

Cn

## Polychlorinated Biphenyls (GC) by Method 8082

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
PCB 1016	ND	J3	0.0176	1.5	07/22/2016 18:48	WG891275
PCB 1221	ND		0.0269	1.5	07/22/2016 18:48	WG891275
PCB 1232	ND		0.0209	1.5	07/22/2016 18:48	WG891275
PCB 1242	ND		0.0159	1.5	07/22/2016 18:48	WG891275
PCB 1248	ND		0.0158	1.5	07/22/2016 18:48	WG891275
PCB 1254	ND		0.0236	1.5	07/22/2016 18:48	WG891275
PCB 1260	ND	J3	0.0248	1.5	07/22/2016 18:48	WG891275
(S) Decachlorobiphenyl	67.3		10.0-143		07/22/2016 18:48	WG891275
(S) Tetrachloro-m-xylene	91.3		29.2-144		07/22/2016 18:48	WG891275

Sr

Qc

Gl

Al

Sc

ACCOUNT:

Badger Laboratories &amp; Engineering, Inc.

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Collected date/time: 07/20/16 00:00

## SAMPLE RESULTS - 04

ONE LAB. NATIONWIDE

L848569

Preparation by Method 1311

Analyte	Result	Qualifier	Prep date / time	Batch
TCLP Extraction	-		7/27/2016 10:32:03 AM	WG892919
TCLP ZHE Extraction	-		7/26/2016 12:37:09 PM	WG892468

Wet Chemistry by Method D93/1010A

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Ignitability	DNI at 170 F		1	07/22/2016 12:20	WG891428

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
Benzene	ND		0.0500	0.50	1	07/28/2016 03:15	WG892961
Carbon tetrachloride	ND		0.0500	0.50	1	07/28/2016 03:15	WG892961
Chlorobenzene	ND		0.0500	100	1	07/28/2016 03:15	WG892961
Chloroform	ND		0.250	6	1	07/28/2016 03:15	WG892961
1,2-Dichloroethane	ND		0.0500	0.50	1	07/28/2016 03:15	WG892961
1,1-Dichloroethene	ND		0.0500	0.70	1	07/28/2016 03:15	WG892961
2-Butanone (MEK)	ND		0.500	200	1	07/28/2016 03:15	WG892961
Tetrachloroethene	ND		0.0500	0.70	1	07/28/2016 03:15	WG892961
Trichloroethene	ND		0.0500	0.50	1	07/28/2016 03:15	WG892961
Vinyl chloride	ND		0.0500	0.20	1	07/28/2016 03:15	WG892961
(S) Toluene-d8	107		90.0-115	114		07/28/2016 03:15	WG892961
(S) Dibromofluoromethone	103		79.0-121	125		07/28/2016 03:15	WG892961
(S) o,o,a-Trifluorotoluene	105		90.4-116	114		07/28/2016 03:15	WG892961
(S) 4-Bromofluorobenzene	103		80.1-120	128		07/28/2016 03:15	WG892961

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

Analyte	Result	Qualifier	RDL	Limit	Dilution	Analysis date / time	Batch
1,4-Dichlorobenzene	ND		0.100	7.50	1	07/29/2016 15:32	WG893216
2,4-Dinitrotoluene	ND		0.100	0.13	1	07/29/2016 15:32	WG893216
Hexachlorobenzene	ND		0.100	0.13	1	07/29/2016 15:32	WG893216
Hexachloro-1,3-butadiene	ND		0.100	0.50	1	07/29/2016 15:32	WG893216
Hexachloroethane	ND		0.100	3	1	07/29/2016 15:32	WG893216
Nitrobenzene	ND		0.100	2	1	07/29/2016 15:32	WG893216
Pyridine	ND		0.100	5	1	07/29/2016 15:32	WG893216
3&4-Methyl Phenol	ND		0.100	400	1	07/29/2016 15:32	WG893216
2-Methylphenol	ND		0.100	200	1	07/29/2016 15:32	WG893216
Pentachlorophenol	ND		0.100	100	1	07/29/2016 15:32	WG893216
2,4,5-Trichlorophenol	ND		0.100	400	1	07/29/2016 15:32	WG893216
2,4,6-Trichlorophenol	ND		0.100	2	1	07/29/2016 15:32	WG893216
(S) 2-Fluorophenol	44.9		10.0-77.9	87		07/29/2016 15:32	WG893216
(S) Phenol-d5	32.4		5.00-70.1	67		07/29/2016 15:32	WG893216
(S) Nitrobenzene-d5	53.8		21.8-123	120		07/29/2016 15:32	WG893216
(S) 2-Fluorobiphenyl	66.3		29.5-131	122		07/29/2016 15:32	WG893216
(S) 2,4,6-Tribromophenol	88.4		11.2-130	148		07/29/2016 15:32	WG893216
(S) p-Terphenyl-d14	85.6		29.3-137	149		07/29/2016 15:32	WG893216

ACCOUNT:

Badger Laboratories &amp; Engineering, Inc.

PROJECT:

SDG:

L848569

DATE/TIME:

08/01/16 15:33

PAGE:

8 of 23

WG892868

Total Solids by Method 2540 G-2011

QUALITY CONTROL SUMMARY

L848569-01,03

ONE LAB, NATIONWIDE.



Method Blank (MB)

(MB) R3152777-1 07/27/16 09:27

Analyte	MB Result %	MB Qualifier	MB MDL %	MB RDL %
Total Solids	0.000200			

Cp

Tc

Ss

L848956-01 Original Sample (OS) - Duplicate (DUP)

(OS) L848956-01 07/27/16 09:27 • (DUP) R3152777-3 07/27/16 09:27

Analyte	Original Result %	DUP Result %	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits
Total Solids	67.2	67.5	1	0.498	5	

Cn

Sr

Laboratory Control Sample (LCS)

(LCS) R3152777-2 07/27/16 09:27

Analyte	Spike Amount %	LCS Result %	LCS Rec. %	Rec. Limits %	LCS Qualifier
Total Solids	50.0	50.0	100	85.0-115	

Qc

Gl

Al

Sc

WG893594

Wet Chemistry by Method 9030B

QUALITY CONTROL SUMMARY

L848569-01.03

ONE LAB. NATIONWIDE.



Method Blank (MB)

(MB) WG893594-1 07/28/16 20:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Sulfide	U		7.63	25.0

1 Cp

2 Tc

3 Ss

L848577-03 Original Sample (OS) • Duplicate (DUP)

(OS) L848577-03 07/28/16 20:10 • (DUP) WG893594-4 07/28/16 20:10

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfide	61.0	66.0	1	7.87		20

4 Cn

5 Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG893594-2 07/28/16 20:10 • (LCSD) WG893594-3 07/28/16 20:10

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Sulfide	100	79.0	72.8	79.0	72.8	70.0-130			8.17	20

6 Qc

7 Gl

8 Al

9 Sc

WG891428

Wet Chemistry by Method D93/1010A

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.



L848569-02.04

L848569-02 Original Sample (OS) • Duplicate (DUP)

(OS) L848569-02 07/22/16 12:20 • (DUP) WG891428-3 07/22/16 12:20

Analyte	Original Result Deg. F	DUP Result Deg. F	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ignitability	DNI at 170 F	DNI at 170 F	1	0.000		10

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) WG891428-1 07/22/16 12:20 • (LCSD) WG891428-2 07/22/16 12:20

Analyte	Spike Amount Deg. F	LCS Result Deg. F	LCSD Result Deg. F	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ignitability	82.0	82.9	82.9	101	101	93.0-107			0.000	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

WG892961

Volatile Organic Compounds (GC/MS) by Method 8260B

QUALITY CONTROL SUMMARY

L848569-02.04

ONE LAB. NATIONWIDE.

Method Blank (MB)

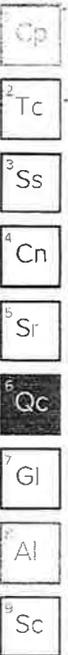
(MB) R3152874-3 07/27/16 23:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0167	0.0500
Carbon tetrachloride	U		0.0167	0.0500
Chlorobenzene	U		0.0167	0.0500
Chloroform	U		0.0833	0.250
1,2-Dichloroethane	U		0.0167	0.0500
1,1-Dichloroethene	U		0.0167	0.0500
2-Butanone (MEK)	U		0.167	0.500
Tetrachloroethene	U		0.0167	0.0500
Trichloroethene	U		0.0167	0.0500
Vinyl chloride	U		0.0167	0.0500
(S) Toluene-d8	108			90.0-115
(S) Dibromofluoromethone	102			79.0-121
(S) o,o,a-Trifluorotoluene	105			90.4-116
(S) 4-Bromofluorobenzene	103			80.1-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3152874-1 07/27/16 21:44 • (LCSD) R3152874-2 07/27/16 22:03

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.0250	0.0228	0.0227	91.2	90.9	73.0-122			0.300	20
Carbon tetrachloride	0.0250	0.0243	0.0235	97.2	93.9	70.9-129			3.48	20
Chlorobenzene	0.0250	0.0250	0.0246	99.8	98.6	79.7-122			1.24	20
Chloroform	0.0250	0.0235	0.0236	94.1	94.5	73.2-125			0.390	20
1,2-Dichloroethane	0.0250	0.0251	0.0253	100	101	65.3-126			0.890	20
1,1-Dichloroethene	0.0250	0.0240	0.0239	95.8	95.8	60.6-133			0.0200	20
2-Butanone (MEK)	0.125	0.126	0.124	101	98.9	46.4-155			1.74	20
Tetrachloroethene	0.0250	0.0242	0.0244	96.7	97.5	73.5-130			0.900	20
Trichloroethene	0.0250	0.0251	0.0248	101	99.1	79.5-121			1.52	20
Vinyl chloride	0.0250	0.0264	0.0261	105	105	61.5-134			0.900	20
(S) Toluene-d8				107	106	90.0-115				
(S) Dibromofluoromethane				107	105	79.0-121				
(S) a,a,a-Trifluorotoluene				105	106	90.4-116				
(S) 4-Bromofluorobenzene				102	101	80.1-120				



WG892961

Volatile Organic Compounds (GC/MS) by Method 8260B

QUALITY CONTROL SUMMARY

L848569-02.04

ONE LAB. NATIONWIDE.



L848569-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L848569-02 07/28/16 00:59 • (MS) R3152874-4 07/27/16 23:21 • (MSD) R3152874-5 07/27/16 23:41

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	1.25	ND	1.23	1.29	98.1	103	1	58.6-133			4.96	20
Carbon tetrachloride	1.25	ND	1.22	1.34	97.9	107	1	60.6-139			8.78	20
Chlorobenzene	1.25	ND	1.36	1.42	109	114	1	70.1-130			4.57	20
Chloroform	1.25	ND	1.28	1.35	102	108	1	66.1-133			5.08	20
1,2-Dichloroethane	1.25	ND	1.34	1.39	107	111	1	60.7-132			3.94	20
1,1-Dichloroethene	1.25	ND	1.30	1.36	104	109	1	48.8-144			4.47	20
2-Butanone (MEK)	6.25	ND	4.95	5.23	74.9	79.3	1	45.0-156			5.47	20.8
Tetrachloroethene	1.25	ND	1.33	1.38	106	111	1	57.4-141			3.92	20
Trichloroethene	1.25	ND	1.36	1.42	109	114	1	48.9-148			4.13	20
Vinyl chloride	1.25	ND	1.28	1.36	102	109	1	44.3-143			6.01	20
(S) Toluene-d8					108	107		90.0-115				
(S) Dibromofluoromethone					106	105		79.0-121				
(S) o,o,o-Trifluorotoluene					106	104		90.4-116				
(S) 4-Bromofluorobenzene					101	101		80.1-120				

Cp

<sup>2</sup>Tc

<sup>3</sup>Ss

<sup>4</sup>Cn

<sup>5</sup>Sr

<sup>6</sup>Qc

<sup>7</sup>Gl

<sup>8</sup>Al

<sup>9</sup>Sc

WG891275

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE



Polychlorinated Biphenyls (GC) by Method 8082

L848569-01.03

Method Blank (MB)

(MB) R3151699-1 07/22/16 09:04

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
PCB 1016	U		0.00350	0.0117
PCB 1221	U		0.00537	0.0179
PCB 1232	U		0.00417	0.0139
PCB 1242	U		0.00318	0.0106
PCB 1248	U		0.00315	0.0105
PCB 1254	U		0.00472	0.0157
PCB 1260	U		0.00494	0.0165
(S) Decachlorobiphenyl	87.0			10.0-143
(S) Tetrachloro-m-xylene	91.7			29.2-144

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3151699-2 07/22/16 09:16 • (LCSD) R3151699-3 07/22/16 09:29

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	0.124	0.166	74.5	99.6	46.5-120		J3	28.8	27
PCB 1016	0.167	0.111	0.150	66.5	89.7	46.3-117		J3	29.8	27.5
(S) Decachlorobiphenyl				89.7	100	10.0-143				
(S) Tetrachloro-m-xylene				96.8	102	29.2-144				

L848452-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L848452-01 07/22/16 19:00 • (MS) R3151699-4 07/22/16 19:13 • (MSD) R3151699-5 07/22/16 19:25

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
PCB 1260	0.167	ND	0.139	0.147	83.2	88.0	1	24.6-127			5.67	20
PCB 1016	0.167	ND	0.180	0.215	86.2	103	1	23.9-147			18.0	25.8
(S) Decachlorobiphenyl					66.4	74.2		10.0-143				
(S) Tetrachloro-m-xylene					84.4	87.0		29.2-144				



Method Blank (MB)

(MB) R3153267-3 07/29/16 12:25

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1,4-Dichlorobenzene	U		0.0333	0.100
2,4-Dinitrotoluene	U		0.0333	0.100
Hexachlorobenzene	U		0.0333	0.100
Hexachloro-1,3-butadiene	U		0.0333	0.100
Hexachloroethane	U		0.0333	0.100
Nitrobenzene	U		0.0333	0.100
Pyridine	U		0.0333	0.100
2-Methylphenol	U		0.0333	0.100
3&4-Methyl Phenol	U		0.0333	0.100
Pentachlorophenol	U		0.0333	0.100
2,4,5-Trichlorophenol	U		0.0333	0.100
2,4,6-Trichlorophenol	U		0.0333	0.100
(S) Nitrobenzene-d5	58.2			21.8-123
(S) 2-Fluorobiphenyl	72.2			29.5-131
(S) p-Terphenyl-d14	83.1			29.3-137
(S) Phenol-d5	34.8			5.00-70.1
(S) 2-Fluorophenol	50.0			10.0-77.9
(S) 2,4,6-Tribromophenol	80.7			11.2-130



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3153267-1 07/29/16 11:15 • (LCSD) R3153267-2 07/29/16 11:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	0.0500	0.0293	0.0318	58.7	63.6	21.0-89.4			7.97	32.6
2,4-Dinitrotoluene	0.0500	0.0423	0.0426	84.7	85.3	31.2-105			0.660	22
Hexachlorobenzene	0.0500	0.0412	0.0444	82.4	88.8	38.5-116			7.45	20.1
Hexachloro-1,3-butadiene	0.0500	0.0365	0.0394	73.0	78.7	16.1-104			7.52	31.2
Hexachloroethane	0.0500	0.0267	0.0300	53.5	60.1	16.5-89.8			11.6	30.7
Nitrobenzene	0.0500	0.0287	0.0325	57.4	65.0	31.4-106			12.5	25.7
Pyridine	0.0500	0.00859	0.00948	17.2	19.0	13.5-58.9			9.83	32.5
2-Methylphenol	0.0500	0.0267	0.0284	53.4	56.9	26.4-86.9			6.29	26.5
3&4-Methyl Phenol	0.0500	0.0296	0.0317	59.2	63.5	27.9-92.0			7.02	27
Pentachlorophenol	0.0500	0.0352	0.0376	70.4	75.1	10.0-97.4			6.45	35.1
2,4,5-Trichlorophenol	0.0500	0.0417	0.0445	83.5	89.1	34.9-112			6.51	23.9
2,4,6-Trichlorophenol	0.0500	0.0389	0.0435	77.8	87.1	29.8-107			11.3	24.1
(S) Nitrobenzene-d5				67.1	70.8	21.8-123				
(S) 2-Fluorobiphenyl				77.8	80.3	29.5-131				
(S) p-Terphenyl-d14				90.1	91.9	29.3-137				

WG893216

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Semi Volatile Organic Compounds (GC/MS) by Method 8270C

L848569-02,04

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3153267-1 07/29/16 11:15 • (LCSD) R3153267-2 07/29/16 11:38

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
(S) Phenol-d5				37.2	39.8	5.00-70.1				
(S) 2-Fluorophenol				52.1	58.0	10.0-77.9				
(S) 2,4,6-Tribromophenol				100	101	11.2-130				

L849237-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L849237-01 07/29/16 16:53 • (MS) R3153267-4 07/29/16 17:16 • (MSD) R3153267-5 07/29/16 17:40

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
1,4-Dichlorobenzene	0.500	ND	0.278	0.271	55.6	54.3	1	14.0-104			2.34	36.4
2,4-Dinitrotoluene	0.500	ND	0.414	0.402	82.8	80.4	1	16.2-135			2.93	20.6
Hexachlorobenzene	0.500	ND	0.423	0.411	84.6	82.3	1	31.9-135			2.84	20
Hexachloro-1,3-butadiene	0.500	ND	0.353	0.328	70.6	65.5	1	15.7-109			7.47	37.6
Hexachloroethane	0.500	ND	0.257	0.256	51.3	51.2	1	10.4-105			0.230	40
Nitrobenzene	0.500	ND	0.275	0.269	54.9	53.7	1	23.1-121			2.26	29
Pyridine	0.500	ND	0.0989	0.103	19.8	20.5	1	10.0-77.8			3.74	38.8
2-Methylphenol	0.500	ND	0.257	0.252	51.4	50.5	1	10.0-133			1.74	40
3&4-Methyl Phenol	0.500	ND	0.295	0.288	59.0	57.6	1	17.4-100			2.49	27.7
Pentachlorophenol	0.500	ND	0.375	0.375	75.0	74.9	1	10.0-108			0.0700	40
2,4,5-Trichlorophenol	0.500	ND	0.415	0.421	83.0	84.3	1	30.6-120			1.53	33.8
2,4,6-Trichlorophenol	0.500	ND	0.390	0.409	78.0	81.8	1	19.1-114			4.66	29.9
(S) Nitrobenzene-d5					62.0	57.7		21.8-123				
(S) 2-Fluorobiphenyl					72.2	69.0		29.5-131				
(S) p-Terphenyl-d14					87.8	82.8		29.3-137				
(S) Phenol-d5					36.3	34.6		5.00-70.1				
(S) 2-Fluorophenol					49.2	48.0		10.0-77.9				
(S) 2,4,6-Tribromophenol					99.6	98.2		11.2-130				

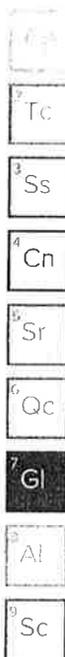
- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gf
- 8 Al
- 9 Sc



## Abbreviations and Definitions

SDG	Sample Delivery Group.
MDL	Method Detection Limit.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
U	Not detected at the Reporting Limit (or MDL where applicable).
RPD	Relative Percent Difference.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
Rec.	Recovery.

Qualifier	Description
J3	The associated batch QC was outside the established quality control range for precision.



# ACCREDITATIONS & LOCATIONS

ONE LAB. NATIONWIDE.



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.  
 \* Not all certifications held by the laboratory are applicable to the results reported in the attached report.



## State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	U5T-080	New Hampshire	2975
Arizona	AZ0612	New Jersey-NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina <sup>1</sup>	DW21704
Florida	E87487	North Carolina <sup>2</sup>	41
Georgia	NELAP	North Dakota	R-140
Georgia <sup>1</sup>	923	Ohio-VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky <sup>1</sup>	90010	South Dakota	n/a
Kentucky <sup>2</sup>	16	Tennessee <sup>14</sup>	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas <sup>5</sup>	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-05-15-05		

## Third Party & Federal Accreditations

A2LA - ISO 17025	1461.01	AIHA	100789
A2LA - ISO 17025 <sup>3</sup>	1461.02	DOD	1461.01
Canada	1461.01	USDA	5-67674
EPA-Crypto	TN00003		

<sup>1</sup> Drinking Water <sup>2</sup> Underground Storage Tanks <sup>3</sup> Aquatic Toxicity <sup>4</sup> Chemical/Microbiological <sup>5</sup> Mold <sup>14</sup> Accreditation not applicable

## Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**





# BADGER LABORATORIES & ENGINEERING INC.

501 WEST BELL STREET • NEENAH, WISCONSIN 54956-4868 • EST. 1966

(920) 729-1100 • FAX (920) 729-4945 • 1-800-776-7196

NEENAH PAPER INC-NEENAH MILL  
135 N COMMERCIAL ST  
NEENAH, WI S49S6-

Report Number: 16008170  
Report Date: 8/10/2016  
Sampled By: Client  
Emailed: 8/10/16

Attn: MR. STEVEN HAGGLUND

PO#: 333242966  
# Samples: 2

Sample Number: 46018SSS  
Description: NEENAH SLUDGE  
Sample Date: 7/20/2016  
Date Received: 7/20/2016

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
CHLORINE	<0.02	%	0.02	0.02		SW-846-S0S0	08/04/16	
CYANIDE, TOTAL	0.098	ppm	0.086	0.286	12	EPA33S.4	07/25/16	
CYANIDE-AM. TO CL2	0.098	ppm	0.086	0.286	12	SM4500CN-G	07/26/16	
FLASH POINT	--SEE ATTACHED ESC REPORT--							
FREE LIQUIDS	0.0	%	0	0		SW 846 909S	08/03/16	
METALS DIGESTION	DONE		0	0		SM3030E	07/22/16	
PCB, TOTAL	--SEE ATTACHED ESC REPORT--							
PHENOL, TOTAL	<0.05	mg/l	0.05	0.17	1	EPA420.4	08/08/16	
pH-LAB	7.7	S.U.	0	0		SW846-904SC	07/21/16	
SULFIDE	--SEE ATTACHED ESC REPORT--							
TCLP ARSENIC	<0.005	mg/l	0.005	0.017	S	SM3113B	07/26/16	
TCLP BARIUM	0.30	mg/l	0.03	0.08	1	SM3111D	07/28/16	
TCLP CADMIUM	<0.01	mg/l	0.01	0.03	1	SM3111B	07/27/16	
TCLP CHROMIUM	<0.02	mg/l	0.02	0.06	1	SM3111B	07/27/16	
TCLP EXTRACTION	DONE		0	0		SW846-1311	07/22/16	
TCLP LEAD	<0.03	mg/l	0.03	0.10	1	SM3111B	07/27/16	
TCLP MERCURY	<0.0002	mg/l	0.0002	0.0008	1	SM3112B	07/26/16	
TCLP ORGANICS	--SEE ATTACHED ESC REPORT--							
TCLP SELENIUM	<0.009	mg/l	0.009	0.030	S	SM3113B	07/26/16	
TCLP SILVER	0.02	mg/l	0.01	0.03	1	SM3111B	07/27/16	
TOTAL SOLIDS	36.0	%	0.010	0.010		SM2540B	07/25/16	

WI DNR Certified Lab #445023150  
WI Reg. Engineers (Corp.) #CE00601  
WI DATCP Certified #205 (Bacteria-Water)

Members  
WI Environmental Labs; Am. Chemical Soc.;  
T.A.P.P.I.; WI Food Processors Assn.;  
Wisc. Paper Council



# BADGER LABORATORIES & ENGINEERING INC.

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(920) 729-1100 • FAX (920) 729-4945 • 1-800-776-7196

Sample Number: 46018556  
Description: APPLETON SLUDGE  
Sample Date: 7/20/2016  
Date Received: 7/20/2016

Parameter	Results	Units	LOD	LOQ	Dil.	Method	Analyzed	Codes
CHLORINE	<0.02	%	0.02	0.02		SW-846-5050	08/04/16	
CYANIDE, TOTAL	<0.086	ppm	0.086	0.286	12	EPA335.4	07/25/16	
CYANIDE-AM. TO CL2	<0.086	ppm	0.086	0.286	12	SM4500CN-G	07/25/16	
FLASH POINT	--SEE ATTACHED ESC REPORT--							
FREE LIQUIDS	0.0	%	0	0		SW 846 9095	08/03/16	
METALS DIGESTION	DONE		0	0		SM3030E	07/22/16	
PCB, TOTAL	--SEE ATTACHED ESC REPORT--							
PHENOL, TOTAL	0.06	mg/l	0.05	0.17	1	EPA420.4	08/08/16	
pH-LAB	7.0	S.U.	0	0		SW846-9045C	07/21/16	
SULFIDE	--SEE ATTACHED ESC REPORT--							
TCLP ARSENIC	<0.005	mg/l	0.005	0.017	5	SM3113B	07/26/16	
TCLP BARIUM	0.17	mg/l	0.03	0.08	1	SM3111D	07/28/16	
TCLP CADMIUM	<0.01	mg/l	0.01	0.03	1	SM3111B	07/27/16	
TCLP CHROMIUM	<0.02	mg/l	0.02	0.06	1	SM3111B	07/27/16	
TCLP EXTRACTION	DONE		0	0		SW846-1311	07/22/16	
TCLP LEAD	<0.03	mg/l	0.03	0.10	1	SM3111B	07/27/16	
TCLP MERCURY	<0.0002	mg/l	0.0002	0.0008	1	SM3112B	07/26/16	
TCLP ORGANICS	--SEE ATTACHED ESC REPORT--							
TCLP SELENIUM	<0.009	mg/l	0.009	0.030	5	SM3113B	07/26/16	
TCLP SILVER	<0.01	mg/l	0.01	0.03	1	SM3111B	07/27/16	
TOTAL SOLIDS	39.5	%	0.010	0.010		SM2540B	07/25/16	

All LOD/LOQs adjusted for dilution and/or solids content.

BADGER LABS & ENGINEERING  
WDNR Certified Lab #445023150  
Approved By:

JMW:rt

CHEMISTS

ENGINEERS

# BADGER LABORATORIES & ENGINEERING, INC.

501 WEST BELL STREET - NEENAH, WISCONSIN 54956-4868 - EST. 1966  
(920) 729-1100 - Fax (920) 729-4945 - 1-800-776-7196

16008170

## SAMPLE RECEIPT FORM

### CLIENT INFORMATION

COMPANY: Neenah Paper

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

FAX/PHONE/EMAIL: \_\_\_\_\_

P.O. #: \_\_\_\_\_

PROJECT/SITE: \_\_\_\_\_

REPORT & BILL TO: \_\_\_\_\_

ADDITIONAL REPORTS TO: \_\_\_\_\_

#### TURN AROUND TIME:

- Normal
- Other TAT\*

\*REQUIRES PRIOR LAB APPROVAL \_\_\_\_\_

#### SAMPLE TYPE:

- Groundwater  Lab Filtered
- Wastewater  Field Filtered
- WPDES  Grab
- Cooling Water  Composite
- Drinking Water  Flow Proportional
- Solid Waste  Time Proportional
- Oil
- Other \_\_\_\_\_

CUSTOMER SAMPLE ID	SAMPLE DATE/TIME	DATE REC'D	BL & E REPORT #	BL & E SAMPLE #	TEMP *	CONTAINER S	Ice Y/N	DELIVERY METHOD				PRESERVATION				ANALYTICAL REQUESTS	pH ok	EP	
								BL&E	CLIENT	UPS	OTHER	PIF	PIL	NON-PRES	H2SO4				HNO3
		7/2	8170	18538	-3	4													
			8170	18536	-3	1													

### CHAIN OF CUSTODY RECORD

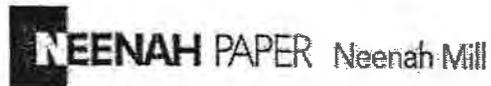
FILLED IN BY CUSTOMER SAMPLED BY: <u>[Signature]</u> DATE/TIME SAMPLED: _____ RELINQUISHED BY: _____	FILLED IN BY BADGER LABS & ENG RECEIVED BY: <u>[Signature]</u> DATE/TIME RECEIVED: <u>7/23/08</u> LOGGED IN: <u>[Signature]</u>	
---	--	--

\* Temperature over 6°C are above EPA/DNR Protocol unless received on ice.

\* EP= If pH was not correct, extra preservation was added until correct pH was achieved; H2SO4/HNO3 adjusted to pH <2.0; NaOH >12.0

\* PIF= Preserved in field.

\* PIL= Preserved in lab.



**NEENAH PAPER WWTP SAMPLE  
CHAIN OF CUSTODY RECORD**

**SAMPLE(S) SOURCE INFORMATION**

NEENAH PAPER CONTACT: STEVEN HAGGLUND  
 ADDRESS: NEENAH PAPER INC. - NEENAH MILL  
 135 NORTH COMMERCIAL STREET  
 P. O. BOX 2003  
 NEENAH, WISCONSIN 54957-2003  
 CONTACT PHONE NUMBER: (920) 721-1065  
 WWTP OPERATOR PHONE NUMBER: (920) 721-1049 Daily 7am - 3pm  
 FAX NUMBER: 678-784-7261  
 PURCHASE ORDER: ~~38343850~~ Exp. ~~6/28/2016~~

**DESTINATION/TESTING LAB INFORMATION**

LAB NAME AND ADDRESS: BADGER LABS AND ENGINEERING  
 501 WEST BELL STREET  
 NEENAH, WISCONSIN 54957-1392  
 LAB PHONE NUMBER: (920) 729-1100  
 LAB CONTACT PERSON: JEFF WAGNER

Sampled by: Signature	Date	Time	Sample Type		Preservation	Sample ID	
			Grab	Comp		(must match sample label)	Analyte
<i>St. Hagglund</i>	7-20-16	10:30	X		None	Neenah Sludge	TCLP
<i>St. Hagglund</i>	7-20-16	11:10	X		None	Appleton Sludge	TCLP

Relinquished by: (signature) *St. Hagglund* Date: 7-20-16 Time: 12:15 Neenah Paper

Delivered to: (signature) *GP Chorn* Date: 7-20-16 Time: 12:15 Badger Labs

**RETURN THIS FORM WITH TEST RESULTS**

**MAXIMUM CONCENTRATION OF CONTAMINANTS FOR TOXICITY CHARACTERISTIC**

Contaminant	Regulatory Level (mg/l.)
Arsenic	5.0
Barium	100.0
Benzene	0.5
Cadmium	1.0
Carbon tetrachloride	0.5
Chlordane	0.03
Chlorobenzene	100.0
Chloroform	6.0
Chromium	5.0
o-Cresol	200.0
m-Cresol	200.0
p-Cresol	200.0
Cresol	200.0
2-4-D	10.0
1,4-Dichlorobenzene	7.5
1,2-Dichloroethane	0.5
1,1-Dichloroethylene	0.7
2,4-dinitrotoluene	0.13
Endrin	0.02
Heptachlor (and its hydroxide)	0.008
Hexachlorobenzene	0.13
Hexachloro-1,3-butadiene	0.5
Hexachloroethane	3.0
Lead	5.0
Lindane	0.4
Mercury	0.2
Methoxychlor	10.0
Methyl ethyl ketone	200.0
Nitrobenzene	2.0
Pentachloroophenol	100.0
Pyridine	5.0
Selenium	1.0
Silver	5.0
Tetrachloroethylene	0.7
Toxaphene	0.5
Trichloroethylene	0.5
2,4,5-Trichloroophenol	400.0
2,4,6-Trichloroophenol	2.0
2,4,5-TP (Silvex)	1.0
Vinyl chloride	0.2

February 24, 2017

Mandy Peterson  
Veolia ES Industrial Services  
501 Eastman Ave  
Green Bay, WI 54302

RE: Project: PAPER FINES TESTING  
Pace Project No.: 40145698

Dear Mandy Peterson:

Enclosed are the analytical results for sample(s) received by the laboratory on February 15, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Some analyses have been subcontracted outside of the Pace Network. The subcontracted laboratory report has been attached.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Cindy Varga  
cindy.varga@pacelabs.com  
Project Manager

Enclosures

cc: Jim Delvoye, Proctor & Gamble



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

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### Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414  
Alaska Certification UST-107  
525 N 8th Street, Salina, KS 67401  
A2LA Certification #: 2926.01  
Alaska Certification #: UST-078  
Alaska Certification #MN00064  
Alabama Certification #40770  
Arizona Certification #: AZ-0014  
Arkansas Certification #: 88-0680  
California Certification #: 01155CA  
Colorado Certification #Pace  
Connecticut Certification #: PH-0256  
EPA Region 8 Certification #: 8TMS-L  
Florida/NELAP Certification #: E87605  
Guam Certification #:14-008r  
Georgia Certification #: 959  
Georgia EPD #: Pace  
Idaho Certification #: MN00064  
Hawaii Certification #MN00064  
Illinois Certification #: 200011  
Indiana Certification#C-MN-01  
Iowa Certification #: 368  
Kansas Certification #: E-10167  
Kentucky Dept of Envi. Protection - DW #90062  
Kentucky Dept of Envi. Protection - WW #:90062  
Louisiana DEQ Certification #: 3086  
Louisiana DHH #: LA140001  
Maine Certification #: 2013011  
Maryland Certification #: 322

Michigan DEPH Certification #: 9909  
Minnesota Certification #: 027-053-137  
Mississippi Certification #: Pace  
Montana Certification #: MT0092  
Nevada Certification #: MN\_00064  
Nebraska Certification #: Pace  
New Jersey Certification #: MN-002  
New York Certification #: 11647  
North Carolina Certification #: 530  
North Carolina State Public Health #: 27700  
North Dakota Certification #: R-036  
Ohio EPA #: 4150  
Ohio VAP Certification #: CL101  
Oklahoma Certification #: 9507  
Oregon Certification #: MN200001  
Oregon Certification #: MN300001  
Pennsylvania Certification #: 68-00563  
Puerto Rico Certification  
Saipan (CNMI) #:MP0003  
South Carolina #:74003001  
Texas Certification #: T104704192  
Tennessee Certification #: 02818  
Utah Certification #: MN000642013-4  
Virginia DGS Certification #: 251  
Virginia/VELAP Certification #: Pace  
Washington Certification #: C486  
West Virginia Certification #: 382  
West Virginia DHHR #:9952C  
Wisconsin Certification #: 999407970

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: PAPER FINES TESTING

Pace Project No.: 40145698

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40145698001	PAPER FINES	Solid	02/15/17 11:30	02/15/17 11:55

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: PAPER FINES TESTING

Pace Project No.: 40145698

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40145698001	PAPER FINES	EPA 8082	BLM	10	PASI-G
		EPA 6010	DLB	10	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 8270	RJN	16	PASI-G
		EPA 8260	HNW	13	PASI-G
		ASTM D2974-87	BTH	1	PASI-G
		EPA 1010	DEY	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 9095	DEY	1	PASI-G
		EPA 420.4	KEO	1	PASI-M
		EPA 9012	DAW	1	PASI-G

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: PAPER FINES TESTING

Pace Project No.: 40145698

Sample: PAPER FINES Lab ID: 40145698001 Collected: 02/15/17 11:30 Received: 02/15/17 11:55 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8082 GCS PCB</b>									
Analytical Method: EPA 8082 Preparation Method: EPA 3541									
PCB-1016 (Aroclor 1016)	<79.3	ug/kg	159	79.3	1	02/16/17 11:22	02/16/17 20:08	12674-11-2	
PCB-1221 (Aroclor 1221)	<79.3	ug/kg	159	79.3	1	02/16/17 11:22	02/16/17 20:08	11104-28-2	
PCB-1232 (Aroclor 1232)	<79.3	ug/kg	159	79.3	1	02/16/17 11:22	02/16/17 20:08	11141-16-5	
PCB-1242 (Aroclor 1242)	<79.3	ug/kg	159	79.3	1	02/16/17 11:22	02/16/17 20:08	53469-21-9	
PCB-1248 (Aroclor 1248)	<79.3	ug/kg	159	79.3	1	02/16/17 11:22	02/16/17 20:08	12672-29-6	
PCB-1254 (Aroclor 1254)	<79.3	ug/kg	159	79.3	1	02/16/17 11:22	02/16/17 20:08	11097-69-1	
PCB-1260 (Aroclor 1260)	<79.3	ug/kg	159	79.3	1	02/16/17 11:22	02/16/17 20:08	11096-82-5	
PCB, Total	<79.3	ug/kg	159	79.3	1	02/16/17 11:22	02/16/17 20:08	1336-36-3	
<b>Surrogates</b>									
Tetrachloro-m-xylene (S)	73	%	63-130		1	02/16/17 11:22	02/16/17 20:08	877-09-8	
Decachlorobiphenyl (S)	57	%	48-130		1	02/16/17 11:22	02/16/17 20:08	2051-24-3	
<b>6010 MET ICP, TCLP</b>									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Leachate Method/Date: EPA 1311; 02/20/17 00:00									
Arsenic	<0.042	mg/L	0.12	0.042	1	02/21/17 14:37	02/22/17 10:35	7440-38-2	
Barium	0.037J	mg/L	0.075	0.025	1	02/21/17 14:37	02/22/17 10:35	7440-39-3	
Cadmium	<0.0066	mg/L	0.025	0.0066	1	02/21/17 14:37	02/22/17 10:35	7440-43-9	
Chromium	<0.013	mg/L	0.050	0.013	1	02/21/17 14:37	02/22/17 10:35	7440-47-3	
Copper	<0.031	mg/L	0.10	0.031	1	02/21/17 14:37	02/22/17 10:35	7440-50-8	
Lead	<0.022	mg/L	0.065	0.022	1	02/21/17 14:37	02/22/17 10:35	7439-92-1	
Nickel	<0.013	mg/L	0.050	0.013	1	02/21/17 14:37	02/22/17 10:35	7440-02-0	
Selenium	<0.083	mg/L	0.25	0.083	1	02/21/17 14:37	02/22/17 10:35	7782-49-2	
Silver	<0.017	mg/L	0.050	0.017	1	02/21/17 14:37	02/22/17 10:35	7440-22-4	
Zinc	0.11J	mg/L	0.20	0.047	1	02/21/17 14:37	02/22/17 10:35	7440-66-6	
<b>7470 Mercury, TCLP</b>									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Leachate Method/Date: EPA 1311; 02/20/17 00:00									
Mercury	<0.13	ug/L	0.42	0.13	1	02/23/17 11:05	02/24/17 08:48	7439-97-6	
<b>8270 MSSV TCLP Sep Funnel</b>									
Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Leachate Method/Date: EPA 1311; 02/20/17 00:00									
1,4-Dichlorobenzene	<19.4	ug/L	50.0	19.4	1	02/21/17 08:15	02/21/17 16:59	106-46-7	
2,4-Dinitrotoluene	<10	ug/L	50.0	10	1	02/21/17 08:15	02/21/17 16:59	121-14-2	
Hexachloro-1,3-butadiene	<18.2	ug/L	100	18.2	1	02/21/17 08:15	02/21/17 16:59	87-68-3	
Hexachlorobenzene	<5.7	ug/L	50.0	5.7	1	02/21/17 08:15	02/21/17 16:59	118-74-1	
Hexachloroethane	<14.8	ug/L	50.0	14.8	1	02/21/17 08:15	02/21/17 16:59	67-72-1	
2-Methylphenol(o-Cresol)	<9.6	ug/L	50.0	9.6	1	02/21/17 08:15	02/21/17 16:59	95-48-7	
3&4-Methylphenol(m&p Cresol)	<12.8	ug/L	50.0	12.8	1	02/21/17 08:15	02/21/17 16:59		
Nitrobenzene	<10.3	ug/L	50.0	10.3	1	02/21/17 08:15	02/21/17 16:59	98-95-3	
Pentachlorophenol	<7.5	ug/L	100	7.5	1	02/21/17 08:15	02/21/17 16:59	87-86-5	
Pyridine	<14.6	ug/L	50.0	14.6	1	02/21/17 08:15	02/21/17 16:59	110-86-1	
2,4,5-Trichlorophenol	<7.6	ug/L	50.0	7.6	1	02/21/17 08:15	02/21/17 16:59	95-95-4	
2,4,6-Trichlorophenol	<10.5	ug/L	50.0	10.5	1	02/21/17 08:15	02/21/17 16:59	88-06-2	
<b>Surrogates</b>									
Nitrobenzene-d5 (S)	87	%	43-130		1	02/21/17 08:15	02/21/17 16:59	4165-60-0	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: PAPER FINES TESTING

Pace Project No.: 40145698

**Sample: PAPER FINES**      **Lab ID: 40145698001**      Collected: 02/15/17 11:30      Received: 02/15/17 11:55      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8270 MSSV TCLP Sep Funnel</b>									
Analytical Method: EPA 8270    Preparation Method: EPA 3510									
Leachate Method/Date: EPA 1311; 02/20/17 00:00									
<b>Surrogates</b>									
2-Fluorobiphenyl (S)	80	%	41-130		1	02/21/17 08:15	02/21/17 16:59	321-60-8	
Phenol-d6 (S)	37	%	15-130		1	02/21/17 08:15	02/21/17 16:59	13127-88-3	
2,4,6-Tribromophenol (S)	119	%	42-140		1	02/21/17 08:15	02/21/17 16:59	118-79-6	
<b>8260 MSV TCLP</b>									
Analytical Method: EPA 8260    Leachate Method/Date: EPA 1311; 02/20/17 00:00									
Benzene	<5.0	ug/L	10.0	5.0	10		02/22/17 15:56	71-43-2	
2-Butanone (MEK)	<29.8	ug/L	200	29.8	10		02/22/17 15:56	78-93-3	
Carbon tetrachloride	<5.0	ug/L	10.0	5.0	10		02/22/17 15:56	56-23-5	
Chlorobenzene	<5.0	ug/L	10.0	5.0	10		02/22/17 15:56	108-90-7	
Chloroform	<25.0	ug/L	50.0	25.0	10		02/22/17 15:56	67-66-3	
1,2-Dichloroethane	<1.7	ug/L	10.0	1.7	10		02/22/17 15:56	107-06-2	
1,1-Dichloroethene	<4.1	ug/L	10.0	4.1	10		02/22/17 15:56	75-35-4	
Tetrachloroethene	<5.0	ug/L	10.0	5.0	10		02/22/17 15:56	127-18-4	
Trichloroethene	<3.3	ug/L	10.0	3.3	10		02/22/17 15:56	79-01-6	
Vinyl chloride	<1.8	ug/L	10.0	1.8	10		02/22/17 15:56	75-01-4	
<b>Surrogates</b>									
Toluene-d8 (S)	97	%	70-130		10		02/22/17 15:56	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130		10		02/22/17 15:56	460-00-4	
Dibromofluoromethane (S)	100	%	70-130		10		02/22/17 15:56	1868-53-7	
<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87									
Percent Moisture	68.5	%	0.10	0.10	1		02/15/17 17:26		
<b>1010 Flashpoint,Closed Cup</b>									
Analytical Method: EPA 1010									
Flashpoint	>210	deg F			1		02/20/17 15:46		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
pH	7.4	Std. Units	0.10	0.010	1		02/21/17 08:45		1q,H6
<b>9095 Paint Filter Liquid Test</b>									
Analytical Method: EPA 9095									
Free Liquids	Pass	no units			1		02/21/17 11:23		
<b>420.4 Phenolics, Total</b>									
Analytical Method: EPA 420.4    Preparation Method: EPA 420.4									
Phenol	5.1J	ug/L	11.3	3.4	1	02/23/17 09:15	02/24/17 13:44	108-95-2	B
<b>9012 Cyanide, Total</b>									
Analytical Method: EPA 9012    Preparation Method: EPA 9012A									
Cyanide	0.62J	mg/kg	1.5	0.45	1	02/22/17 09:40	02/22/17 13:10	57-12-5	B

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

QC Batch: 248920 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury TCLP  
Associated Lab Samples: 40145698001

METHOD BLANK: 1470352 Matrix: Water  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	02/24/17 08:20	

METHOD BLANK: 1469072 Matrix: Water  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	02/24/17 08:52	

METHOD BLANK: 1469390 Matrix: Water  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	02/24/17 09:20	

LABORATORY CONTROL SAMPLE: 1470353

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.5	90	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1470354 1470355

Parameter	Units	40145633005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	0.41J	5	5	5.2	5.1	96	93	85-115	3	20	

MATRIX SPIKE SAMPLE: 1470356

Parameter	Units	40145714001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	0.00014J mg/L	5	4.5	88	85-115	

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**QUALITY CONTROL DATA**

Project: PAPER FINES TESTING

Pace Project No.: 40145698

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MATRIX SPIKE SAMPLE: 1470357		40145632003	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Mercury	ug/L	<0.13	5	4.7	94	85-115	

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MATRIX SPIKE SAMPLE: 1470358		40145698001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Mercury	ug/L	<0.13	5	4.9	96	85-115	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

QC Batch: 248763 Analysis Method: EPA 6010  
QC Batch Method: EPA 3010 Analysis Description: 6010 MET TCLP  
Associated Lab Samples: 40145698001

METHOD BLANK: 1469668 Matrix: Water  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0083	0.025	02/22/17 10:02	
Barium	mg/L	<0.0050	0.015	02/22/17 10:02	
Cadmium	mg/L	<0.0013	0.0050	02/22/17 10:02	
Chromium	mg/L	<0.0025	0.010	02/22/17 10:02	
Copper	mg/L	<0.0063	0.020	02/22/17 10:02	
Lead	mg/L	<0.0043	0.013	02/22/17 10:02	
Nickel	mg/L	<0.0026	0.010	02/22/17 10:02	
Selenium	mg/L	<0.017	0.050	02/22/17 10:02	
Silver	mg/L	<0.0033	0.010	02/22/17 10:02	
Zinc	mg/L	<0.0093	0.040	02/22/17 10:02	

METHOD BLANK: 1469070 Matrix: Solid  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.042	0.12	02/22/17 10:40	
Barium	mg/L	<0.025	0.075	02/22/17 10:40	
Cadmium	mg/L	<0.0066	0.025	02/22/17 10:40	
Chromium	mg/L	<0.013	0.050	02/22/17 10:40	
Copper	mg/L	<0.031	0.10	02/22/17 10:40	
Lead	mg/L	<0.022	0.065	02/22/17 10:40	
Nickel	mg/L	<0.013	0.050	02/22/17 10:40	
Selenium	mg/L	<0.083	0.25	02/22/17 10:40	
Silver	mg/L	<0.017	0.050	02/22/17 10:40	
Zinc	mg/L	<0.047	0.20	02/22/17 10:40	

LABORATORY CONTROL SAMPLE: 1469669

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	.5	0.46	92	80-120	
Barium	mg/L	.5	0.48	97	80-120	
Cadmium	mg/L	.5	0.47	95	80-120	
Chromium	mg/L	.5	0.49	97	80-120	
Copper	mg/L	.5	0.49	98	80-120	
Lead	mg/L	.5	0.47	93	80-120	
Nickel	mg/L	.5	0.47	93	80-120	
Selenium	mg/L	.5	0.45	91	80-120	
Silver	mg/L	.25	0.24	97	80-120	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

LABORATORY CONTROL SAMPLE: 1469669

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Zinc	mg/L	.5	0.49	98	80-120	

MATRIX SPIKE SAMPLE: 1469670

Parameter	Units	40145714001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.3	92	75-125	
Barium	mg/L	0.096	2.5	2.5	98	75-125	
Cadmium	mg/L	<0.0066	2.5	2.4	95	75-125	
Chromium	mg/L	<0.013	2.5	2.4	97	75-125	
Copper	mg/L	<0.031	2.5	2.5	98	75-125	
Lead	mg/L	<0.022	2.5	2.3	93	75-125	
Nickel	mg/L	0.58	2.5	2.9	91	75-125	
Selenium	mg/L	<0.083	2.5	2.3	93	75-125	
Silver	mg/L	<0.017	1.2	1.2	99	75-125	
Zinc	mg/L	5.3	2.5	7.6	92	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1469671 1469672

Parameter	Units	40145632003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	<0.042	2.5	2.5	2.3	2.3	94	92	75-125	2	20	
Barium	mg/L	0.22	2.5	2.5	2.7	2.6	100	97	75-125	3	20	
Cadmium	mg/L	<0.0066	2.5	2.5	2.5	2.4	99	95	75-125	3	20	
Chromium	mg/L	<0.013	2.5	2.5	2.5	2.4	99	96	75-125	3	20	
Copper	mg/L	<0.031	2.5	2.5	2.6	2.5	102	99	75-125	3	20	
Lead	mg/L	<0.022	2.5	2.5	2.4	2.3	95	92	75-125	3	20	
Nickel	mg/L	0.049J	2.5	2.5	2.4	2.3	95	91	75-125	4	20	
Selenium	mg/L	<0.083	2.5	2.5	2.4	2.3	95	92	75-125	3	20	
Silver	mg/L	<0.017	1.2	1.2	1.3	1.2	102	99	75-125	3	20	
Zinc	mg/L	205	2.5	2.5	214	213	330	292	75-125	0	20	P6

MATRIX SPIKE SAMPLE: 1469673

Parameter	Units	40145633005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.3	92	75-125	
Barium	mg/L	0.23	2.5	2.7	99	75-125	
Cadmium	mg/L	<0.0066	2.5	2.4	96	75-125	
Chromium	mg/L	<0.013	2.5	2.4	97	75-125	
Copper	mg/L	<0.031	2.5	2.5	100	75-125	
Lead	mg/L	<0.022	2.5	2.3	92	75-125	
Nickel	mg/L	0.015J	2.5	2.3	92	75-125	
Selenium	mg/L	<0.083	2.5	2.3	93	75-125	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING

Pace Project No.: 40145698

MATRIX SPIKE SAMPLE:		1469673					
Parameter	Units	40145633005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Silver	mg/L	<0.017	1.2	1.3	100	75-125	
Zinc	mg/L	<0.047	2.5	2.5	97	75-125	

MATRIX SPIKE SAMPLE:		1469674					
Parameter	Units	40145698001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.2	89	75-125	
Barium	mg/L	0.037J	2.5	2.4	96	75-125	
Cadmium	mg/L	<0.0066	2.5	2.3	93	75-125	
Chromium	mg/L	<0.013	2.5	2.4	97	75-125	
Copper	mg/L	<0.031	2.5	2.5	98	75-125	
Lead	mg/L	<0.022	2.5	2.3	91	75-125	
Nickel	mg/L	<0.013	2.5	2.3	92	75-125	
Selenium	mg/L	<0.083	2.5	2.3	92	75-125	
Silver	mg/L	<0.017	1.2	1.2	97	75-125	
Zinc	mg/L	0.11J	2.5	2.5	98	75-125	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

QC Batch: 248719 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV TCLP  
Associated Lab Samples: 40145698001

METHOD BLANK: 1469432 Matrix: Water  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	<0.41	1.0	02/22/17 09:12	
1,2-Dichloroethane	ug/L	<0.17	1.0	02/22/17 09:12	
2-Butanone (MEK)	ug/L	<3.0	20.0	02/22/17 09:12	
Benzene	ug/L	<0.50	1.0	02/22/17 09:12	
Carbon tetrachloride	ug/L	<0.50	1.0	02/22/17 09:12	
Chlorobenzene	ug/L	<0.50	1.0	02/22/17 09:12	
Chloroform	ug/L	<2.5	5.0	02/22/17 09:12	
Tetrachloroethene	ug/L	<0.50	1.0	02/22/17 09:12	
Trichloroethene	ug/L	<0.33	1.0	02/22/17 09:12	
Vinyl chloride	ug/L	<0.18	1.0	02/22/17 09:12	
4-Bromofluorobenzene (S)	%	96	70-130	02/22/17 09:12	
Dibromofluoromethane (S)	%	99	70-130	02/22/17 09:12	
Toluene-d8 (S)	%	99	70-130	02/22/17 09:12	

METHOD BLANK: 1469073 Matrix: Solid  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	<4.1	10.0	02/22/17 12:12	
1,2-Dichloroethane	ug/L	<1.7	10.0	02/22/17 12:12	
2-Butanone (MEK)	ug/L	<29.8	200	02/22/17 12:12	
Benzene	ug/L	<5.0	10.0	02/22/17 12:12	
Carbon tetrachloride	ug/L	<5.0	10.0	02/22/17 12:12	
Chlorobenzene	ug/L	<5.0	10.0	02/22/17 12:12	
Chloroform	ug/L	<25.0	50.0	02/22/17 12:12	
Tetrachloroethene	ug/L	<5.0	10.0	02/22/17 12:12	
Trichloroethene	ug/L	<3.3	10.0	02/22/17 12:12	
Vinyl chloride	ug/L	<1.8	10.0	02/22/17 12:12	
4-Bromofluorobenzene (S)	%	96	70-130	02/22/17 12:12	
Dibromofluoromethane (S)	%	100	70-130	02/22/17 12:12	
Toluene-d8 (S)	%	98	70-130	02/22/17 12:12	

METHOD BLANK: 1469074 Matrix: Solid  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	ug/L	<4.1	10.0	02/22/17 11:49	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

METHOD BLANK: 1469074 Matrix: Solid  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	<1.7	10.0	02/22/17 11:49	
2-Butanone (MEK)	ug/L	<29.8	200	02/22/17 11:49	
Benzene	ug/L	<5.0	10.0	02/22/17 11:49	
Carbon tetrachloride	ug/L	<5.0	10.0	02/22/17 11:49	
Chlorobenzene	ug/L	<5.0	10.0	02/22/17 11:49	
Chloroform	ug/L	<25.0	50.0	02/22/17 11:49	
Tetrachloroethene	ug/L	<5.0	10.0	02/22/17 11:49	
Trichloroethene	ug/L	<3.3	10.0	02/22/17 11:49	
Vinyl chloride	ug/L	<1.8	10.0	02/22/17 11:49	
4-Bromofluorobenzene (S)	%	97	70-130	02/22/17 11:49	
Dibromofluoromethane (S)	%	99	70-130	02/22/17 11:49	
Toluene-d8 (S)	%	100	70-130	02/22/17 11:49	

LABORATORY CONTROL SAMPLE: 1469433

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	50	50.9	102	70-130	
1,2-Dichloroethane	ug/L	50	50.7	101	70-130	
Benzene	ug/L	50	53.7	107	60-135	
Carbon tetrachloride	ug/L	50	52.7	105	70-138	
Chlorobenzene	ug/L	50	51.1	102	70-130	
Chloroform	ug/L	50	49.8	100	70-130	
Tetrachloroethene	ug/L	50	51.7	103	70-138	
Trichloroethene	ug/L	50	52.0	104	70-130	
Vinyl chloride	ug/L	50	52.8	106	49-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Dibromofluoromethane (S)	%			102	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE SAMPLE: 1469437

Parameter	Units	40145632001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/L	<4.1	500	516	103	68-136	
1,2-Dichloroethane	ug/L	<1.7	500	507	101	70-130	
2-Butanone (MEK)	ug/L	762		740			
Benzene	ug/L	<5.0	500	540	108	57-138	
Carbon tetrachloride	ug/L	<5.0	500	535	107	70-138	
Chlorobenzene	ug/L	<5.0	500	500	100	70-130	
Chloroform	ug/L	<25.0	500	500	100	70-130	
Tetrachloroethene	ug/L	<5.0	500	511	102	70-148	
Trichloroethene	ug/L	<3.3	500	526	105	70-131	
Vinyl chloride	ug/L	<1.8	500	534	107	49-133	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

MATRIX SPIKE SAMPLE: 1469437		40145632001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
4-Bromofluorobenzene (S)	%				100	70-130	
Dibromofluoromethane (S)	%				101	70-130	
Toluene-d8 (S)	%				98	70-130	

MATRIX SPIKE SAMPLE: 1469438		40145698001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1-Dichloroethene	ug/L	<4.1	500	513	103	68-136	
1,2-Dichloroethane	ug/L	<1.7	500	514	103	70-130	
2-Butanone (MEK)	ug/L	<29.8		<29.8			
Benzene	ug/L	<5.0	500	540	108	57-138	
Carbon tetrachloride	ug/L	<5.0	500	534	107	70-138	
Chlorobenzene	ug/L	<5.0	500	514	103	70-130	
Chloroform	ug/L	<25.0	500	500	100	70-130	
Tetrachloroethene	ug/L	<5.0	500	513	103	70-148	
Trichloroethene	ug/L	<3.3	500	522	104	70-131	
Vinyl chloride	ug/L	<1.8	500	526	105	49-133	
4-Bromofluorobenzene (S)	%				102	70-130	
Dibromofluoromethane (S)	%				102	70-130	
Toluene-d8 (S)	%				100	70-130	

MATRIX SPIKE SAMPLE: 1469439		40145714001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1-Dichloroethene	ug/L	<0.0041 mg/L	500	511	102	68-136	
1,2-Dichloroethane	ug/L	<0.0017 mg/L	500	505	101	70-130	
2-Butanone (MEK)	ug/L	<0.030 mg/L		<29.8			
Benzene	ug/L	<0.0050 mg/L	500	530	106	57-138	
Carbon tetrachloride	ug/L	<0.0050 mg/L	500	515	103	70-138	
Chlorobenzene	ug/L	<0.0050 mg/L	500	498	100	70-130	
Chloroform	ug/L	<0.025 mg/L	500	489	98	70-130	
Tetrachloroethene	ug/L	<0.0050 mg/L	500	499	100	70-148	
Trichloroethene	ug/L	<0.0033 mg/L	500	516	103	70-131	
Vinyl chloride	ug/L	<0.0018 mg/L	500	524	105	49-133	
4-Bromofluorobenzene (S)	%				101	70-130	
Dibromofluoromethane (S)	%				102	70-130	
Toluene-d8 (S)	%				100	70-130	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING

Pace Project No.: 40145698

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1469440		1469441		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		40145766001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
1,1-Dichloroethene	ug/L	<4.1	500	500	513	524	103	105	68-136	2	20		
1,2-Dichloroethane	ug/L	<1.7	500	500	512	504	102	101	70-130	2	20		
2-Butanone (MEK)	ug/L	<29.8			<29.8	<29.8						20	
Benzene	ug/L	<5.0	500	500	540	545	108	109	57-138	1	20		
Carbon tetrachloride	ug/L	<5.0	500	500	526	533	105	107	70-138	1	20		
Chlorobenzene	ug/L	<5.0	500	500	510	511	102	102	70-130	0	20		
Chloroform	ug/L	<25.0	500	500	500	503	100	101	70-130	1	20		
Tetrachloroethene	ug/L	<5.0	500	500	515	514	103	103	70-148	0	20		
Trichloroethene	ug/L	<3.3	500	500	518	528	104	106	70-131	2	20		
Vinyl chloride	ug/L	<1.8	500	500	531	538	106	108	49-133	1	20		
4-Bromofluorobenzene (S)	%						102	103	70-130				
Dibromofluoromethane (S)	%						102	104	70-130				
Toluene-d8 (S)	%						100	101	70-130				

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

QC Batch: 248480 Analysis Method: EPA 8082  
QC Batch Method: EPA 3541 Analysis Description: 8082 GCS PCB  
Associated Lab Samples: 40145698001

METHOD BLANK: 1468263 Matrix: Solid  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg	<25.0	50.0	02/16/17 16:22	
PCB-1221 (Aroclor 1221)	ug/kg	<25.0	50.0	02/16/17 16:22	
PCB-1232 (Aroclor 1232)	ug/kg	<25.0	50.0	02/16/17 16:22	
PCB-1242 (Aroclor 1242)	ug/kg	<25.0	50.0	02/16/17 16:22	
PCB-1248 (Aroclor 1248)	ug/kg	<25.0	50.0	02/16/17 16:22	
PCB-1254 (Aroclor 1254)	ug/kg	<25.0	50.0	02/16/17 16:22	
PCB-1260 (Aroclor 1260)	ug/kg	<25.0	50.0	02/16/17 16:22	
Decachlorobiphenyl (S)	%	78	48-130	02/16/17 16:22	
Tetrachloro-m-xylene (S)	%	70	63-130	02/16/17 16:22	

LABORATORY CONTROL SAMPLE: 1468264

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
PCB-1016 (Aroclor 1016)	ug/kg		<25.0			
PCB-1221 (Aroclor 1221)	ug/kg		<25.0			
PCB-1232 (Aroclor 1232)	ug/kg		<25.0			
PCB-1242 (Aroclor 1242)	ug/kg		<25.0			
PCB-1248 (Aroclor 1248)	ug/kg		<25.0			
PCB-1254 (Aroclor 1254)	ug/kg		<25.0			
PCB-1260 (Aroclor 1260)	ug/kg	500	392	78	55-130	
Decachlorobiphenyl (S)	%			80	48-130	
Tetrachloro-m-xylene (S)	%			72	63-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1468265 1468266

Parameter	Units	40145663015		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
PCB-1016 (Aroclor 1016)	ug/kg	<31.1			<31.1	<31.1					20
PCB-1221 (Aroclor 1221)	ug/kg	<31.1			<31.1	<31.1					20
PCB-1232 (Aroclor 1232)	ug/kg	<31.1			<31.1	<31.1					20
PCB-1242 (Aroclor 1242)	ug/kg	<31.1			<31.1	<31.1					20
PCB-1248 (Aroclor 1248)	ug/kg	<31.1			<31.1	<31.1					20
PCB-1254 (Aroclor 1254)	ug/kg	<31.1			<31.1	<31.1					20
PCB-1260 (Aroclor 1260)	ug/kg	<31.1	622	622	477	493	77	79	40-130	3	20
Decachlorobiphenyl (S)	%						74	77	48-130		
Tetrachloro-m-xylene (S)	%						74	77	63-130		

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

QC Batch: 248695 Analysis Method: EPA 8270  
QC Batch Method: EPA 3510 Analysis Description: 8270 TCLP MSSV  
Associated Lab Samples: 40145698001

METHOD BLANK: 1469374 Matrix: Water  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	<3.9	10.0	02/21/17 13:22	
2,4,5-Trichlorophenol	ug/L	<1.5	10.0	02/21/17 13:22	
2,4,6-Trichlorophenol	ug/L	<2.1	10.0	02/21/17 13:22	
2,4-Dinitrotoluene	ug/L	<2.0	10.0	02/21/17 13:22	
2-Methylphenol(o-Cresol)	ug/L	<1.9	10.0	02/21/17 13:22	
3&4-Methylphenol(m&p Cresol)	ug/L	<2.6	10.0	02/21/17 13:22	
Hexachloro-1,3-butadiene	ug/L	<3.6	20.0	02/21/17 13:22	
Hexachlorobenzene	ug/L	<1.1	10.0	02/21/17 13:22	
Hexachloroethane	ug/L	<3.0	10.0	02/21/17 13:22	
Nitrobenzene	ug/L	<2.1	10.0	02/21/17 13:22	
Pentachlorophenol	ug/L	<1.5	20.0	02/21/17 13:22	
Pyridine	ug/L	<2.9	10.0	02/21/17 13:22	
2,4,6-Tribromophenol (S)	%	125	42-140	02/21/17 13:22	
2-Fluorobiphenyl (S)	%	94	41-130	02/21/17 13:22	
Nitrobenzene-d5 (S)	%	101	43-130	02/21/17 13:22	
Phenol-d6 (S)	%	39	15-130	02/21/17 13:22	

METHOD BLANK: 1469071 Matrix: Water  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	ug/L	<19.4	50.0	02/21/17 18:04	
2,4,5-Trichlorophenol	ug/L	<7.6	50.0	02/21/17 18:04	
2,4,6-Trichlorophenol	ug/L	<10.5	50.0	02/21/17 18:04	
2,4-Dinitrotoluene	ug/L	<10	50.0	02/21/17 18:04	
2-Methylphenol(o-Cresol)	ug/L	<9.6	50.0	02/21/17 18:04	
3&4-Methylphenol(m&p Cresol)	ug/L	<12.8	50.0	02/21/17 18:04	
Hexachloro-1,3-butadiene	ug/L	<18.2	100	02/21/17 18:04	
Hexachlorobenzene	ug/L	<5.7	50.0	02/21/17 18:04	
Hexachloroethane	ug/L	<14.8	50.0	02/21/17 18:04	
Nitrobenzene	ug/L	<10.3	50.0	02/21/17 18:04	
Pentachlorophenol	ug/L	<7.5	100	02/21/17 18:04	
Pyridine	ug/L	<14.6	50.0	02/21/17 18:04	
2,4,6-Tribromophenol (S)	%	106	42-140	02/21/17 18:04	
2-Fluorobiphenyl (S)	%	91	41-130	02/21/17 18:04	
Nitrobenzene-d5 (S)	%	91	43-130	02/21/17 18:04	
Phenol-d6 (S)	%	32	15-130	02/21/17 18:04	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING

Pace Project No.: 40145698

LABORATORY CONTROL SAMPLE: 1469375

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	50	35.3	71	42-130	
2,4,5-Trichlorophenol	ug/L	50	48.4	97	70-130	
2,4,6-Trichlorophenol	ug/L	50	51.2	102	70-130	
2,4-Dinitrotoluene	ug/L	50	56.8	114	70-130	
2-Methylphenol(o-Cresol)	ug/L	50	36.5	73	57-130	
3&4-Methylphenol(m&p Cresol)	ug/L	50	31.8	64	47-130	
Hexachloro-1,3-butadiene	ug/L	50	37.0	74	46-130	
Hexachlorobenzene	ug/L	50	45.6	91	70-130	
Hexachloroethane	ug/L	50	36.2	72	37-130	
Nitrobenzene	ug/L	50	44.2	88	62-130	
Pentachlorophenol	ug/L	50	43.4	87	50-130	
Pyridine	ug/L	50	17.3	35	10-130	
2,4,6-Tribromophenol (S)	%			118	42-140	
2-Fluorobiphenyl (S)	%			90	41-130	
Nitrobenzene-d5 (S)	%			91	43-130	
Phenol-d6 (S)	%			36	15-130	

MATRIX SPIKE SAMPLE: 1469376

Parameter	Units	40145714001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	<0.019 mg/L	250	152	61	26-130	
2,4,5-Trichlorophenol	ug/L	<0.0076 mg/L	250	283	113	55-130	
2,4,6-Trichlorophenol	ug/L	<0.011 mg/L	250	294	117	56-130	
2,4-Dinitrotoluene	ug/L	<0.010 mg/L	250	322	129	69-130	
2-Methylphenol(o-Cresol)	ug/L	<0.0096 mg/L	250	192	77	40-130	
3&4-Methylphenol(m&p Cresol)	ug/L	<0.013 mg/L	250	175	70	35-130	
Hexachloro-1,3-butadiene	ug/L	<0.018 mg/L	250	183	73	45-130	
Hexachlorobenzene	ug/L	<0.0057 mg/L	250	247	99	70-130	
Hexachloroethane	ug/L	<0.015 mg/L	250	157	63	34-130	
Nitrobenzene	ug/L	<0.010 mg/L	250	222	89	62-130	
Pentachlorophenol	ug/L	<0.0075 mg/L	250	242	97	28-138	
Pyridine	ug/L	<0.015 mg/L	250	101	40	10-130	
2,4,6-Tribromophenol (S)	%				130	42-140	
2-Fluorobiphenyl (S)	%				95	41-130	
Nitrobenzene-d5 (S)	%				94	43-130	
Phenol-d6 (S)	%				38	15-130	

MATRIX SPIKE SAMPLE: 1469377

Parameter	Units	40145632002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	<484	250	<484	66	26-130	
2,4,5-Trichlorophenol	ug/L	<191	250	237J	95	55-130	
2,4,6-Trichlorophenol	ug/L	<263	250	268J	107	56-130	
2,4-Dinitrotoluene	ug/L	<249	250	<249	93	69-130	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

MATRIX SPIKE SAMPLE: 1469377		40145632002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
2-Methylphenol(o-Cresol)	ug/L	353J	250	581J	91	40-130	
3&4-Methylphenol(m&p Cresol)	ug/L	<319	250	<319	70	35-130	
Hexachloro-1,3-butadiene	ug/L	<454	250	<454	73	45-130	
Hexachlorobenzene	ug/L	<143	250	238J	95	70-130	
Hexachloroethane	ug/L	<370	250	<370	66	34-130	
Nitrobenzene	ug/L	<256	250	<256	87	62-130	
Pentachlorophenol	ug/L	<188	250	849J	340	28-138	M6
Pyridine	ug/L	<364	250	<364	53	10-130	
2,4,6-Tribromophenol (S)	%				108	42-140	
2-Fluorobiphenyl (S)	%				88	41-130	
Nitrobenzene-d5 (S)	%				95	43-130	
Phenol-d6 (S)	%				45	15-130	

MATRIX SPIKE SAMPLE: 1469378		40145633005	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	<19.4	250	170	68	26-130	
2,4,5-Trichlorophenol	ug/L	<7.6	250	279	112	55-130	
2,4,6-Trichlorophenol	ug/L	<10.5	250	294	117	56-130	
2,4-Dinitrotoluene	ug/L	<10	250	308	123	69-130	
2-Methylphenol(o-Cresol)	ug/L	<9.6	250	194	78	40-130	
3&4-Methylphenol(m&p Cresol)	ug/L	<12.8	250	174	70	35-130	
Hexachloro-1,3-butadiene	ug/L	<18.2	250	188	75	45-130	
Hexachlorobenzene	ug/L	<5.7	250	226	90	70-130	
Hexachloroethane	ug/L	<14.8	250	169	67	34-130	
Nitrobenzene	ug/L	<10.3	250	224	90	62-130	
Pentachlorophenol	ug/L	<7.5	250	226	90	28-138	
Pyridine	ug/L	<14.6	250	130	52	10-130	
2,4,6-Tribromophenol (S)	%				113	42-140	
2-Fluorobiphenyl (S)	%				89	41-130	
Nitrobenzene-d5 (S)	%				91	43-130	
Phenol-d6 (S)	%				36	15-130	

MATRIX SPIKE SAMPLE: 1469379		40145698001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,4-Dichlorobenzene	ug/L	<19.4	250	192	77	26-130	
2,4,5-Trichlorophenol	ug/L	<7.6	250	294	118	55-130	
2,4,6-Trichlorophenol	ug/L	<10.5	250	292	117	56-130	
2,4-Dinitrotoluene	ug/L	<10	250	315	126	69-130	
2-Methylphenol(o-Cresol)	ug/L	<9.6	250	205	82	40-130	
3&4-Methylphenol(m&p Cresol)	ug/L	<12.8	250	189	76	35-130	
Hexachloro-1,3-butadiene	ug/L	<18.2	250	212	85	45-130	
Hexachlorobenzene	ug/L	<5.7	250	237	95	70-130	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING

Pace Project No.: 40145698

MATRIX SPIKE SAMPLE: 1469379		40145698001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Hexachloroethane	ug/L	<14.8	250	201	80	34-130	
Nitrobenzene	ug/L	<10.3	250	234	94	62-130	
Pentachlorophenol	ug/L	<7.5	250	231	93	28-138	
Pyridine	ug/L	<14.6	250	74.3	30	10-130	
2,4,6-Tribromophenol (S)	%				132	42-140	
2-Fluorobiphenyl (S)	%				93	41-130	
Nitrobenzene-d5 (S)	%				98	43-130	
Phenol-d6 (S)	%				38	15-130	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING

Pace Project No.: 40145698

QC Batch: 248629	Analysis Method: EPA 1010
QC Batch Method: EPA 1010	Analysis Description: 1010 Flash Point, Closed Cup
Associated Lab Samples: 40145698001	

LABORATORY CONTROL SAMPLE: 1469172

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Flashpoint	deg F		80.3			

LABORATORY CONTROL SAMPLE: 1469197

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Flashpoint	deg F		81.5			

SAMPLE DUPLICATE: 1469340

Parameter	Units	40145698001 Result	Dup Result	RPD	Max RPD	Qualifiers
Flashpoint	deg F	>210	>210			

SAMPLE DUPLICATE: 1469341

Parameter	Units	40145851001 Result	Dup Result	RPD	Max RPD	Qualifiers
Flashpoint	deg F	>210	>210			

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING

Pace Project No.: 40145698

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QC Batch:	248716	Analysis Method:	EPA 9040
QC Batch Method:	EPA 9040	Analysis Description:	9040 pH
Associated Lab Samples:	40145698001		

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SAMPLE DUPLICATE: 1469428

Parameter	Units	40145812001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.4	7.4	1	20	H6

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SAMPLE DUPLICATE: 1469429

Parameter	Units	40145792001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH	Std. Units	7.6	7.6	0	20	H6

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**QUALITY CONTROL DATA**

Project: PAPER FINES TESTING

Pace Project No.: 40145698

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QC Batch:	248737	Analysis Method:	EPA 9095
QC Batch Method:	EPA 9095	Analysis Description:	9095 PAINT FILTER LIQUID TEST
Associated Lab Samples:	40145698001		

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SAMPLE DUPLICATE: 1469502

Parameter	Units	40145766001 Result	Dup Result	RPD	Max RPD	Qualifiers
Free Liquids	no units	Pass	Pass			

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

QC Batch: 461219 Analysis Method: EPA 420.4  
QC Batch Method: EPA 420.4 Analysis Description: 420.4 Phenolics  
Associated Lab Samples: 40145698001

METHOD BLANK: 2522309 Matrix: Water  
Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phenol	ug/L	4.9J	11.3	02/24/17 13:35	

LABORATORY CONTROL SAMPLE: 2522310

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol	ug/L	250	230	92	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522311 2522312

Parameter	Units	1282794003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	ug/L	ND	250	250	32.4	5.9J	12	1	90-110		20	M3

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2522313 2522314

Parameter	Units	10379540001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	ug/L	ND	250	250	260	248	102	97	90-110	5	20	

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### QUALITY CONTROL DATA

Project: PAPER FINES TESTING

Pace Project No.: 40145698

QC Batch: 248779

Analysis Method: EPA 9012

QC Batch Method: EPA 9012A

Analysis Description: 9012 Cyanide

Associated Lab Samples: 40145698001

METHOD BLANK: 1469738

Matrix: Solid

Associated Lab Samples: 40145698001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/kg	0.17J	0.40	02/22/17 13:02	

LABORATORY CONTROL SAMPLE: 1469739

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/kg	3	3.0	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1469740 1469741

Parameter	Units	10379473001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Spike Conc.	MSD Result						
Cyanide	mg/kg	ND	3.2	3.2	2.8	3.1	80	90	80-120	10	20	

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## QUALIFIERS

Project: PAPER FINES TESTING  
Pace Project No.: 40145698

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above LOD.  
J - Estimated concentration at or above the LOD and below the LOQ.  
LOD - Limit of Detection adjusted for dilution factor and percent moisture.  
LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-G Pace Analytical Services - Green Bay  
PASI-M Pace Analytical Services - Minneapolis

### WORKORDER QUALIFIERS

WO: 40145698  
[1] 420.4 Phenols was performed using the TCLP Leach.

### SAMPLE QUALIFIERS

Sample: 40145698001  
[1] Sample container used for ZHE had headspace

### ANALYTE QUALIFIERS

1q Due to the sample matrix, DI water was added to this sample on a one to one basis and the sample was stirred before analysis.  
B Analyte was detected in the associated method blank.  
H6 Analysis initiated outside of the 15 minute EPA required holding time.  
M3 Matrix spike recovery was outside laboratory control limits due to matrix interferences.  
M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.  
P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PAPER FINES TESTING

Pace Project No.: 40145698

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40145698001	PAPER FINES	EPA 3541	248480	EPA 8082	248482
40145698001	PAPER FINES	EPA 3010	248763	EPA 6010	248822
40145698001	PAPER FINES	EPA 7470	248920	EPA 7470	248972
40145698001	PAPER FINES	EPA 3510	248695	EPA 8270	248770
40145698001	PAPER FINES	EPA 8260	248719		
40145698001	PAPER FINES	ASTM D2974-87	248423		
40145698001	PAPER FINES	EPA 1010	248629		
40145698001	PAPER FINES	EPA 9040	248716		
40145698001	PAPER FINES	EPA 9095	248737		
40145698001	PAPER FINES	EPA 420.4	461219	EPA 420.4	461376
40145698001	PAPER FINES	EPA 9012A	248779	EPA 9012	248841

### REPORT OF LABORATORY ANALYSIS

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without the written consent of Pace Analytical Services, LLC.



Sample Condition Upon Receipt

Pace Analytical Services, Inc.  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302



Project # **WO# : 40145698**

Client Name: Veolia



Courier:  Fed Ex  UPS  Client  Pace Other: \_\_\_\_\_

Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used SR169 Type of Ice: Wet Blue Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 25 /Corr: 25 Biological Tissue is Frozen:  yes  no

Temp Blank Present:  yes  no  no

Person examining contents:  
Date: 2/15/17  
Initials: [Signature]

Temp should be above freezing to 6°C for all sample except Biota.  
Frozen Biota Samples should be received ≤ 0°C.

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. no collect time
-Includes date/time/ID/Analysis Matrix: <u>5</u>		<u>2/15/17</u>
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> NaOH <input type="checkbox"/> NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lab Std #/ID of preservative
		Date/Time:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review: [Signature] Date: 2/15/17

## Analytical Report

Cindy Varga  
Pace Analytical Services, Inc.  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

February 21, 2017

Work Order: 17B0590

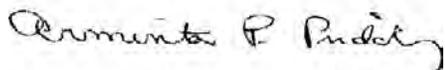
RE: Green Bay  
Paper Fines Testing / 40145698

Dear Cindy Varga:

Enclosed are the analytical reports for the EMT Work Order listed. Also included with this analytical report is a copy of the chain of custody associated with these samples. If you have any questions, please contact me.

Sincerely,

Approved by,



Arminta Priddy  
Project Manager  
847.967.6666  
apriddy@emt.com

Approved for release: 2/21/2017 4:03:09PM



Matthew Gregory  
Technical Manager

The contents of this report apply to the sample(s) analyzed. No duplication is allowed except in its entirety. Detection and Reporting limits are adjusted for sample size used, dilutions and moisture content, if applicable.

State of Wisconsin Dept of Natural Resources, Cert No. 999888890

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Chain of Custody	10

### Sample Summary

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
PAPER FINES	17B0590-01	Solid	02/15/17 11:30	02/16/17 09:30

## Case Narrative

**Client:** Pace Analytical Services, Inc.  
**Project:** Green Bay  
Paper Fines Testing / 40145698  
**Work Order:** 17B0590

**Date:** 02/21/2017

---

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

Sample results only relate to the sample(s) received at the laboratory and analytes of interest tested.

**Work Order: 17B0590**

The samples were received on 02/16/17 09:30. The samples arrived in good condition and properly preserved. The temperature of the cooler at receipt was

<u>Cooler</u>	<u>Temp C°</u>
Default Cooler	3.3

Refer to Qualifiers and Definitions for quality and analytical clarifications or deviations.

WET Chemistry

Method 2540G\_TS%, 17B0590-01: Analysis was performed by Pace so no associated qc results.

### Client Sample Results

**Client:** Pace Analytical Services, Inc.  
**Project:** Green Bay  
 Paper Fines Testing / 40145698  
**Work Order:** 17B0590

**Client Sample ID:** PAPER FINES  
**Report Date:** 02/21/2017  
**Collection Date:** 02/15/2017 11:30  
**Matrix:** Solid  
**Lab ID:** 17B0590-01

Analyses	Result	EMT Reporting		Qual	Units	MDL	Date/Time Analyzed	Batch	Analyst	DF
		Limit								
<b>Wet Chemistry</b>										
Method: SM2540G										
Total Solids	68.5	0.100			% (Percent)	0.00700	02/20/17 13:26	B7B0680	MLB	1
Method: SW9030B/SW9034/SM4500-S2 F										
Sulfide, total	23.0	29.2	J		mg/Kg dry	4.96	02/21/17 14:42	B7B0732	SK2	1

## Dates Report

**Client:** Pace Analytical Services, Inc.  
**Project:** Green Bay  
 Paper Fines Testing / 40145698  
**Work Order:** 17B0590

**Report Date:** 02/21/2017

Sample ID	Client Sample ID	Collection	Matrix	Test Name	Leached Prep Date	Prep Date	Analysis Date	Batch ID	Sequence
17B0590-01	PAPER FINES	02/15/17	Solid	Total Solids / Percent Moisture		02/20/17 13:25	02/20/17 13:26	B7B0680	
				Sulfide (S2), Total		02/21/17 11:00	02/21/17 14:42	B7B0732	

### Quality Control

**Client:** Pace Analytical Services, Inc.  
**Project:** Green Bay  
 Paper Fines Testing / 40145698  
**Work Order:** 17B0590

**Report Date:** 02/21/2017  
**Matrix:** Solid

### Wet Chemistry

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qual	DF
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**Batch: B7B0732**

**Blank (B7B0732-BLK1)**

*Prepared: 02/21/2017 11:00 Analyzed: 02/21/2017 14:42*

Sulfide, total	< 3.40	20.0	mg/Kg wet								1
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**LCS (B7B0732-BS1)**

*Prepared: 02/21/2017 11:00 Analyzed: 02/21/2017 14:42*

Sulfide, total	163	20.0	mg/Kg wet	175.2		93.2	80-120				1
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**Duplicate (B7B0732-DUP1)**

**Source: 17B0590-01**

*Prepared: 02/21/2017 11:00 Analyzed: 02/21/2017 14:42*

Sulfide, total	23.0	29.2	mg/Kg dry		23.0			0.00	14.1	J	1
----------------	------	------	-----------	--	------	--	--	------	------	---	---

**Certified Analyses included in this Report**

Analyte	CAS #	Certifications
<b>SM2540G in Solid</b>		
Total Solids	Moist	WDNR
<b>SW9030B/SW9034/SM4500-S2 F in Solid</b>		
Sulfide, total	18496-25-8	DoD, ILEPA, WDNR

**List of Certifications**

Code	Description	Number	Expires
AKDEC	State of Alaska, Dept. Environmental Conservation	UST-105	07/16/2017
CPSC	US Consumer Product Safety Commission, Accredited by PJLA Lab No. 1050	L14-56	04/30/2018
DoD	Department of Defense, Accredited by PJLA	L14-55	04/30/2018
ILEPA	State of Illinois, NELAP Accredited Lab No. 100256	003674	07/27/2017
ISO	ISO/IEC 17025, Accredited by PJLA	L14-56	04/30/2018
LELAP	State of Louisiana, NELAP Accredited Lab No. 171344	05015	06/30/2017
WDNR	State of Wisconsin Dept of Natural Resources	999888890	08/31/2017

### Qualifiers and Definitions

Item	Description
J	Estimated Value
%Rec	Percent Recovery



Attachment 2

Special Waste Management Plan: Analytical/Acceptance Protocol G  
– Auto Shredder Fluff

**Brown County South Landfill**  
**Analytical Protocol/Acceptance Criteria**  
**Protocol G**

Testing protocols for auto shredder fluff.

<b>Analytical Parameter</b>	<b>Acceptance Criteria</b>
TCLP metals	
cadmium	TCLP <1.0 mg/L
lead	TCLP <5.0 mg/L
mercury	TCLP <0.2 mg/L
PCB (Arochlor 1216, 1221, 1232, 1242, 1249, 1254, 1260)	<50mg/kg
ASTM Water Leach or TCLP PCBs	Not Applicable

Note: Physical testing of materials to be considered for use as ADC or other beneficial uses will be required. Meeting the minimum testing requirements does not relieve the generator of the responsibility to determine whether their waste is hazardous. Brown County reserves the right to request additional information in order to evaluate the waste stream for disposal.

Testing requirements summary:

- Perform testing on a semi-annual basis, according to the methods listed in the WDNR publication PUB-WA-1699 2014, Condition 16. Specifically, ten samples of each source of ASR shall be collected over a five-day period. Each sample shall be obtained by removing a shovel full of fluff from the conveyor once an hour for a four-hour period in the morning and then again for another four-hour period in the afternoon for a typical 8-hour production cycle. If the production cycle is typically less than 8-hours, then sampling should consist of a minimum of 3 hours of production. Each day's sampling shall be composited into a single sample. The resulting daily sample shall be coned and quartered until 10 gallons of fluff remain. Each 10-gallon sample shall be coned and quartered into two five-gallon samples. The samples shall be stored in sealed containers made of inert material until they are analyzed in a laboratory.
- Three samples for each testing round will need to be randomly selected and analyzed for TCLP lead, cadmium, and mercury, as well as total PCBs. If any of the samples are above a regulatory/acceptance limit, then the seven additional collected samples need to be analyzed for the exceeding parameter. The

results from the analyzed samples are to be averaged to determine the test result for each sampling event. If the average result of the sampling event exceeds the regulatory/acceptance limit, additional sampling must be performed immediately under the same protocol for the exceeding parameter.

- A rolling average from the last 5 sampling events needs to be reported and compared to the regulatory limit. If the rolling average exceeds 80% of the regulatory limit, then the material is not acceptable.
- On an annual basis, one sample of auto shredder fluff from each source shall be subject to the ASTM D 3987-85 water leach test and the leaching fluid shall be analyzed for dissolved PCBs using an analytical method with a level of detection <10 micrograms per liter. TCLP PCB analysis may be used in place of the water leach test.

Attachment 3  
Boiler/Fly Ash Sources



**Outagamie County Recycling & Solid Waste  
Brown Outagamie Winnebago Counties  
SPECIAL WASTE DISPOSAL APPLICATION**

**A. Generator Information**

Name Expera Specialty Solutions  
 Contact Person Tom Emord  
 Email Address tom.emord@expera.com  
 Phone Number 715-369-4160  
 Site Address (where material is generated)  
515 West Davenport St.  
Rhinelanders, WI 54501

**B. Billing Information**

*(In order to be billed, you must fill out a credit application)*

Name Expera Specialty Solutions LLC  
 Contact Person Iola Van Oss  
 Email Address iola.vanoss@expera.com  
 Phone 920-766-8608  
 Fax Number \_\_\_\_\_  
 Billing Address \_\_\_\_\_  
Accounts Payable  
P.O. Box 600  
Kaukauna, WI 54130

**C. Consultant Information**

Name \_\_\_\_\_  
 Contact Person \_\_\_\_\_  
 Email Address NA  
 Phone Number \_\_\_\_\_  
 Fax Number \_\_\_\_\_  
 Address \_\_\_\_\_

**D. Hauler Information**

Name \_\_\_\_\_  
 Contact Person \_\_\_\_\_  
 Phone Number TBD  
 Address \_\_\_\_\_

**E. Waste Information**

Waste Name Flyash  
 Process Used to Generate Waste coal combustion  
 Waste Category Number A  
 Total Anticipated Waste Volume (include units) 700 tons/mo  
 Frequency of Disposal 5 days/week; 7 mos/yr  
 Name of Lab Performing Analysis NLS  
 Date of Most Recent Analysis 2018  
 Physical State @ 25°C solid  
 Color black/gray Odor none  
 Comments \_\_\_\_\_

\*For all waste types, attach available pertinent documents, MSDSs, technical bulletins, etc. List attachments here:

Lab reports

**F. Generator Warranty**

The generator warrants, represents, and certifies that this waste is not hazardous waste as specified by NR600 or 40CFR261, that his material does not contain more than 50 ppm of PCB materials, and that this information is representative of the waste.

Tom Emord Env. Mgr 8/16/18  
 Generator's Signature Title Date

**Instructions:**

For Category A, B, and, C Wastes: Complete Section I

For Category D Wastes: Complete Section II

For Category E Wastes: Complete Section III

Outagamie County Internal Use Only:

- BC Customer
- OC Customer
- WC Customer

For Category A, B, and C Wastes, complete the following and attach laboratory report:

**Analytical Information**

Parameter	Acceptance Level (mg/l)	Lab Result
% Solids	≥ 40% (A&B) ≥ 20% (C)	> 80%
% Free Liquids (paint filter test)	0%	0%
Flash Point	> 140°F	> 220
pH	2.0 ≤ pH ≤ 12.5	9.2
Total available sulfide	< 500 mg/kg	ND
Total available cyanide	< 250 mg/kg	ND
Arsenic	< 5.0	ND
Barium	< 100.0	0.22
Cadmium	< 1.0	0.005
Chromium	< 5.0	ND
Lead	< 5.0	ND
Mercury	< 0.2	ND
Selenium	< 1.0	ND
Silver	< 5.0	ND
% Chlorine	< 1%	< 0.1
Phenol	< 2000	NA
Benzene	< 0.5	ND
Carbon tetrachloride	< 0.5	ND
Chlorobenzene	< 100.0	ND
Chloroform	< 6.0	ND
Cresol	< 200.0	ND
1,4-Dichlorobenzene	< 7.5	ND
1,2-Dichloroethane	< 0.5	ND
1,1-Dichloroethylene	< 0.7	ND
2,4-Dinitrotoluene	< 0.3	ND
Hexachlorobenzene	< 0.13	ND
Hexachlorobutadiene	< 0.5	ND
Hexachloroethane	< 3.0	ND
Methyl ethyl ketone	< 200.0	ND
Nitrobenzene	< 2.0	ND
Pentachlorophenol	< 100.0	ND
Pyridine	< 5.0	ND
Tetrachloroethylene	< 0.7	ND
Trichloroethylene	< 0.5	ND
2,4,5-Trichlorophenol	< 400.0	ND
2,4,6-Trichlorophenol	< 2.0	ND
Vinyl Chloride	< 0.2	ND

For Category B and C Wastes, complete the following and attach laboratory report:

PCB (Arochlor 1016, 1221, 1232, 1242, 1248, 1254, 1260)

For Category D Wastes, complete the following and attach laboratory report:

**Analytical Information**

Parameter	Acceptance Level	Lab Result
a. All Soils		
Lead	Total < 100 mg/kg or TCLP < 5 mg/l	
b. Gasoline or Diesel		
(analyze all parameters in a., plus the following):		
DRO	< 2000 ppm	
or GRO	< 2000 ppm	
Benzene	Total < 10 mg/kg Or TCLP < 0.5 mg/l	
c. Waste Oil or Unknown Petroleum Waste		
(analyze all parameters in a., plus the following):		
DRO	< 2000 ppm	
or GRO	< 2000 ppm	
Cadmium	Total < 20 mg/kg Or TCLP < 1 m	

For Category E Wastes, complete the following and attach laboratory report:

**Analytical Information**

Parameter	Acceptance Level (m)	Lab Result
pH	2.0 ≤ pH ≤ 12.5	
% Solids	≥ 20%	
% Free liquids	0%	
TCLP metals		
Arsenic	< 5.0	
Barium	< 100.0	
Cadmium	< 1.0	
Chromium	< 5.0	
Lead	< 5.0	
Mercury	< 0.2	
Selenium	< 1.0	
Silver	< 5.0	
Total available sulfide	< 500 mg/kg	

For Category F Wastes, include the following information and attach MSDS(s), technical bulletin(s), or other pertinent information regarding the waste stream. Indicate the waste type, the source of the waste stream, the reason for disposal, the physical state of the material, and describe the process from which the waste was generated.

# ANALYTICAL REPORT

Client: Expera Specialty Solutions (Rhinelander)  
 Attn: Tom Emond  
 515 West Davenport Street  
 Rhinelander, WI 54501 3300

NLS Project: 302347

NLS Customer: 29247

Fax: 715 369 4293 Phone: 715 369 4160

PO # 6249687 OS

Project: Fly Ash

**Fly Ash NLS ID: 1064005**

COC: 212785:1 Matrix: MS  
 Collected: 06/26/18 13:20 Received: 06/27/18

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
TCLP Extraction	yes					07/09/18	SW846 1311	721026460
TCLP Zero Head Space Extraction	yes					07/09/18	SW846 1311	721026460

**TCLP Fly Ash NLS ID: 1064006**

COC: 212785:1 Matrix: EX  
 Collected: 07/10/18 08:30 Received: 07/10/18

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Arsenic, tot. recoverable on extract as As by ICP	ND	ug/L	10	49*	160*	07/12/18	SW846 6010	721026460
Barium, tot. recoverable on extract as Ba by ICP	220	ug/L	10	12*	40*	07/12/18	SW846 6010	721026460
Cadmium, tot. recoverable on extract as Cd by ICP	(5.4)	ug/L	10	1.9	6.1	07/12/18	SW846 6010	721026460
Chromium, tot. recoverable on extract as Cr by ICP	ND	ug/L	10	8.3	28	07/12/18	SW846 6010	721026460
Lead, tot. recoverable on extract as Pb by ICP	ND	ug/L	10	43	140	07/12/18	SW846 6010	721026460
Mercury by CVAA	ND	ug/L	1	0.47	1.5	07/14/18	EPA 245.1, Rev 3	721026460
Selenium, tot. recoverable on extract as Se by ICP	ND	ug/L	10	120	400	07/12/18	SW846 6010	721026460
Silver, tot. recoverable on extract as Ag by ICP	ND	ug/L	10	8.1	27	07/12/18	SW846 6010	721026460
Metals digestion - tot. recov.ICP	yes					07/11/18	SW846 3005M	721026460
TCLP VOC by EPA Method 8260B	see attached					07/10/18	SW846 8260	721026460
Organics Extraction (TCLP) Pest/PCB	yes					07/12/18	SW846 3500	721026460
Organics Extraction (Herbicides)	yes					07/13/18	SW846 8151	632021390
Acid/Base Extraction for GC/MS	yes					07/17/18	SW846 3510C	721026460
Semi-Volatiles TCLP by EPA Method 8270C	see attached					07/27/18	SW846 8270	721026460
TCLP Pesticides	see attached					07/19/18	SW846 8081	721026460
TCLP Herbicides	see attached					07/31/18	SW846 8151A	632021390

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(\*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution and/or solids content.

ND = Not Detected (< LOD)    LOD = Limit of Detection    LOQ = Limit of Quantitation    NA = Not Applicable  
 DWB = Dry Weight Basis    %DWB = (mg/kg DWB) / 10000    1000 ug/L = 1 mg/L  
 MCL = Maximum Contaminant Levels for Drinking Water Samples.    Shaded results indicate >MCL.

Reviewed by:



Authorized by:  
 R. T. Krueger  
 President

**ANALYTICAL RESULTS: TCLP Organochlorine Pesticides by GC**

Customer: Expera Specialty Solutions (Rhineland)

NLS Project: 302347 PO # 6249687 OS

Project Description: Fly Ash

Project Title:

Temperature: OCTCLPW Printed: 08/14/2

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	Note
Gamma-BHC	ND	u /L	1	0.0018	0.0058	
Chlordane	ND	u /L	1	0.013	0.043	
Endrin	ND	u /L	1	0.0017	0.0058	
He tachlor	ND	u /L	1	0.0019	0.0063	
He tachlor E xide	ND	u /L	1	0.0020	0.0066	
Metho chlor	ND	u /L	1	0.0033	0.011	
Toxa hene	ND	u /L	1	0.18	0.58	
DBC SURR	90%		1			S

**NOTES APPLICABLE TO THIS ANALYSIS:**

S = This compound is a surrogate used to evaluate the quality control of a method.

**ANALYTICAL RESULTS: VOC's by P&T/GCMS - TCLP - (VarSat3)**

Customer: Expera Specialty Solutions (Rhineland)

NLS Project: 302347 PO # 6249687 OS

Project Description: Fly Ash

Project Title:

Temperature: SAT3TC P Printed: 8/4/2018 17:0

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	Note
Benzene	ND	u/L	1	0.19	0.69	
Carbon Tetrachloride	ND	u/L	1	0.19	0.66	
Chlorobenzene	ND	u/L	1	0.16	0.56	
Chloroform	ND	u/L	1	0.17	0.60	
1,4-Dichlorobenzene	ND	u/L	1	0.21	0.76	
1,2-Dichloroethane	ND	u/L	1	0.19	0.69	
1,1-Dichloroethene	ND	u/L	1	0.16	0.57	
Tetrachloroethene	ND	u/L	1	0.17	0.58	
Trichloroethene	ND	u/L	1	0.24	0.84	
Vinyl chloride	ND	u/L	1	0.16	0.57	
Methyl ethyl ketone	ND	u/L	1	0.50	1.8	
Dibromofluoromethane SURR	99%		1			S
Toluene-d8 SURR	103%		1			S
1-Bromo-4-Fluorobenzene SURR	106%		1			S

**NOTES APPLICABLE TO THIS ANALYSIS:**

S = This compound is a surrogate used to evaluate the quality control of a method.

**ANALYTICAL RESULTS: Semi-Volatile Organic TCLP Compounds by GC/MS**

Customer: Expera Specialty Solutions (Rhineland) NLS Project: 302347 PO # 6249687 OS

Project Description: Fly Ash

Project Title:

Temperature: SVTCLP Period: 08/1

ANALYTE NAME	RESULT	UNITS	DIL	LOD	LOQ	Note
Acridine	ND	u/L	2	1.0	3.3	
2-Methylphenol o-Cresol	ND	u/L	2	1.8	6.9	
3 & 4-Methylphenol m/ -Cresol	ND	u/L	2	3.1	10	
Nitrobenzene	ND	u/L	2	1.2	4.0	
1,4-Dichlorobenzene	ND	u/L	2	1.8	6.1	
2,4,6-Trichlorophenol	ND	u/L	2	1.4	4.8	
2,4,5-Trichlorophenol	ND	u/L	2	1.8	5.9	
2,4-Dinitrotoluene	ND	u/L	2	1.9	6.4	
Hexachlorobutadiene	ND	u/L	2	1.1	3.5	
Hexachloroethane	ND	u/L	2	2.3	7.6	
Hexachlorobenzene	ND	u/L	2	1.4	4.6	
Pentachlorophenol	ND	u/L	2	2.3	7.4	
2-Fluorophenol SURR	41%		2			S
Phenol-d5 SURR	26%		2			S
Nitrobenzene-d5 SURR	75%		2			S
2-Fluorobiphenyl SURR	77%		2			S
2,4,6-Tribromophenol SURR	103%		2			S
Tetraphenyl-d14 SURR	66%		2			S

**NOTES APPLICABLE TO THIS ANALYSIS:**

S = This compound is a surrogate used to evaluate the quality control of a method.

HX = A dilution was required due to complex sample matrix.

IV = Initial extract is 500 mL.

**ANALYTICAL RESULTS: Chlorinated Herbicides by EPA 8151**

**Customer: Expera Specialty Solutions (Rhineland)**

**NLS Project: 302347 PO # 6249687 OS**

**Project Description: Fly Ash**

**Project Title:**

**Sample ID: DAV8151S Printed: 0**

<b>ANALYTE NAME</b>	<b>RESULT</b>	<b>UNITS</b>	<b>DIL</b>	<b>LOD</b>	<b>LOQ</b>	<b>Note</b>
2,4-D	ND	u /L	200	10	34	
2,4,5-TP Silvex	ND	u /L	200	4.0	16	
DCAA SURR	80.2%		1			S

**NOTES APPLICABLE TO THIS ANALYSIS:**

S = This compound is a surrogate used to evaluate the quality control of a method.

**SAMPLE COLLECTION AND CHAIN OF CUSTODY RECORD**

**NORTHERN LAKE SERVICE, INC.**

Analytical Laboratory and Environmental Services

400 North Lake Avenue • Crandon, WI 54520-1298

Tel: (715) 478-2777 • Fax: (715) 478-3060

CLIENT  
 ADD 5  
 CITY hin  
 STATE WI  
 ZIP  
 PROJECT DESCRIPTION / NO.  
 DN FID  
 ACT  
 PU 2018  
 ORDER NO. *awinar*  
 PHONE 15-369-174  
 FAX

Wisconsin DNR cert ID  
 721026460 (Cran) / 268533760 (Wauk)  
 Wisconsin DATCP ID  
 105-000330 (Cran) / 105-000479 (Wauk)

MATRIX:  
 SW = surface water  
 WW = waste water  
 GW = groundwater  
 DW = drinking water  
 TIS = tissue  
 AIR = air  
 SOIL = soil  
 SED = sediment  
 PROD = product  
 SL = sludge  
 OTHER

USE  
 Indicate Y or I if GW Sample is field filtered.  
 Indicate G or C if WW Sample is Grab or Composite.

ANALYZE PER ORDER OF ANALYSIS

CLP Metals  
 CLP BNAs  
 CLP VOCs  
 Pest Herbi.



NO. 212785

COLLECTION REMARKS  
 (i.e. DNR Well ID #)

ITEM NO.	SAMPLE ID	ME	MATRIX (See above)
1.		6 26	1:15 m other
2.	sh	6 26	: 20 Other
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			

NE SAND BE...

BY  
 RELINQUISHED BY (signature)  
 DISPATCHED BY (signature)  
 AT LS

CUSTODY SEAL NO. (IF ANY)  
 RECEIVED BY (signature)  
 METHOD OF TRANSPORT

DATE/TIME  
 REPORT TO  
 2 1:15  
 TE/TIME

DATE/TIME  
 INVOICE TO

NP = no preservative  
 S = sulfuric acid  
 N = nitric acid  
 Z = zinc acetate  
 M = methanol  
 OH = sodium hydroxide  
 HA = hydrochloric & ascorbic acid  
 H = hydrochloric acid  
 WDNR FACILITY NUMBER  
 E-MAIL ADDRESS  
 la.chouinard.com

1. TO MEET REGULATORY REQUIREMENTS, THIS FORM MUST BE COMPLETED IN DETAIL AND INCLUDED IN THE COOLER CONTAINING THE SAMPLES DESCRIBED.
2. PLEASE USE ONE LINE PER SAMPLE, NOT PER BOTTLE.
3. RETURN THIS FORM WITH SAMPLES - CLIENT MAY KEEP YELLOW COPY.
4. PARTIES COLLECTING SAMPLE, LISTED AS REPORT TO AND LISTED AS INVOICE TO AGREE TO STANDARD TERMS & CONDITIONS ON REVERSE.

ORIGINAL COPY

Waste Management - Antigo  
1715 Deleglise  
Antigo, WI 54409

Project: Wausau Mosinee Paper  
Project Number: MW61373  
Project Manager: Marie Jaszewski

Lab ID: BQB0103  
Reported: 02/23/07 16:04

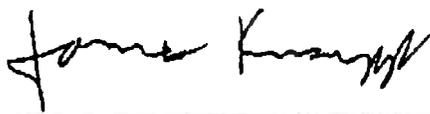
**General Chemistry**  
**TestAmerica - Buffalo Grove, IL**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Flyash 61373 (BQB0103-01) Waste (S)    Sampled: 02/15/07 00:00    Received: 02/16/07 09:08									
Percent Chlorine	ND	0.100	%	1	7020342	02/23/07	02/23/07	ASTMD808 <sup>^</sup>	
Flashpoint	>220 °F		°F	"	7020340	02/23/07	02/23/07	ASTM D92-85	
Free Liquid	No sample flowed.		N/A	"	7020294	02/21/07	02/21/07	9095A	
pH	3.31		pH Units	"	7020290	02/21/07	02/21/07	EPA 9045C	G26
Reactive Cyanide	ND	0.130	mg/kg wet	"	7020218	02/16/07	02/19/07	EPA 9014 Ch 7	G33
Reactive Sulfide	ND	6.50	"	"	7020219	02/16/07	02/16/07	EPA 9034 Ch 7	G33
Total Solids	99.9	0.100	% by Weight	"	7020319	02/22/07	02/23/07	EPA 160.3 <sup>^^</sup>	G25
Specific Gravity	1.48		g/ml	"	7020341	02/23/07	02/23/07	ASTM D854-83 <sup>^^</sup>	

TestAmerica - Buffalo Grove, IL

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*

Reviewed &  
Approved by:



Jim Knapp

April 20, 2019

David Bender  
WI DoA, Div of Facilities Development  
101 East Wilson St  
P.O Box 7866  
Madison, WI 53707

RE: Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

Dear David Bender:

Enclosed are the analytical results for sample(s) received by the laboratory on April 10, 2019. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Christopher Hyska  
christopher.hyska@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Jerome Jansen, WI Department of Administration



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

---

### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601  
ANAB DOD-ELAP Rad Accreditation #: L2417  
Alabama Certification #: 41590  
Arizona Certification #: AZ0734  
Arkansas Certification  
California Certification #: 04222CA  
Colorado Certification #: PA01547  
Connecticut Certification #: PH-0694  
Delaware Certification  
EPA Region 4 DW Rad  
Florida/TNI Certification #: E87683  
Georgia Certification #: C040  
Florida: Cert E871149 SEKS WET  
Guam Certification  
Hawaii Certification  
Idaho Certification  
Illinois Certification  
Indiana Certification  
Iowa Certification #: 391  
Kansas/TNI Certification #: E-10358  
Kentucky Certification #: KY90133  
KY WW Permit #: KY0098221  
KY WW Permit #: KY0000221  
Louisiana DHH/TNI Certification #: LA180012  
Louisiana DEQ/TNI Certification #: 4086  
Maine Certification #: 2017020  
Maryland Certification #: 308  
Massachusetts Certification #: M-PA1457  
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235  
Montana Certification #: Cert0082  
Nebraska Certification #: NE-OS-29-14  
Nevada Certification #: PA014572018-1  
New Hampshire/TNI Certification #: 297617  
New Jersey/TNI Certification #: PA051  
New Mexico Certification #: PA01457  
New York/TNI Certification #: 10888  
North Carolina Certification #: 42706  
North Dakota Certification #: R-190  
Ohio EPA Rad Approval: #41249  
Oregon/TNI Certification #: PA200002-010  
Pennsylvania/TNI Certification #: 65-00282  
Puerto Rico Certification #: PA01457  
Rhode Island Certification #: 65-00282  
South Dakota Certification  
Tennessee Certification #: 02867  
Texas/TNI Certification #: T104704188-17-3  
Utah/TNI Certification #: PA014572017-9  
USDA Soil Permit #: P330-17-00091  
Vermont Dept. of Health: ID# VT-0282  
Virgin Island/PADEP Certification  
Virginia/VELAP Certification #: 9526  
Washington Certification #: C868  
West Virginia DEP Certification #: 143  
West Virginia DHHR Certification #: 9964C  
Wisconsin Approve List for Rad  
Wyoming Certification #: 8TMS-L

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804  
Florida/NELAP Certification #: E87648  
Massachusetts Certification #: M-NC030  
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40  
South Carolina Certification #: 99030001  
Virginia/VELAP Certification #: 460222

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40185584001	Coal Ash	Solid	04/09/19 09:00	04/10/19 10:50

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40185584001	Coal Ash	EPA 6010	TXW	7	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 8270	RJN	17	PASI-G
		EPA 8260	LAP	13	PASI-G
		ASTM D2974-87	JAK	1	PASI-G
		EPA 1010	DEY	1	PASI-G
		EPA 9045	ALY	1	PASI-G
		EPA 9076	CEH	1	PASI-A
		EPA 9095	DEY	1	PASI-G
		EPA 9014	PAS	1	PASI-PA
		SM 4500S2F-00	PAS	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

**Sample: Coal Ash**      **Lab ID: 40185584001**      Collected: 04/09/19 09:00      Received: 04/10/19 10:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP, TCLP</b>									
Analytical Method: EPA 6010    Preparation Method: EPA 3010									
Leachate Method/Date: EPA 1311; 04/15/19 13:36									
Arsenic	<0.042	mg/L	0.12	0.042	1	04/17/19 13:43	04/19/19 10:40	7440-38-2	
Barium	0.60	mg/L	0.075	0.025	1	04/17/19 13:43	04/19/19 10:40	7440-39-3	
Cadmium	0.073	mg/L	0.025	0.0066	1	04/17/19 13:43	04/19/19 10:40	7440-43-9	
Chromium	0.17	mg/L	0.050	0.013	1	04/17/19 13:43	04/19/19 10:40	7440-47-3	1q
Lead	1.0	mg/L	0.098	0.030	1	04/17/19 13:43	04/19/19 10:40	7439-92-1	
Selenium	<0.061	mg/L	0.25	0.061	1	04/17/19 13:43	04/19/19 10:40	7782-49-2	
Silver	<0.017	mg/L	0.050	0.017	1	04/17/19 13:43	04/19/19 10:40	7440-22-4	
<b>7470 Mercury, TCLP</b>									
Analytical Method: EPA 7470    Preparation Method: EPA 7470									
Leachate Method/Date: EPA 1311; 04/15/19 13:36									
Mercury	<0.000084	mg/L	0.00028	0.000084	1	04/16/19 12:00	04/17/19 11:13	7439-97-6	
<b>8270 MSSV TCLP Sep Funnel</b>									
Analytical Method: EPA 8270    Preparation Method: EPA 3510									
Leachate Method/Date: EPA 1311; 04/15/19 13:36									
1,4-Dichlorobenzene	<0.019	mg/L	0.062	0.019	1	04/17/19 07:40	04/18/19 14:47	106-46-7	
2,4-Dinitrotoluene	<0.0079	mg/L	0.026	0.0079	1	04/17/19 07:40	04/18/19 14:47	121-14-2	
Hexachloro-1,3-butadiene	<0.025	mg/L	0.082	0.025	1	04/17/19 07:40	04/18/19 14:47	87-68-3	
Hexachlorobenzene	<0.017	mg/L	0.056	0.017	1	04/17/19 07:40	04/18/19 14:47	118-74-1	
Hexachloroethane	<0.027	mg/L	0.089	0.027	1	04/17/19 07:40	04/18/19 14:47	67-72-1	
2-Methylphenol(o-Cresol)	<0.0087	mg/L	0.029	0.0087	1	04/17/19 07:40	04/18/19 14:47	95-48-7	
3&4-Methylphenol(m&p Cresol)	<0.016	mg/L	0.052	0.016	1	04/17/19 07:40	04/18/19 14:47		
Nitrobenzene	<0.015	mg/L	0.048	0.015	1	04/17/19 07:40	04/18/19 14:47	98-95-3	
Pentachlorophenol	<0.014	mg/L	0.048	0.014	1	04/17/19 07:40	04/18/19 14:47	87-86-5	
Phenol	<0.0060	mg/L	0.020	0.0060	1	04/17/19 07:40	04/18/19 14:47	108-95-2	
Pyridine	<0.018	mg/L	0.060	0.018	1	04/17/19 07:40	04/18/19 14:47	110-86-1	
2,4,5-Trichlorophenol	<0.0084	mg/L	0.028	0.0084	1	04/17/19 07:40	04/18/19 14:47	95-95-4	
2,4,6-Trichlorophenol	<0.021	mg/L	0.070	0.021	1	04/17/19 07:40	04/18/19 14:47	88-06-2	
<b>Surrogates</b>									
Nitrobenzene-d5 (S)	79	%	51-108		1	04/17/19 07:40	04/18/19 14:47	4165-60-0	
2-Fluorobiphenyl (S)	75	%	47-105		1	04/17/19 07:40	04/18/19 14:47	321-60-8	
2,4,6-Tribromophenol (S)	86	%	57-131		1	04/17/19 07:40	04/18/19 14:47	118-79-6	
Phenol-d6 (S)	35	%	18-120		1	04/17/19 07:40	04/18/19 14:47	13127-88-3	
<b>8260 MSV TCLP</b>									
Analytical Method: EPA 8260    Leachate Method/Date: EPA 1311; 04/15/19 13:36									
Benzene	<0.0050	mg/L	0.010	0.0050	10		04/17/19 08:38	71-43-2	
2-Butanone (MEK)	<0.030	mg/L	0.20	0.030	10		04/17/19 08:38	78-93-3	
Carbon tetrachloride	<0.0050	mg/L	0.010	0.0050	10		04/17/19 08:38	56-23-5	
Chlorobenzene	<0.0050	mg/L	0.010	0.0050	10		04/17/19 08:38	108-90-7	
Chloroform	<0.025	mg/L	0.050	0.025	10		04/17/19 08:38	67-66-3	
1,2-Dichloroethane	<0.0017	mg/L	0.010	0.0017	10		04/17/19 08:38	107-06-2	
1,1-Dichloroethene	<0.0041	mg/L	0.010	0.0041	10		04/17/19 08:38	75-35-4	
Tetrachloroethene	<0.0050	mg/L	0.010	0.0050	10		04/17/19 08:38	127-18-4	
Trichloroethene	<0.0033	mg/L	0.010	0.0033	10		04/17/19 08:38	79-01-6	
Vinyl chloride	<0.0018	mg/L	0.010	0.0018	10		04/17/19 08:38	75-01-4	

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

**Sample: Coal Ash**      **Lab ID: 40185584001**      Collected: 04/09/19 09:00      Received: 04/10/19 10:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV TCLP</b>									
Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 04/15/19 13:36									
<b>Surrogates</b>									
Toluene-d8 (S)	98	%	70-130		10		04/17/19 08:38	2037-26-5	
4-Bromofluorobenzene (S)	88	%	70-130		10		04/17/19 08:38	460-00-4	
Dibromofluoromethane (S)	110	%	70-130		10		04/17/19 08:38	1868-53-7	
<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87									
Percent Moisture	1.2	%	0.10	0.10	1		04/10/19 19:31		
<b>1010 Flashpoint,Closed Cup</b>									
Analytical Method: EPA 1010									
Flashpoint	>200	deg F			1		04/15/19 14:22		2q
<b>9045 pH Soil</b>									
Analytical Method: EPA 9045									
pH at 25 Degrees C	4.09	Std. Units	0.100	0.0100	1		04/16/19 10:07		H6
<b>9076 Total Chlorine</b>									
Analytical Method: EPA 9076									
Chlorine, Total	<0.010	%	0.010	0.010	1		04/20/19 03:06	7782-50-5	N2
<b>9095 Paint Filter Liquid Test</b>									
Analytical Method: EPA 9095									
Free Liquids	Pass	no units			1		04/12/19 16:00		
<b>733C S Reactive Cyanide</b>									
Analytical Method: EPA 9014 Preparation Method: SW-846 7.3.3.2									
Cyanide, Reactive	<0.40	mg/kg	1.0	0.40	1	04/18/19 17:35	04/18/19 18:23		
<b>734S Reactive Sulfide</b>									
Analytical Method: SM 4500S2F-00 Preparation Method: SW-846 7.3.4.2									
Sulfide, Reactive	<10.1	mg/kg	10.1	10.1	1	04/18/19 17:35	04/18/19 17:39		

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

QC Batch: 318544 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury TCLP  
Associated Lab Samples: 40185584001

METHOD BLANK: 1851229 Matrix: Water  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000084	0.00028	04/17/19 10:26	

METHOD BLANK: 1850647 Matrix: Water  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000084	0.00028	04/17/19 11:03	

METHOD BLANK: 1850649 Matrix: Water  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000084	0.00028	04/17/19 11:17	

METHOD BLANK: 1850651 Matrix: Water  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000084	0.00028	04/17/19 11:24	

LABORATORY CONTROL SAMPLE: 1851230

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	0.005	0.0053	106	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1851231 1851232

Parameter	Units	40185566002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	mg/L	<0.28 ug/L	0.005	0.005	0.0060	0.0060	119	119	85-115	0	20	MO

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

MATRIX SPIKE SAMPLE:		1851234					
Parameter	Units	40185698001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	<0.000084	0.005	0.0053	105	85-115	

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

QC Batch: 318672 Analysis Method: EPA 6010  
QC Batch Method: EPA 3010 Analysis Description: 6010 MET TCLP  
Associated Lab Samples: 40185584001

METHOD BLANK: 1851881 Matrix: Water  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	0.014J	0.025	04/19/19 10:28	
Barium	mg/L	<0.0050	0.015	04/19/19 10:28	
Cadmium	mg/L	<0.0013	0.0050	04/19/19 10:28	
Chromium	mg/L	<0.0025	0.010	04/19/19 10:28	
Lead	mg/L	<0.0059	0.020	04/19/19 10:28	
Selenium	mg/L	<0.012	0.050	04/19/19 10:28	
Silver	mg/L	<0.0033	0.010	04/19/19 10:28	

METHOD BLANK: 1851242 Matrix: Solid  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	0.013J	0.025	04/19/19 11:04	
Barium	mg/L	<0.0050	0.015	04/19/19 11:04	
Cadmium	mg/L	<0.0013	0.0050	04/19/19 11:04	
Chromium	mg/L	<0.0025	0.010	04/19/19 11:04	
Lead	mg/L	0.012J	0.020	04/19/19 11:04	
Selenium	mg/L	<0.012	0.050	04/19/19 11:04	
Silver	mg/L	<0.0033	0.010	04/19/19 11:04	

METHOD BLANK: 1851604 Matrix: Solid  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	0.059J	0.12	04/19/19 10:50	
Barium	mg/L	<0.025	0.075	04/19/19 10:50	
Cadmium	mg/L	<0.0066	0.025	04/19/19 10:50	
Chromium	mg/L	<0.013	0.050	04/19/19 10:50	
Lead	mg/L	<0.030	0.098	04/19/19 10:50	
Selenium	mg/L	<0.061	0.25	04/19/19 10:50	
Silver	mg/L	<0.017	0.050	04/19/19 10:50	

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

METHOD BLANK: 1851653 Matrix: Solid  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	0.048J	0.12	04/19/19 10:45	
Barium	mg/L	<0.025	0.075	04/19/19 10:45	
Cadmium	mg/L	<0.0066	0.025	04/19/19 10:45	
Chromium	mg/L	0.016J	0.050	04/19/19 10:45	
Lead	mg/L	<0.030	0.098	04/19/19 10:45	
Selenium	mg/L	<0.061	0.25	04/19/19 10:45	
Silver	mg/L	<0.017	0.050	04/19/19 10:45	

LABORATORY CONTROL SAMPLE: 1851882

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	0.5	0.48	96	80-120	
Barium	mg/L	0.5	0.51	102	80-120	
Cadmium	mg/L	0.5	0.51	101	80-120	
Chromium	mg/L	0.5	0.50	101	80-120	
Lead	mg/L	0.5	0.51	102	80-120	
Selenium	mg/L	0.5	0.49	98	80-120	
Silver	mg/L	0.25	0.25	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1851883 1851884

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40185510001 Result	Spike Conc.	Spike Conc.	MS Result						
Arsenic	mg/L	0.077J	2.5	2.5	2.4	2.4	91	94	75-125	3	20
Barium	mg/L	0.27	2.5	2.5	2.8	2.7	100	98	75-125	2	20
Cadmium	mg/L	0.014J	2.5	2.5	2.5	2.5	100	100	75-125	0	20
Chromium	mg/L	<0.013	2.5	2.5	2.5	2.5	99	99	75-125	1	20
Lead	mg/L	0.043J	2.5	2.5	2.5	2.4	97	96	75-125	2	20
Selenium	mg/L	<0.061	2.5	2.5	2.5	2.6	99	101	75-125	2	20
Silver	mg/L	<0.017	1.2	1.2	1.3	1.3	101	100	75-125	1	20

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

QC Batch: 318487 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV TCLP  
Associated Lab Samples: 40185584001

METHOD BLANK: 1850997 Matrix: Water  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	mg/L	<0.00041	0.0010	04/16/19 15:18	
1,2-Dichloroethane	mg/L	<0.00017	0.0010	04/16/19 15:18	
2-Butanone (MEK)	mg/L	<0.0030	0.020	04/16/19 15:18	
Benzene	mg/L	<0.00050	0.0010	04/16/19 15:18	
Carbon tetrachloride	mg/L	<0.00050	0.0010	04/16/19 15:18	
Chlorobenzene	mg/L	<0.00050	0.0010	04/16/19 15:18	
Chloroform	mg/L	<0.0025	0.0050	04/16/19 15:18	
Tetrachloroethene	mg/L	<0.00050	0.0010	04/16/19 15:18	
Trichloroethene	mg/L	<0.00033	0.0010	04/16/19 15:18	
Vinyl chloride	mg/L	<0.00018	0.0010	04/16/19 15:18	
4-Bromofluorobenzene (S)	%	88	70-130	04/16/19 15:18	
Dibromofluoromethane (S)	%	105	70-130	04/16/19 15:18	
Toluene-d8 (S)	%	95	70-130	04/16/19 15:18	

METHOD BLANK: 1850652 Matrix: Solid  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	mg/L	<0.0041	0.010	04/16/19 15:40	
1,2-Dichloroethane	mg/L	<0.0017	0.010	04/16/19 15:40	
2-Butanone (MEK)	mg/L	<0.030	0.20	04/16/19 15:40	
Benzene	mg/L	<0.0050	0.010	04/16/19 15:40	
Carbon tetrachloride	mg/L	<0.0050	0.010	04/16/19 15:40	
Chlorobenzene	mg/L	<0.0050	0.010	04/16/19 15:40	
Chloroform	mg/L	<0.025	0.050	04/16/19 15:40	
Tetrachloroethene	mg/L	<0.0050	0.010	04/16/19 15:40	
Trichloroethene	mg/L	<0.0033	0.010	04/16/19 15:40	
Vinyl chloride	mg/L	<0.0018	0.010	04/16/19 15:40	
4-Bromofluorobenzene (S)	%	90	70-130	04/16/19 15:40	
Dibromofluoromethane (S)	%	110	70-130	04/16/19 15:40	
Toluene-d8 (S)	%	98	70-130	04/16/19 15:40	

LABORATORY CONTROL SAMPLE: 1850998

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	mg/L	0.05	0.054	108	73-150	
1,2-Dichloroethane	mg/L	0.05	0.053	106	75-140	
Benzene	mg/L	0.05	0.054	109	70-130	

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

LABORATORY CONTROL SAMPLE: 1850998

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Carbon tetrachloride	mg/L	0.05	0.057	113	70-130	
Chlorobenzene	mg/L	0.05	0.054	109	70-130	
Chloroform	mg/L	0.05	0.054	108	74-136	
Tetrachloroethene	mg/L	0.05	0.054	107	70-130	
Trichloroethene	mg/L	0.05	0.053	105	70-130	
Vinyl chloride	mg/L	0.05	0.045	90	51-120	
4-Bromofluorobenzene (S)	%			95	70-130	
Dibromofluoromethane (S)	%			107	70-130	
Toluene-d8 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1851079 1851080

Parameter	Units	40185566002		MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result						
1,1-Dichloroethene	mg/L	<10.0 ug/L	0.5	0.5	0.55	0.59	109	119	73-153	8	20		
1,2-Dichloroethane	mg/L	<10.0 ug/L	0.5	0.5	0.57	0.59	113	119	75-140	4	20		
Benzene	mg/L	<10.0 ug/L	0.5	0.5	0.57	0.58	114	117	70-130	2	20		
Carbon tetrachloride	mg/L	<10.0 ug/L	0.5	0.5	0.59	0.62	118	124	70-130	5	20		
Chlorobenzene	mg/L	<10.0 ug/L	0.5	0.5	0.57	0.55	114	111	70-130	3	20		
Chloroform	mg/L	<50.0 ug/L	0.5	0.5	0.56	0.56	111	113	74-136	1	20		
Tetrachloroethene	mg/L	<10.0 ug/L	0.5	0.5	0.54	0.54	108	108	70-130	0	20		
Trichloroethene	mg/L	<10.0 ug/L	0.5	0.5	0.56	0.55	111	111	70-130	1	20		
Vinyl chloride	mg/L	<10.0 ug/L	0.5	0.5	0.49	0.48	99	97	41-129	2	20		
4-Bromofluorobenzene (S)	%						95	94	70-130				
Dibromofluoromethane (S)	%						103	116	70-130				
Toluene-d8 (S)	%						101	100	70-130				

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

QC Batch: 318606 Analysis Method: EPA 8270  
QC Batch Method: EPA 3510 Analysis Description: 8270 TCLP MSSV  
Associated Lab Samples: 40185584001

METHOD BLANK: 1851621 Matrix: Water  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.0038	0.012	04/17/19 15:05	
2,4,5-Trichlorophenol	mg/L	<0.0017	0.0056	04/17/19 15:05	
2,4,6-Trichlorophenol	mg/L	<0.0042	0.014	04/17/19 15:05	
2,4-Dinitrotoluene	mg/L	<0.0016	0.0053	04/17/19 15:05	
2-Methylphenol(o-Cresol)	mg/L	<0.0017	0.0058	04/17/19 15:05	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.0031	0.010	04/17/19 15:05	
Hexachloro-1,3-butadiene	mg/L	<0.0049	0.016	04/17/19 15:05	
Hexachlorobenzene	mg/L	<0.0034	0.011	04/17/19 15:05	
Hexachloroethane	mg/L	<0.0053	0.018	04/17/19 15:05	
Nitrobenzene	mg/L	<0.0029	0.0097	04/17/19 15:05	
Pentachlorophenol	mg/L	<0.0029	0.0096	04/17/19 15:05	
Phenol	mg/L	<0.0012	0.0040	04/17/19 15:05	
Pyridine	mg/L	<0.0036	0.012	04/17/19 15:05	
2,4,6-Tribromophenol (S)	%	85	57-131	04/17/19 15:05	
2-Fluorobiphenyl (S)	%	74	47-105	04/17/19 15:05	
Nitrobenzene-d5 (S)	%	83	51-108	04/17/19 15:05	
Phenol-d6 (S)	%	36	18-120	04/17/19 15:05	

METHOD BLANK: 1850648 Matrix: Water  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	0.062	04/17/19 23:45	
2,4,5-Trichlorophenol	mg/L	<0.0084	0.028	04/17/19 23:45	
2,4,6-Trichlorophenol	mg/L	<0.021	0.070	04/17/19 23:45	
2,4-Dinitrotoluene	mg/L	<0.0079	0.026	04/17/19 23:45	
2-Methylphenol(o-Cresol)	mg/L	<0.0087	0.029	04/17/19 23:45	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	0.052	04/17/19 23:45	
Hexachloro-1,3-butadiene	mg/L	<0.025	0.082	04/17/19 23:45	
Hexachlorobenzene	mg/L	<0.017	0.056	04/17/19 23:45	
Hexachloroethane	mg/L	<0.027	0.089	04/17/19 23:45	
Nitrobenzene	mg/L	<0.015	0.048	04/17/19 23:45	
Pentachlorophenol	mg/L	<0.014	0.048	04/17/19 23:45	
Phenol	mg/L	<0.0060	0.020	04/17/19 23:45	
Pyridine	mg/L	<0.018	0.060	04/17/19 23:45	
2,4,6-Tribromophenol (S)	%	85	57-131	04/17/19 23:45	
2-Fluorobiphenyl (S)	%	74	47-105	04/17/19 23:45	
Nitrobenzene-d5 (S)	%	78	51-108	04/17/19 23:45	
Phenol-d6 (S)	%	34	18-120	04/17/19 23:45	

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

METHOD BLANK: 1850650 Matrix: Water  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	0.062	04/18/19 00:07	
2,4,5-Trichlorophenol	mg/L	<0.0084	0.028	04/18/19 00:07	
2,4,6-Trichlorophenol	mg/L	<0.021	0.070	04/18/19 00:07	
2,4-Dinitrotoluene	mg/L	<0.0079	0.026	04/18/19 00:07	
2-Methylphenol(o-Cresol)	mg/L	<0.0087	0.029	04/18/19 00:07	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	0.052	04/18/19 00:07	
Hexachloro-1,3-butadiene	mg/L	<0.025	0.082	04/18/19 00:07	
Hexachlorobenzene	mg/L	<0.017	0.056	04/18/19 00:07	
Hexachloroethane	mg/L	<0.027	0.089	04/18/19 00:07	
Nitrobenzene	mg/L	<0.015	0.048	04/18/19 00:07	
Pentachlorophenol	mg/L	<0.014	0.048	04/18/19 00:07	
Phenol	mg/L	<0.0060	0.020	04/18/19 00:07	
Pyridine	mg/L	<0.018	0.060	04/18/19 00:07	
2,4,6-Tribromophenol (S)	%	86	57-131	04/18/19 00:07	
2-Fluorobiphenyl (S)	%	71	47-105	04/18/19 00:07	
Nitrobenzene-d5 (S)	%	75	51-108	04/18/19 00:07	
Phenol-d6 (S)	%	34	18-120	04/18/19 00:07	

LABORATORY CONTROL SAMPLE: 1851622

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	mg/L	0.05	0.034	68	57-120	
2,4,5-Trichlorophenol	mg/L	0.05	0.042	85	59-124	
2,4,6-Trichlorophenol	mg/L	0.05	0.041	81	64-125	
2,4-Dinitrotoluene	mg/L	0.05	0.047	93	70-132	
2-Methylphenol(o-Cresol)	mg/L	0.05	0.036	71	45-107	
3&4-Methylphenol(m&p Cresol)	mg/L	0.05	0.032	65	39-130	
Hexachloro-1,3-butadiene	mg/L	0.05	0.033	65	63-107	
Hexachlorobenzene	mg/L	0.05	0.047	94	70-124	
Hexachloroethane	mg/L	0.05	0.030	60	50-130	
Nitrobenzene	mg/L	0.05	0.045	91	70-130	
Pentachlorophenol	mg/L	0.05	0.037	74	61-113	
Phenol	mg/L	0.05	0.020	40	25-120	
Pyridine	mg/L	0.05	0.019	37	10-78	
2,4,6-Tribromophenol (S)	%			83	57-131	
2-Fluorobiphenyl (S)	%			79	47-105	
Nitrobenzene-d5 (S)	%			84	51-108	
Phenol-d6 (S)	%			37	18-120	

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

MATRIX SPIKE SAMPLE: 1851623		40185510001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,4-Dichlorobenzene	mg/L	<18.8 ug/L	0.25	0.19	75	55-120	
2,4,5-Trichlorophenol	mg/L	<8.4 ug/L	0.25	0.24	94	26-124	
2,4,6-Trichlorophenol	mg/L	<21.1 ug/L	0.25	0.23	92	29-125	
2,4-Dinitrotoluene	mg/L	<7.9 ug/L	0.25	0.25	101	32-143	
2-Methylphenol(o-Cresol)	mg/L	<8.7 ug/L	0.25	0.23	92	25-107	
3&4-Methylphenol(m&p Cresol)	mg/L	<15.6 ug/L	0.25	0.20	81	21-130	
Hexachloro-1,3-butadiene	mg/L	<24.6 ug/L	0.25	0.18	74	63-109	
Hexachlorobenzene	mg/L	<16.9 ug/L	0.25	0.24	97	57-124	
Hexachloroethane	mg/L	<26.6 ug/L	0.25	0.17	69	50-130	
Nitrobenzene	mg/L	<14.5 ug/L	0.25	0.23	94	23-147	
Pentachlorophenol	mg/L	<14.3 ug/L	0.25	0.22	86	10-200	
Phenol	mg/L	<6.0 ug/L	0.25	0.11	44	20-120	
Pyridine	mg/L	<17.9 ug/L	0.25	0.12	48	10-78	
2,4,6-Tribromophenol (S)	%				95	57-131	
2-Fluorobiphenyl (S)	%				82	47-105	
Nitrobenzene-d5 (S)	%				89	51-108	
Phenol-d6 (S)	%				40	18-120	

MATRIX SPIKE SAMPLE: 1851624		40185736001	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	0.25	0.19	77	55-120	
2,4,5-Trichlorophenol	mg/L	<0.0084	0.25	0.24	94	26-124	
2,4,6-Trichlorophenol	mg/L	<0.021	0.25	0.24	95	29-125	
2,4-Dinitrotoluene	mg/L	<0.0079	0.25	0.25	99	32-143	
2-Methylphenol(o-Cresol)	mg/L	<0.0087	0.25	0.21	84	25-107	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	0.25	0.20	80	21-130	
Hexachloro-1,3-butadiene	mg/L	<0.025	0.25	0.19	76	63-109	
Hexachlorobenzene	mg/L	<0.017	0.25	0.24	97	57-124	
Hexachloroethane	mg/L	<0.027	0.25	0.18	72	50-130	
Nitrobenzene	mg/L	<0.015	0.25	0.24	95	23-147	
Pentachlorophenol	mg/L	<0.014	0.25	0.21	82	10-200	
Phenol	mg/L	<0.0060	0.25	0.11	45	20-120	
Pyridine	mg/L	<0.018	0.25	0.12	46	10-78	
2,4,6-Tribromophenol (S)	%				96	57-131	
2-Fluorobiphenyl (S)	%				81	47-105	
Nitrobenzene-d5 (S)	%				93	51-108	
Phenol-d6 (S)	%				40	18-120	

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

QC Batch: 317991

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 40185584001

SAMPLE DUPLICATE: 1848813

Parameter	Units	40185530001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	5.0	5.2	4	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

QC Batch: 318348

Analysis Method: EPA 1010

QC Batch Method: EPA 1010

Analysis Description: 1010 Flash Point, Closed Cup

Associated Lab Samples: 40185584001

LABORATORY CONTROL SAMPLE: 1850642

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Flashpoint	deg F		83.0			

SAMPLE DUPLICATE: 1850893

Parameter	Units	10470465008 Result	Dup Result	RPD	Max RPD	Qualifiers
Flashpoint	deg F	>200	>200			

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

QC Batch: 318498 Analysis Method: EPA 9045

QC Batch Method: EPA 9045 Analysis Description: 9045 pH

Associated Lab Samples: 40185584001

SAMPLE DUPLICATE: 1851021

Parameter	Units	40185682001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.44	6.60	2	5	H6,PI

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

---

QC Batch: 318216	Analysis Method: EPA 9095
QC Batch Method: EPA 9095	Analysis Description: 9095 PAINT FILTER LIQUID TEST
Associated Lab Samples: 40185584001	

---

METHOD BLANK: 1850066 Matrix: Solid  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Free Liquids	no units	Fail		04/12/19 15:38	

---

LABORATORY CONTROL SAMPLE: 1850067

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Free Liquids	no units		Pass			

---

SAMPLE DUPLICATE: 1850068

Parameter	Units	40185693001 Result	Dup Result	RPD	Max RPD	Qualifiers
Free Liquids	no units	Pass	Pass			

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

QC Batch: 338818	Analysis Method: EPA 9014
QC Batch Method: SW-846 7.3.3.2	Analysis Description: 733C Reactive Cyanide
Associated Lab Samples: 40185584001	

METHOD BLANK: 1649268 Matrix: Solid  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide, Reactive	mg/kg	<0.40	1.0	04/18/19 18:13	

LABORATORY CONTROL SAMPLE: 1649269

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide, Reactive	mg/kg	99.2	<0.40	0	0-8	

SAMPLE DUPLICATE: 1649270

Parameter	Units	30289771002 Result	Dup Result	RPD	Max RPD	Qualifiers
Cyanide, Reactive	mg/kg	1.0 U	<0.40		20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### QUALITY CONTROL DATA

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

QC Batch: 338819	Analysis Method: SM 4500S2F-00
QC Batch Method: SW-846 7.3.4.2	Analysis Description: 734S Reactive Sulfide
Associated Lab Samples: 40185584001	

METHOD BLANK: 1649271 Matrix: Solid  
Associated Lab Samples: 40185584001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Reactive	mg/kg	<10	10	04/18/19 17:39	

LABORATORY CONTROL SAMPLE: 1649272

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Reactive	mg/kg	199	39.7	20	0-52	

SAMPLE DUPLICATE: 1649273

Parameter	Units	30289771002 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Reactive	mg/kg	10 U	<10		20	

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### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: UW-Oshkosh Coal Ash  
Pace Project No.: 40185584

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.  
ND - Not Detected at or above LOD.  
J - Estimated concentration at or above the LOD and below the LOQ.  
LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.  
LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.  
S - Surrogate  
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.  
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.  
LCS(D) - Laboratory Control Sample (Duplicate)  
MS(D) - Matrix Spike (Duplicate)  
DUP - Sample Duplicate  
RPD - Relative Percent Difference  
NC - Not Calculable.  
SG - Silica Gel - Clean-Up  
U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.  
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.  
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.  
TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville  
PASI-G Pace Analytical Services - Green Bay  
PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

1q Analyte was detected in the associated leach blank at a concentration of 0.016 mg/L.  
2q Use of method EPA 1010A for flash point analysis on solid samples is for informational purposes only. It is the user's responsibility to verify the acceptance of this data for intended use.  
H6 Analysis initiated outside of the 15 minute EPA required holding time.  
M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.  
N2 The lab does not hold NELAC/TNI accreditation for this parameter but other accreditations/certifications may apply. A complete list of accreditations/certifications is available upon request.  
PI The precision between the sample and the duplicate sample exceeded laboratory control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: UW-Oshkosh Coal Ash

Pace Project No.: 40185584

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40185584001	Coal Ash	EPA 3010	318672	EPA 6010	318808
40185584001	Coal Ash	EPA 7470	318544	EPA 7470	318603
40185584001	Coal Ash	EPA 3510	318606	EPA 8270	318695
40185584001	Coal Ash	EPA 8260	318487		
40185584001	Coal Ash	ASTM D2974-87	317991		
40185584001	Coal Ash	EPA 1010	318348		
40185584001	Coal Ash	EPA 9045	318498		
40185584001	Coal Ash	EPA 9076	470604		
40185584001	Coal Ash	EPA 9095	318216		
40185584001	Coal Ash	SW-846 7.3.3.2	338818	EPA 9014	338981
40185584001	Coal Ash	SW-846 7.3.4.2	338819	SM 4500S2F-00	338979

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1241 Bellevue Street, Green Bay, WI 54302

Document Name:  
Sample Condition Upon Receipt (SCUR)

Document No.:  
F-GB-C-031-Rev.07

Document Revised: 25Apr2018

Issuing Authority:  
Pace Green Bay Quality Office

### Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: UWoshkosh

WO#: **40185584**

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Waltco  
 Client  Pace Other: 04/10/19



Tracking #: 125763120351983780

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR-66 Type of Ice: Wet Blue Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 22 /Corr: 22.5

Temp Blank Present:  yes  no Biological Tissue is Frozen:  yes  no

Person examining contents:

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

Date: 4/10/19  
Initials: CS

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>no id, date, time</u> <u>CS 4/10/19</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>ID "Dan Biese" 4/10/19 @ 0900</u> <u>CS 4/10/19</u>
-Includes date/time/ID/Analysis Matrix: <u>S</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: Client placed label on sample like a custody seal  
4/10/19

Project Manager Review: CS

Date: 4/11/19

October 25, 2018

MARK METCALF  
WEC Business Services, LLC.  
PO BOX 19800  
700 NORTH ADAMS  
Green Bay, WI 543079004

RE: Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

Dear MARK METCALF:

Enclosed are the analytical results for sample(s) received by the laboratory on October 12, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Brian Basten  
brian.basten@pacelabs.com  
(920)469-2436  
Project Manager

Enclosures

cc: Patrick Ahrens, WEC Business Services, LLC.  
Jeff Dykhuis, WEC Business Services, LLC.  
Tom Jansen, WE Energies



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

---

### Pennsylvania Certification IDs

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601  
ANAB DOD-ELAP Rad Accreditation #: L2417  
Alabama Certification #: 41590  
Arizona Certification #: AZ0734  
Arkansas Certification  
California Certification #: 04222CA  
Colorado Certification #: PA01547  
Connecticut Certification #: PH-0694  
Delaware Certification  
EPA Region 4 DW Rad  
Florida/TNI Certification #: E87683  
Georgia Certification #: C040  
Guam Certification  
Hawaii Certification  
Idaho Certification  
Illinois Certification  
Indiana Certification  
Iowa Certification #: 391  
Kansas/TNI Certification #: E-10358  
Kentucky Certification #: KY90133  
KY WW Permit #: KY0098221  
KY WW Permit #: KY0000221  
Louisiana DHH/TNI Certification #: LA180012  
Louisiana DEQ/TNI Certification #: 4086  
Maine Certification #: 2017020  
Maryland Certification #: 308  
Massachusetts Certification #: M-PA1457  
Michigan/PADEP Certification #: 9991

Missouri Certification #: 235  
Montana Certification #: Cert0082  
Nebraska Certification #: NE-OS-29-14  
Nevada Certification #: PA014572018-1  
New Hampshire/TNI Certification #: 297617  
New Jersey/TNI Certification #: PA051  
New Mexico Certification #: PA01457  
New York/TNI Certification #: 10888  
North Carolina Certification #: 42706  
North Dakota Certification #: R-190  
Ohio EPA Rad Approval: #41249  
Oregon/TNI Certification #: PA200002-010  
Pennsylvania/TNI Certification #: 65-00282  
Puerto Rico Certification #: PA01457  
Rhode Island Certification #: 65-00282  
South Dakota Certification  
Tennessee Certification #: 02867  
Texas/TNI Certification #: T104704188-17-3  
Utah/TNI Certification #: PA014572017-9  
USDA Soil Permit #: P330-17-00091  
Vermont Dept. of Health: ID# VT-0282  
Virgin Island/PADEP Certification  
Virginia/VELAP Certification #: 9526  
Washington Certification #: C868  
West Virginia DEP Certification #: 143  
West Virginia DHHR Certification #: 9964C  
Wisconsin Approve List for Rad  
Wyoming Certification #: 8TMS-L

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302  
Florida/NELAP Certification #: E87948  
Illinois Certification #: 200050  
Kentucky UST Certification #: 82  
Louisiana Certification #: 04168  
Minnesota Certification #: 055-999-334  
New York Certification #: 12064  
North Dakota Certification #: R-150

Virginia VELAP ID: 460263  
South Carolina Certification #: 83006001  
Texas Certification #: T104704529-14-1  
Wisconsin Certification #: 405132750  
Wisconsin DATCP Certification #: 105-444  
USDA Soil Permit #: P330-16-00157  
Federal Fish & Wildlife Permit #: LE51774A-0

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### Asheville Certification IDs

2225 Riverside Drive, Asheville, NC 28804  
Florida/NELAP Certification #: E87648  
Massachusetts Certification #: M-NC030  
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40  
South Carolina Certification #: 99030001  
Virginia/VELAP Certification #: 460222

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40177595001	WESTON 4 FLY ASH	Solid	10/12/18 00:00	10/12/18 13:02

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40177595001	WESTON 4 FLY ASH	EPA 6010	TXW	7	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 8270	RJN	17	PASI-G
		EPA 8260	HNW	13	PASI-G
		ASTM D2974-87	JXS	1	PASI-G
		EPA 1010	DEY	1	PASI-G
		EPA 9040	ALY	1	PASI-G
		EPA 9076	MJP	1	PASI-A
		EPA 9095	DDY	1	PASI-G
		SM 2710F	DEY	1	PASI-G
		EPA 9014	PAS	1	PASI-PA
		SM4500S2F-00	PAS	1	PASI-PA

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** EPA 6010

**Description:** 6010 MET ICP, TCLP

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

**General Information:**

1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** EPA 7470

**Description:** 7470 Mercury, TCLP

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

**General Information:**

1 sample was analyzed for EPA 7470. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 7470 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 303426

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s):  
10451259001,40177385001,40177395001,40177480001,40177541001,40177595001,40177596001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1772293)
- Mercury

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

---

**Method:** EPA 8270  
**Description:** 8270 MSSV TCLP Sep Funnel  
**Client:** WEC Business Services, LLC.  
**Date:** October 25, 2018

### General Information:

1 sample was analyzed for EPA 8270. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

### Surrogates:

All surrogates were within QC limits with any exceptions noted below.

QC Batch: 303829

S0: Surrogate recovery outside laboratory control limits.

- LCS (Lab ID: 1775444)
  - 2,4,6-Tribromophenol (S)
- MS (Lab ID: 1775445)
  - 2,4,6-Tribromophenol (S)

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: 303829

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s):  
40177480001,40177505001,40177506001,40177621001,40177838001

M6: Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

- MS (Lab ID: 1775447)
  - Hexachloroethane

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** EPA 8270

**Description:** 8270 MSSV TCLP Sep Funnel

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

QC Batch: 303829

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s):  
40177480001,40177505001,40177506001,40177621001,40177838001

M6: Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

- Nitrobenzene
- Pentachlorophenol

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** EPA 8260

**Description:** 8260 MSV TCLP

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

**General Information:**

1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Internal Standards:**

All internal standards were within QC limits with any exceptions noted below.

**Surrogates:**

All surrogates were within QC limits with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** EPA 1010

**Description:** 1010 Flashpoint,Closed Cup

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

**General Information:**

1 sample was analyzed for EPA 1010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

Analyte Comments:

QC Batch: 303161

2q: Use of method EPA 1010A for flash point analysis on solid samples is for informational purposes only. It is the user's responsibility to verify the acceptance of this data for intended use.

- WESTON 4 FLY ASH (Lab ID: 40177595001)
- Flashpoint

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

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**Method:** EPA 9040

**Description:** 9040 pH

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

### General Information:

1 sample was analyzed for EPA 9040. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

H6: Analysis initiated outside of the 15 minute EPA required holding time.

- WESTON 4 FLY ASH (Lab ID: 40177595001)

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

### Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

### Additional Comments:

Analyte Comments:

QC Batch: 303308

1q: Due to the sample matrix, DI water was added to this sample on a one to one basis and the sample was stirred before analysis.

- WESTON 4 FLY ASH (Lab ID: 40177595001)
  - pH at 25 Degrees C

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** EPA 9076

**Description:** 9076 Total Chlorine

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

**General Information:**

1 sample was analyzed for EPA 9076. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

Analyte Comments:

QC Batch: 437300

N2: The lab does not hold NELAC/TNI accreditation for this parameter.

- MS (Lab ID: 2405201)
  - Chlorine, Total
- MSD (Lab ID: 2405202)
  - Chlorine, Total
- WESTON 4 FLY ASH (Lab ID: 40177595001)
  - Chlorine, Total

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** EPA 9095

**Description:** 9095 Paint Filter Liquid Test

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

**General Information:**

1 sample was analyzed for EPA 9095. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** SM 2710F

**Description:** Specific Gravity

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

**General Information:**

1 sample was analyzed for SM 2710F. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** EPA 9014

**Description:** 733C S Reactive Cyanide

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

**General Information:**

1 sample was analyzed for EPA 9014. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with SW-846 7.3.3.2 with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

---

**Method:** SM4500S2F-00

**Description:** 734S Reactive Sulfide

**Client:** WEC Business Services, LLC.

**Date:** October 25, 2018

**General Information:**

1 sample was analyzed for SM4500S2F-00. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with SW-846 7.3.4.2 with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Duplicate Sample:**

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

**Additional Comments:**

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

Sample: WESTON 4 FLY ASH Lab ID: 40177595001 Collected: 10/12/18 00:00 Received: 10/12/18 13:02 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP, TCLP</b>									
Analytical Method: EPA 6010 Preparation Method: EPA 3010									
Leachate Method/Date: EPA 1311; 10/15/18 14:35									
Arsenic	<0.042	mg/L	0.12	0.042	1	10/17/18 06:44	10/18/18 12:04	7440-38-2	
Barium	0.69	mg/L	0.075	0.025	1	10/17/18 06:44	10/18/18 12:04	7440-39-3	
Cadmium	<0.0066	mg/L	0.025	0.0066	1	10/17/18 06:44	10/18/18 12:04	7440-43-9	
Chromium	0.081	mg/L	0.050	0.013	1	10/17/18 06:44	10/18/18 12:04	7440-47-3	
Lead	<0.030	mg/L	0.098	0.030	1	10/17/18 06:44	10/18/18 12:04	7439-92-1	
Selenium	<0.061	mg/L	0.25	0.061	1	10/17/18 06:44	10/18/18 12:04	7782-49-2	
Silver	<0.017	mg/L	0.050	0.017	1	10/17/18 06:44	10/18/18 12:04	7440-22-4	
<b>7470 Mercury, TCLP</b>									
Analytical Method: EPA 7470 Preparation Method: EPA 7470									
Leachate Method/Date: EPA 1311; 10/15/18 14:35									
Mercury	0.00038	mg/L	0.00028	0.000084	1	10/17/18 07:20	10/17/18 13:06	7439-97-6	M0
<b>8270 MSSV TCLP Sep Funnel</b>									
Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Leachate Method/Date: EPA 1311; 10/15/18 14:35									
1,4-Dichlorobenzene	<0.019	mg/L	0.062	0.019	1	10/22/18 07:35	10/22/18 17:17	106-46-7	
2,4-Dinitrotoluene	<0.0079	mg/L	0.026	0.0079	1	10/22/18 07:35	10/22/18 17:17	121-14-2	
Hexachloro-1,3-butadiene	<0.025	mg/L	0.082	0.025	1	10/22/18 07:35	10/22/18 17:17	87-68-3	
Hexachlorobenzene	<0.017	mg/L	0.056	0.017	1	10/22/18 07:35	10/22/18 17:17	118-74-1	
Hexachloroethane	<0.027	mg/L	0.089	0.027	1	10/22/18 07:35	10/22/18 17:17	67-72-1	
2-Methylphenol(o-Cresol)	<0.0087	mg/L	0.029	0.0087	1	10/22/18 07:35	10/22/18 17:17	95-48-7	
3&4-Methylphenol(m&p Cresol)	<0.016	mg/L	0.052	0.016	1	10/22/18 07:35	10/22/18 17:17		
Nitrobenzene	<0.015	mg/L	0.048	0.015	1	10/22/18 07:35	10/22/18 17:17	98-95-3	
Pentachlorophenol	<0.014	mg/L	0.048	0.014	1	10/22/18 07:35	10/22/18 17:17	87-86-5	
Phenol	<6.0	ug/L	20.0	6.0	1	10/22/18 07:35	10/22/18 17:17	108-95-2	
Pyridine	<0.018	mg/L	0.060	0.018	1	10/22/18 07:35	10/22/18 17:17	110-86-1	
2,4,5-Trichlorophenol	<0.0084	mg/L	0.028	0.0084	1	10/22/18 07:35	10/22/18 17:17	95-95-4	
2,4,6-Trichlorophenol	<0.021	mg/L	0.070	0.021	1	10/22/18 07:35	10/22/18 17:17	88-06-2	
<b>Surrogates</b>									
Nitrobenzene-d5 (S)	85	%	56-120		1	10/22/18 07:35	10/22/18 17:17	4165-60-0	
2-Fluorobiphenyl (S)	86	%	54-122		1	10/22/18 07:35	10/22/18 17:17	321-60-8	
2,4,6-Tribromophenol (S)	122	%	58-134		1	10/22/18 07:35	10/22/18 17:17	118-79-6	
Phenol-d6 (S)	33	%	16-120		1	10/22/18 07:35	10/22/18 17:17	13127-88-3	
<b>8260 MSV TCLP</b>									
Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 10/15/18 14:35									
Benzene	<0.0050	mg/L	0.010	0.0050	10		10/16/18 20:04	71-43-2	
2-Butanone (MEK)	<0.030	mg/L	0.20	0.030	10		10/16/18 20:04	78-93-3	
Carbon tetrachloride	<0.0050	mg/L	0.010	0.0050	10		10/16/18 20:04	56-23-5	
Chlorobenzene	<0.0050	mg/L	0.010	0.0050	10		10/16/18 20:04	108-90-7	
Chloroform	<0.025	mg/L	0.050	0.025	10		10/16/18 20:04	67-66-3	
1,2-Dichloroethane	<0.0017	mg/L	0.010	0.0017	10		10/16/18 20:04	107-06-2	
1,1-Dichloroethene	<0.0041	mg/L	0.010	0.0041	10		10/16/18 20:04	75-35-4	
Tetrachloroethene	<0.0050	mg/L	0.010	0.0050	10		10/16/18 20:04	127-18-4	
Trichloroethene	<0.0033	mg/L	0.010	0.0033	10		10/16/18 20:04	79-01-6	
Vinyl chloride	<0.0018	mg/L	0.010	0.0018	10		10/16/18 20:04	75-01-4	

## REPORT OF LABORATORY ANALYSIS

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### ANALYTICAL RESULTS

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

**Sample: WESTON 4 FLY ASH**      **Lab ID: 40177595001**      Collected: 10/12/18 00:00      Received: 10/12/18 13:02      Matrix: Solid  
*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>8260 MSV TCLP</b>									
Analytical Method: EPA 8260 Leachate Method/Date: EPA 1311; 10/15/18 14:35									
<b>Surrogates</b>									
Toluene-d8 (S)	106	%	70-130		10		10/16/18 20:04	2037-26-5	
4-Bromofluorobenzene (S)	98	%	70-130		10		10/16/18 20:04	460-00-4	
Dibromofluoromethane (S)	96	%	70-130		10		10/16/18 20:04	1868-53-7	
<b>Percent Moisture</b>									
Analytical Method: ASTM D2974-87									
Percent Moisture	<b>27.4</b>	%	0.10	0.10	1		10/12/18 17:53		
<b>1010 Flashpoint,Closed Cup</b>									
Analytical Method: EPA 1010									
Flashpoint	<b>&gt;200</b>	deg F			1		10/15/18 12:02		2q
<b>9040 pH</b>									
Analytical Method: EPA 9040									
pH at 25 Degrees C	<b>11.4</b>	Std. Units	0.10	0.010	1		10/16/18 10:35		1q,H6
<b>9076 Total Chlorine</b>									
Analytical Method: EPA 9076									
Chlorine, Total	<b>0.028</b>	%	0.010	0.010	1		10/19/18 14:29	7782-50-5	N2
<b>9095 Paint Filter Liquid Test</b>									
Analytical Method: EPA 9095									
Free Liquids	<b>pass</b>	no units			1		10/15/18 14:05		
<b>Specific Gravity</b>									
Analytical Method: SM 2710F									
Specific Gravity	<b>1.7</b>	no units			1		10/18/18 14:08		
<b>733C S Reactive Cyanide</b>									
Analytical Method: EPA 9014 Preparation Method: SW-846 7.3.3.2									
Cyanide, Reactive	<b>&lt;0.55</b>	mg/kg	1.4	0.55	1	10/18/18 23:11	10/19/18 00:16		
<b>734S Reactive Sulfide</b>									
Analytical Method: SM4500S2F-00 Preparation Method: SW-846 7.3.4.2									
Sulfide, Reactive	<b>&lt;13.7</b>	mg/kg	13.7	13.7	1	10/18/18 23:11	10/18/18 23:14		

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

QC Batch: 303426 Analysis Method: EPA 7470  
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury TCLP  
Associated Lab Samples: 40177595001

METHOD BLANK: 1772285 Matrix: Water  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000084	0.00028	10/17/18 12:22	

METHOD BLANK: 1769037 Matrix: Water  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000084	0.00028	10/17/18 12:38	

METHOD BLANK: 1770912 Matrix: Water  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000084	0.00028	10/17/18 13:18	

METHOD BLANK: 1770915 Matrix: Water  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000084	0.00028	10/17/18 13:11	

METHOD BLANK: 1770916 Matrix: Water  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	mg/L	<0.000084	0.00028	10/17/18 12:59	

LABORATORY CONTROL SAMPLE: 1772286

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	mg/L	.005	0.0053	105	85-115	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1772287												1772288	
Parameter	Units	40177385001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
Mercury	mg/L	<0.084 ug/L	.005	.005	0.0049	0.0048	97	96	85-115	1	20		

MATRIX SPIKE SAMPLE: 1772289		40177541001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Parameter	Units						
Mercury	mg/L	<0.084 ug/L	.005	0.0050	99	85-115	

MATRIX SPIKE SAMPLE: 1772290		10451259001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Parameter	Units						
Mercury	mg/L	<0.084 ug/L	.005	0.0050	99	85-115	

MATRIX SPIKE SAMPLE: 1772291		40177395001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Parameter	Units						
Mercury	mg/L	<0.084 ug/L	.005	0.0051	100	85-115	

MATRIX SPIKE SAMPLE: 1772292		40177480001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Parameter	Units						
Mercury	mg/L	0.00015J	.005	0.0051	99	85-115	

MATRIX SPIKE SAMPLE: 1772293		40177595001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Parameter	Units						
Mercury	mg/L	0.00038	.005	0.0046	84	85-115	M0

MATRIX SPIKE SAMPLE: 1772294		40177596001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Parameter	Units						
Mercury	mg/L	0.00040	.005	0.0054	99	85-115	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

QC Batch: 303424 Analysis Method: EPA 6010  
QC Batch Method: EPA 3010 Analysis Description: 6010 MET TCLP  
Associated Lab Samples: 40177595001

METHOD BLANK: 1772270 Matrix: Water  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0083	0.025	10/18/18 11:07	
Barium	mg/L	<0.0050	0.015	10/18/18 11:07	
Cadmium	mg/L	<0.0013	0.0050	10/18/18 11:07	
Chromium	mg/L	<0.0025	0.010	10/18/18 11:07	
Lead	mg/L	<0.0059	0.020	10/18/18 11:07	
Selenium	mg/L	<0.012	0.050	10/18/18 11:07	
Silver	mg/L	<0.0033	0.010	10/18/18 11:07	

METHOD BLANK: 1770901 Matrix: Solid  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.042	0.12	10/18/18 11:52	
Barium	mg/L	<0.025	0.075	10/18/18 11:52	
Cadmium	mg/L	<0.0066	0.025	10/18/18 11:52	
Chromium	mg/L	<0.013	0.050	10/18/18 11:52	
Lead	mg/L	<0.030	0.098	10/18/18 11:52	
Selenium	mg/L	<0.061	0.25	10/18/18 11:52	
Silver	mg/L	<0.017	0.050	10/18/18 11:52	

METHOD BLANK: 1770902 Matrix: Solid  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.042	0.12	10/18/18 12:09	
Barium	mg/L	<0.025	0.075	10/18/18 12:09	
Cadmium	mg/L	<0.0066	0.025	10/18/18 12:09	
Chromium	mg/L	<0.013	0.050	10/18/18 12:09	
Lead	mg/L	<0.030	0.098	10/18/18 12:09	
Selenium	mg/L	<0.061	0.25	10/18/18 12:09	
Silver	mg/L	<0.017	0.050	10/18/18 12:09	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

METHOD BLANK: 1770903 Matrix: Solid  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.042	0.12	10/18/18 12:16	
Barium	mg/L	<0.025	0.075	10/18/18 12:16	
Cadmium	mg/L	<0.0066	0.025	10/18/18 12:16	
Chromium	mg/L	<0.013	0.050	10/18/18 12:16	
Lead	mg/L	<0.030	0.098	10/18/18 12:16	
Selenium	mg/L	<0.061	0.25	10/18/18 12:16	
Silver	mg/L	<0.017	0.050	10/18/18 12:16	

METHOD BLANK: 1770904 Matrix: Solid  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/L	<0.0083	0.025	10/18/18 12:24	
Barium	mg/L	<0.0050	0.015	10/18/18 12:24	
Cadmium	mg/L	<0.0013	0.0050	10/18/18 12:24	
Chromium	mg/L	<0.0025	0.010	10/18/18 12:24	
Lead	mg/L	<0.0059	0.020	10/18/18 12:24	
Selenium	mg/L	<0.012	0.050	10/18/18 12:24	
Silver	mg/L	<0.0033	0.010	10/18/18 12:24	

LABORATORY CONTROL SAMPLE: 1772271

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	.5	0.44	89	80-120	
Barium	mg/L	.5	0.47	94	80-120	
Cadmium	mg/L	.5	0.45	90	80-120	
Chromium	mg/L	.5	0.50	101	80-120	
Lead	mg/L	.5	0.48	96	80-120	
Selenium	mg/L	.5	0.44	88	80-120	
Silver	mg/L	.25	0.26	102	80-120	

MATRIX SPIKE SAMPLE: 1772272

Parameter	Units	10451259001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.3	91	75-125	
Barium	mg/L	0.15	2.5	2.5	93	75-125	
Cadmium	mg/L	<0.0066	2.5	2.2	89	75-125	
Chromium	mg/L	<0.013	2.5	2.5	100	75-125	
Lead	mg/L	<0.030	2.5	2.3	91	75-125	
Selenium	mg/L	<0.061	2.5	2.2	88	75-125	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

MATRIX SPIKE SAMPLE:		1772272					
Parameter	Units	10451259001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Silver	mg/L	<0.017	1.2	1.3	105	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1772273			1772274							
Parameter	Units	40176305004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Arsenic	mg/L	<0.042	2.5	2.5	2.3	2.3	91	92	75-125	1	20	
Barium	mg/L	0.61	2.5	2.5	2.9	2.9	92	93	75-125	1	20	
Cadmium	mg/L	0.028	2.5	2.5	2.3	2.3	90	91	75-125	2	20	
Chromium	mg/L	<0.013	2.5	2.5	2.4	2.5	97	99	75-125	2	20	
Lead	mg/L	2.9	2.5	2.5	5.0	5.1	85	90	75-125	2	20	
Selenium	mg/L	<0.061	2.5	2.5	2.2	2.3	89	92	75-125	3	20	
Silver	mg/L	<0.017	1.2	1.2	1.3	1.3	103	105	75-125	1	20	

MATRIX SPIKE SAMPLE:		1772275					
Parameter	Units	40177395001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.2	89	75-125	
Barium	mg/L	<0.025	2.5	2.3	93	75-125	
Cadmium	mg/L	0.0080J	2.5	2.2	89	75-125	
Chromium	mg/L	0.015J	2.5	2.5	99	75-125	
Lead	mg/L	<0.030	2.5	2.3	91	75-125	
Selenium	mg/L	<0.061	2.5	2.3	89	75-125	
Silver	mg/L	<0.017	1.2	1.3	104	75-125	

MATRIX SPIKE SAMPLE:		1772276					
Parameter	Units	40177480001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.3	91	75-125	
Barium	mg/L	0.28	2.5	2.6	93	75-125	
Cadmium	mg/L	<0.0066	2.5	2.3	91	75-125	
Chromium	mg/L	<0.013	2.5	2.4	96	75-125	
Lead	mg/L	0.24	2.5	2.5	90	75-125	
Selenium	mg/L	<0.061	2.5	2.2	90	75-125	
Silver	mg/L	<0.017	1.2	1.3	104	75-125	

MATRIX SPIKE SAMPLE:		1772277					
Parameter	Units	40177541001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.3	92	75-125	
Barium	mg/L	0.14	2.5	2.5	94	75-125	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

MATRIX SPIKE SAMPLE:		1772277					
Parameter	Units	40177541001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	mg/L	0.030	2.5	2.3	91	75-125	
Chromium	mg/L	<0.013	2.5	2.5	99	75-125	
Lead	mg/L	0.95	2.5	3.4	97	75-125	
Selenium	mg/L	<0.061	2.5	2.3	90	75-125	
Silver	mg/L	<0.017	1.2	1.3	106	75-125	

MATRIX SPIKE SAMPLE:		1772278					
Parameter	Units	40177546001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.3	93	75-125	
Barium	mg/L	0.074J	2.5	2.4	93	75-125	
Cadmium	mg/L	0.0089J	2.5	2.3	90	75-125	
Chromium	mg/L	2.5	2.5	5.1	100	75-125	
Lead	mg/L	<0.030	2.5	2.3	91	75-125	
Selenium	mg/L	<0.061	2.5	2.3	89	75-125	
Silver	mg/L	<0.017	1.2	1.3	104	75-125	

MATRIX SPIKE SAMPLE:		1772279					
Parameter	Units	40177595001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.4	94	75-125	
Barium	mg/L	0.69	2.5	3.1	94	75-125	
Cadmium	mg/L	<0.0066	2.5	2.3	92	75-125	
Chromium	mg/L	0.081	2.5	2.5	97	75-125	
Lead	mg/L	<0.030	2.5	2.3	91	75-125	
Selenium	mg/L	<0.061	2.5	2.3	91	75-125	
Silver	mg/L	<0.017	1.2	1.3	106	75-125	

MATRIX SPIKE SAMPLE:		1772280					
Parameter	Units	40177596001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/L	<0.042	2.5	2.3	94	75-125	
Barium	mg/L	<0.025	2.5	2.4	95	75-125	
Cadmium	mg/L	<0.0066	2.5	2.3	93	75-125	
Chromium	mg/L	<0.013	2.5	2.5	99	75-125	
Lead	mg/L	<0.030	2.5	2.3	92	75-125	
Selenium	mg/L	<0.061	2.5	2.3	93	75-125	
Silver	mg/L	<0.017	1.2	1.3	105	75-125	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

QC Batch: 303318 Analysis Method: EPA 8260  
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV TCLP  
Associated Lab Samples: 40177595001

METHOD BLANK: 1771608 Matrix: Water  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	mg/L	<0.00041	0.0010	10/16/18 16:20	
1,2-Dichloroethane	mg/L	<0.00017	0.0010	10/16/18 16:20	
2-Butanone (MEK)	mg/L	<0.0030	0.020	10/16/18 16:20	
Benzene	mg/L	<0.00050	0.0010	10/16/18 16:20	
Carbon tetrachloride	mg/L	<0.00050	0.0010	10/16/18 16:20	
Chlorobenzene	mg/L	<0.00050	0.0010	10/16/18 16:20	
Chloroform	mg/L	<0.0025	0.0050	10/16/18 16:20	
Tetrachloroethene	mg/L	<0.00050	0.0010	10/16/18 16:20	
Trichloroethene	mg/L	<0.00033	0.0010	10/16/18 16:20	
Vinyl chloride	mg/L	<0.00018	0.0010	10/16/18 16:20	
4-Bromofluorobenzene (S)	%	99	70-130	10/16/18 16:20	
Dibromofluoromethane (S)	%	95	70-130	10/16/18 16:20	
Toluene-d8 (S)	%	105	70-130	10/16/18 16:20	

METHOD BLANK: 1770889 Matrix: Solid  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1-Dichloroethene	mg/L	<0.0041	0.010	10/16/18 18:57	
1,2-Dichloroethane	mg/L	<0.0017	0.010	10/16/18 18:57	
2-Butanone (MEK)	mg/L	0.38	0.20	10/16/18 18:57	
Benzene	mg/L	<0.0050	0.010	10/16/18 18:57	
Carbon tetrachloride	mg/L	<0.0050	0.010	10/16/18 18:57	
Chlorobenzene	mg/L	<0.0050	0.010	10/16/18 18:57	
Chloroform	mg/L	<0.025	0.050	10/16/18 18:57	
Tetrachloroethene	mg/L	<0.0050	0.010	10/16/18 18:57	
Trichloroethene	mg/L	<0.0033	0.010	10/16/18 18:57	
Vinyl chloride	mg/L	<0.0018	0.010	10/16/18 18:57	
4-Bromofluorobenzene (S)	%	100	70-130	10/16/18 18:57	
Dibromofluoromethane (S)	%	95	70-130	10/16/18 18:57	
Toluene-d8 (S)	%	106	70-130	10/16/18 18:57	

LABORATORY CONTROL SAMPLE: 1771609

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	mg/L	.05	0.047	93	75-132	
1,2-Dichloroethane	mg/L	.05	0.049	99	73-134	
Benzene	mg/L	.05	0.053	105	69-137	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

LABORATORY CONTROL SAMPLE: 1771609

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Carbon tetrachloride	mg/L	.05	0.051	101	73-142	
Chlorobenzene	mg/L	.05	0.051	101	70-130	
Chloroform	mg/L	.05	0.048	96	80-129	
Tetrachloroethene	mg/L	.05	0.055	109	70-130	
Trichloroethene	mg/L	.05	0.056	111	70-130	
Vinyl chloride	mg/L	.05	0.039	79	48-134	
4-Bromofluorobenzene (S)	%			112	70-130	
Dibromofluoromethane (S)	%			95	70-130	
Toluene-d8 (S)	%			106	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1771960 1771961

Parameter	Units	40177501001		MS	MSD	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	MSD Conc.							
1,1-Dichloroethene	mg/L	<4.1 ug/L	.5	.5	0.49	0.48	97	97	72-137	0	20	
1,2-Dichloroethane	mg/L	<1.7 ug/L	.5	.5	0.51	0.49	101	99	71-137	3	20	
Benzene	mg/L	<0.0050	.5	.5	0.53	0.53	106	105	66-143	1	20	
Carbon tetrachloride	mg/L	<5.0 ug/L	.5	.5	0.50	0.50	101	100	73-142	1	20	
Chlorobenzene	mg/L	<5.0 ug/L	.5	.5	0.51	0.50	101	101	70-130	1	20	
Chloroform	mg/L	<25.0 ug/L	.5	.5	0.47	0.48	95	96	80-131	1	20	
Tetrachloroethene	mg/L	<5.0 ug/L	.5	.5	0.54	0.53	108	107	70-132	1	20	
Trichloroethene	mg/L	<3.3 ug/L	.5	.5	0.55	0.55	110	111	70-131	1	20	
Vinyl chloride	mg/L	<1.8 ug/L	.5	.5	0.41	0.42	82	84	46-134	2	20	
4-Bromofluorobenzene (S)	%						112	111	70-130			
Dibromofluoromethane (S)	%						94	94	70-130			
Toluene-d8 (S)	%						105	106	70-130			

MATRIX SPIKE SAMPLE: 1771962

Parameter	Units	40177595001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	mg/L	<0.0041	.5	0.48	96	72-137	
1,2-Dichloroethane	mg/L	<0.0017	.5	0.51	102	71-137	
Benzene	mg/L	<0.0050	.5	0.53	107	66-143	
Carbon tetrachloride	mg/L	<0.0050	.5	0.51	101	73-142	
Chlorobenzene	mg/L	<0.0050	.5	0.51	102	70-130	
Chloroform	mg/L	<0.025	.5	0.48	97	80-131	
Tetrachloroethene	mg/L	<0.0050	.5	0.54	109	70-132	
Trichloroethene	mg/L	<0.0033	.5	0.56	111	70-131	
Vinyl chloride	mg/L	<0.0018	.5	0.42	84	46-134	
4-Bromofluorobenzene (S)	%				113	70-130	
Dibromofluoromethane (S)	%				96	70-130	
Toluene-d8 (S)	%				107	70-130	

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### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

QC Batch: 303829 Analysis Method: EPA 8270  
QC Batch Method: EPA 3510 Analysis Description: 8270 TCLP MSSV  
Associated Lab Samples: 40177595001

METHOD BLANK: 1775443 Matrix: Water  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.0038	0.012	10/22/18 12:35	
2,4,5-Trichlorophenol	mg/L	<0.0017	0.0056	10/22/18 12:35	
2,4,6-Trichlorophenol	mg/L	<0.0042	0.014	10/22/18 12:35	
2,4-Dinitrotoluene	mg/L	<0.0016	0.0053	10/22/18 12:35	
2-Methylphenol(o-Cresol)	mg/L	<0.0017	0.0058	10/22/18 12:35	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.0031	0.010	10/22/18 12:35	
Hexachloro-1,3-butadiene	mg/L	<0.0049	0.016	10/22/18 12:35	
Hexachlorobenzene	mg/L	<0.0034	0.011	10/22/18 12:35	
Hexachloroethane	mg/L	<0.0053	0.018	10/22/18 12:35	
Nitrobenzene	mg/L	<0.0029	0.0097	10/22/18 12:35	
Pentachlorophenol	mg/L	<0.0029	0.0096	10/22/18 12:35	
Phenol	ug/L	<1.2	4.0	10/22/18 12:35	
Pyridine	mg/L	<0.0036	0.012	10/22/18 12:35	
2,4,6-Tribromophenol (S)	%	131	58-134	10/22/18 12:35	
2-Fluorobiphenyl (S)	%	102	54-122	10/22/18 12:35	
Nitrobenzene-d5 (S)	%	98	56-120	10/22/18 12:35	
Phenol-d6 (S)	%	33	16-120	10/22/18 12:35	

METHOD BLANK: 1770913 Matrix: Water  
Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	0.062	10/22/18 20:55	
2,4,5-Trichlorophenol	mg/L	<0.0084	0.028	10/22/18 20:55	
2,4,6-Trichlorophenol	mg/L	<0.021	0.070	10/22/18 20:55	
2,4-Dinitrotoluene	mg/L	<0.0079	0.026	10/22/18 20:55	
2-Methylphenol(o-Cresol)	mg/L	<0.0087	0.029	10/22/18 20:55	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	0.052	10/22/18 20:55	
Hexachloro-1,3-butadiene	mg/L	<0.025	0.082	10/22/18 20:55	
Hexachlorobenzene	mg/L	<0.017	0.056	10/22/18 20:55	
Hexachloroethane	mg/L	<0.027	0.089	10/22/18 20:55	
Nitrobenzene	mg/L	<0.015	0.048	10/22/18 20:55	
Pentachlorophenol	mg/L	<0.014	0.048	10/22/18 20:55	
Phenol	ug/L	<6.0	20.0	10/22/18 20:55	
Pyridine	mg/L	<0.018	0.060	10/22/18 20:55	
2,4,6-Tribromophenol (S)	%	113	58-134	10/22/18 20:55	
2-Fluorobiphenyl (S)	%	78	54-122	10/22/18 20:55	
Nitrobenzene-d5 (S)	%	78	56-120	10/22/18 20:55	
Phenol-d6 (S)	%	28	16-120	10/22/18 20:55	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

METHOD BLANK: 1770914

Matrix: Water

Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	0.062	10/22/18 21:17	
2,4,5-Trichlorophenol	mg/L	<0.0084	0.028	10/22/18 21:17	
2,4,6-Trichlorophenol	mg/L	<0.021	0.070	10/22/18 21:17	
2,4-Dinitrotoluene	mg/L	<0.0079	0.026	10/22/18 21:17	
2-Methylphenol(o-Cresol)	mg/L	<0.0087	0.029	10/22/18 21:17	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	0.052	10/22/18 21:17	
Hexachloro-1,3-butadiene	mg/L	<0.025	0.082	10/22/18 21:17	
Hexachlorobenzene	mg/L	<0.017	0.056	10/22/18 21:17	
Hexachloroethane	mg/L	<0.027	0.089	10/22/18 21:17	
Nitrobenzene	mg/L	<0.015	0.048	10/22/18 21:17	
Pentachlorophenol	mg/L	<0.014	0.048	10/22/18 21:17	
Phenol	ug/L	<6.0	20.0	10/22/18 21:17	
Pyridine	mg/L	<0.018	0.060	10/22/18 21:17	
2,4,6-Tribromophenol (S)	%	117	58-134	10/22/18 21:17	
2-Fluorobiphenyl (S)	%	83	54-122	10/22/18 21:17	
Nitrobenzene-d5 (S)	%	71	56-120	10/22/18 21:17	
Phenol-d6 (S)	%	28	16-120	10/22/18 21:17	

METHOD BLANK: 1771858

Matrix: Water

Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	0.062	10/23/18 14:57	
2,4,5-Trichlorophenol	mg/L	<0.0084	0.028	10/23/18 14:57	
2,4,6-Trichlorophenol	mg/L	<0.021	0.070	10/23/18 14:57	
2,4-Dinitrotoluene	mg/L	<0.0079	0.026	10/23/18 14:57	
2-Methylphenol(o-Cresol)	mg/L	<0.0087	0.029	10/23/18 14:57	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	0.052	10/23/18 14:57	
Hexachloro-1,3-butadiene	mg/L	<0.025	0.082	10/23/18 14:57	
Hexachlorobenzene	mg/L	<0.017	0.056	10/23/18 14:57	
Hexachloroethane	mg/L	<0.027	0.089	10/23/18 14:57	
Nitrobenzene	mg/L	<0.015	0.048	10/23/18 14:57	
Pentachlorophenol	mg/L	<0.014	0.048	10/23/18 14:57	
Phenol	ug/L	<6.0	20.0	10/23/18 14:57	
Pyridine	mg/L	<0.018	0.060	10/23/18 14:57	
2,4,6-Tribromophenol (S)	%	97	58-134	10/23/18 14:57	
2-Fluorobiphenyl (S)	%	69	54-122	10/23/18 14:57	
Nitrobenzene-d5 (S)	%	58	56-120	10/23/18 14:57	
Phenol-d6 (S)	%	24	16-120	10/23/18 14:57	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

METHOD BLANK: 1773592

Matrix: Water

Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	0.062	10/23/18 15:19	
2,4,5-Trichlorophenol	mg/L	<0.0084	0.028	10/23/18 15:19	
2,4,6-Trichlorophenol	mg/L	<0.021	0.070	10/23/18 15:19	
2,4-Dinitrotoluene	mg/L	<0.0079	0.026	10/23/18 15:19	
2-Methylphenol(o-Cresol)	mg/L	<0.0087	0.029	10/23/18 15:19	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	0.052	10/23/18 15:19	
Hexachloro-1,3-butadiene	mg/L	<0.025	0.082	10/23/18 15:19	
Hexachlorobenzene	mg/L	<0.017	0.056	10/23/18 15:19	
Hexachloroethane	mg/L	<0.027	0.089	10/23/18 15:19	
Nitrobenzene	mg/L	<0.015	0.048	10/23/18 15:19	
Pentachlorophenol	mg/L	<0.014	0.048	10/23/18 15:19	
Phenol	ug/L	<6.0	20.0	10/23/18 15:19	
Pyridine	mg/L	<0.018	0.060	10/23/18 15:19	
2,4,6-Tribromophenol (S)	%	103	58-134	10/23/18 15:19	
2-Fluorobiphenyl (S)	%	95	54-122	10/23/18 15:19	
Nitrobenzene-d5 (S)	%	94	56-120	10/23/18 15:19	
Phenol-d6 (S)	%	28	16-120	10/23/18 15:19	

LABORATORY CONTROL SAMPLE: 1775444

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	mg/L	.05	0.038	76	61-108	
2,4,5-Trichlorophenol	mg/L	.05	0.053	107	70-127	
2,4,6-Trichlorophenol	mg/L	.05	0.057	113	77-120	
2,4-Dinitrotoluene	mg/L	.05	0.064	127	70-130	
2-Methylphenol(o-Cresol)	mg/L	.05	0.043	87	60-130	
3&4-Methylphenol(m&p Cresol)	mg/L	.05	0.038	77	53-130	
Hexachloro-1,3-butadiene	mg/L	.05	0.048	96	66-114	
Hexachlorobenzene	mg/L	.05	0.055	110	70-130	
Hexachloroethane	mg/L	.05	0.036	73	52-130	
Nitrobenzene	mg/L	.05	0.047	94	70-130	
Pentachlorophenol	mg/L	.05	0.048	96	65-109	
Phenol	ug/L	50	22.9	46	28-120	
Pyridine	mg/L	.05	0.0098J	20	10-130	
2,4,6-Tribromophenol (S)	%			143	58-134	S0
2-Fluorobiphenyl (S)	%			100	54-122	
Nitrobenzene-d5 (S)	%			103	56-120	
Phenol-d6 (S)	%			40	16-120	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

MATRIX SPIKE SAMPLE:		1775445					
Parameter	Units	40177838001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	.25	0.21	84	57-108	
2,4,5-Trichlorophenol	mg/L	<0.0084	.25	0.26	104	45-127	
2,4,6-Trichlorophenol	mg/L	<0.021	.25	0.28	111	43-129	
2,4-Dinitrotoluene	mg/L	<0.0079	.25	0.30	121	36-165	
2-Methylphenol(o-Cresol)	mg/L	<0.0087	.25	0.20	78	38-130	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	.25	0.17	69	36-130	
Hexachloro-1,3-butadiene	mg/L	<0.025	.25	0.25	101	66-114	
Hexachlorobenzene	mg/L	<0.017	.25	0.27	109	70-130	
Hexachloroethane	mg/L	<0.027	.25	0.20	81	52-130	
Nitrobenzene	mg/L	<0.015	.25	0.23	93	65-130	
Pentachlorophenol	mg/L	<0.014	.25	0.25	100	39-132	
Phenol	ug/L	<0.0060 mg/L	250	96.0	38	21-120	
Pyridine	mg/L	<0.018	.25	0.11	45	10-130	
2,4,6-Tribromophenol (S)	%				137	58-134	SO
2-Fluorobiphenyl (S)	%				102	54-122	
Nitrobenzene-d5 (S)	%				103	56-120	
Phenol-d6 (S)	%				38	16-120	

MATRIX SPIKE SAMPLE:		1775446					
Parameter	Units	40177480001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	.25	0.18	70	57-108	
2,4,5-Trichlorophenol	mg/L	<0.0084	.25	0.23	93	45-127	
2,4,6-Trichlorophenol	mg/L	<0.021	.25	0.25	99	43-129	
2,4-Dinitrotoluene	mg/L	<0.0079	.25	0.26	106	36-165	
2-Methylphenol(o-Cresol)	mg/L	<0.0087	.25	0.19	74	38-130	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	.25	0.16	66	36-130	
Hexachloro-1,3-butadiene	mg/L	<0.025	.25	0.22	89	66-114	
Hexachlorobenzene	mg/L	<0.017	.25	0.24	97	70-130	
Hexachloroethane	mg/L	<0.027	.25	0.16	66	52-130	
Nitrobenzene	mg/L	<0.015	.25	0.21	82	65-130	
Pentachlorophenol	mg/L	<0.014	.25	0.23	92	39-132	
Phenol	ug/L	<6.0	250	99.5	40	21-120	
Pyridine	mg/L	<0.018	.25	0.039J	15	10-130	
2,4,6-Tribromophenol (S)	%				124	58-134	
2-Fluorobiphenyl (S)	%				87	54-122	
Nitrobenzene-d5 (S)	%				89	56-120	
Phenol-d6 (S)	%				34	16-120	

MATRIX SPIKE SAMPLE:		1775447					
Parameter	Units	40177505001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	mg/L	<375 ug/L	.25	<0.38	78	57-108	
2,4,5-Trichlorophenol	mg/L	<168 ug/L	.25	<0.17	65	45-127	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

MATRIX SPIKE SAMPLE:		1775447					
Parameter	Units	40177505001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
2,4,6-Trichlorophenol	mg/L	<423 ug/L	.25	<0.42	79	43-129	
2,4-Dinitrotoluene	mg/L	<158 ug/L	.25	0.18J	70	36-165	
2-Methylphenol(o-Cresol)	mg/L	242J ug/L	.25	0.49J	97	38-130	
3&4-Methylphenol(m&p Cresol)	mg/L	484J ug/L	.25	0.69J	82	36-130	
Hexachloro-1,3-butadiene	mg/L	<492 ug/L	.25	<0.49	83	66-114	
Hexachlorobenzene	mg/L	<339 ug/L	.25	<0.34	90	70-130	
Hexachloroethane	mg/L	<532 ug/L	.25	<0.53	137	52-130	M6
Nitrobenzene	mg/L	<290 ug/L	.25	<0.29	62	65-130	M6
Pentachlorophenol	mg/L	<287 ug/L	.25	0.42J	169	39-132	M6
Phenol	ug/L	271J	250	391J	48	21-120	
Pyridine	mg/L	<358 ug/L	.25	<0.36	59	10-130	
2,4,6-Tribromophenol (S)	%				103	58-134	
2-Fluorobiphenyl (S)	%				89	54-122	
Nitrobenzene-d5 (S)	%				88	56-120	
Phenol-d6 (S)	%				31	16-120	

MATRIX SPIKE SAMPLE:		1775448					
Parameter	Units	40177506001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	mg/L	<93.9 ug/L	.25	0.17J	70	57-108	
2,4,5-Trichlorophenol	mg/L	<42.1 ug/L	.25	0.21	83	45-127	
2,4,6-Trichlorophenol	mg/L	<106 ug/L	.25	0.24J	95	43-129	
2,4-Dinitrotoluene	mg/L	<39.6 ug/L	.25	0.20	80	36-165	
2-Methylphenol(o-Cresol)	mg/L	<43.4 ug/L	.25	0.21	73	38-130	
3&4-Methylphenol(m&p Cresol)	mg/L	<78.1 ug/L	.25	0.19J	62	36-130	
Hexachloro-1,3-butadiene	mg/L	<123 ug/L	.25	0.21J	82	66-114	
Hexachlorobenzene	mg/L	<84.7 ug/L	.25	0.22J	89	70-130	
Hexachloroethane	mg/L	<133 ug/L	.25	0.25J	98	52-130	
Nitrobenzene	mg/L	<72.5 ug/L	.25	0.19J	75	65-130	
Pentachlorophenol	mg/L	<71.7 ug/L	.25	0.21J	85	39-132	
Phenol	ug/L	42.6J	250	117	30	21-120	
Pyridine	mg/L	<89.5 ug/L	.25	0.098J	39	10-130	
2,4,6-Tribromophenol (S)	%				110	58-134	
2-Fluorobiphenyl (S)	%				86	54-122	
Nitrobenzene-d5 (S)	%				81	56-120	
Phenol-d6 (S)	%				29	16-120	

MATRIX SPIKE SAMPLE:		1775449					
Parameter	Units	40177621001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,4-Dichlorobenzene	mg/L	<0.019	.25	0.18	74	57-108	
2,4,5-Trichlorophenol	mg/L	<0.0084	.25	0.22	90	45-127	
2,4,6-Trichlorophenol	mg/L	<0.021	.25	0.24	95	43-129	
2,4-Dinitrotoluene	mg/L	<0.0079	.25	0.27	107	36-165	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

MATRIX SPIKE SAMPLE:		1775449					
Parameter	Units	40177621001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
2-Methylphenol(o-Cresol)	mg/L	<0.0087	.25	0.18	74	38-130	
3&4-Methylphenol(m&p Cresol)	mg/L	<0.016	.25	0.16	63	36-130	
Hexachloro-1,3-butadiene	mg/L	<0.025	.25	0.21	86	66-114	
Hexachlorobenzene	mg/L	<0.017	.25	0.23	91	70-130	
Hexachloroethane	mg/L	<0.027	.25	0.17	69	52-130	
Nitrobenzene	mg/L	<0.015	.25	0.20	82	65-130	
Pentachlorophenol	mg/L	<0.014	.25	0.19	77	39-132	
Phenol	ug/L	<6.0	250	94.7	38	21-120	
Pyridine	mg/L	<0.018	.25	0.13	50	10-130	
2,4,6-Tribromophenol (S)	%				118	58-134	
2-Fluorobiphenyl (S)	%				83	54-122	
Nitrobenzene-d5 (S)	%				85	56-120	
Phenol-d6 (S)	%				33	16-120	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

QC Batch: 303106

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 40177595001

SAMPLE DUPLICATE: 1770478

Parameter	Units	40177554001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	5.3	5.3	0	10	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

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QC Batch:	303161	Analysis Method:	EPA 1010
QC Batch Method:	EPA 1010	Analysis Description:	1010 Flash Point, Closed Cup
Associated Lab Samples:	40177595001		

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LABORATORY CONTROL SAMPLE: 1770861

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Flashpoint	deg F		83.0			

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SAMPLE DUPLICATE: 1770967

Parameter	Units	10450966001 Result	Dup Result	RPD	Max RPD	Qualifiers
Flashpoint	deg F	131.8	139.7			

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

QC Batch: 303308 Analysis Method: EPA 9040

QC Batch Method: EPA 9040 Analysis Description: 9040 pH

Associated Lab Samples: 40177595001

SAMPLE DUPLICATE: 1771549

Parameter	Units	40177448002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.0	8.0	0	20	H6

SAMPLE DUPLICATE: 1771550

Parameter	Units	40177631001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.7	7.7	0	20	H6

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**QUALITY CONTROL DATA**

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

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QC Batch:	437300	Analysis Method:	EPA 9076
QC Batch Method:	EPA 9076	Analysis Description:	9076 Total Chlorine
Associated Lab Samples:	40177595001		

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MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		2405201			2405202							
		92403918003	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Parameter	Units	Result										
Chlorine, Total	%	0.012	.05	.05	0.059	0.059	94	94	80-120	1	20	N2

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

QC Batch: 303188

Analysis Method: EPA 9095

QC Batch Method: EPA 9095

Analysis Description: 9095 PAINT FILTER LIQUID TEST

Associated Lab Samples: 40177595001

METHOD BLANK: 1771088

Matrix: Solid

Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Free Liquids	no units	fail		10/15/18 13:54	

LABORATORY CONTROL SAMPLE: 1771089

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Free Liquids	no units		pass			

SAMPLE DUPLICATE: 1771090

Parameter	Units	40177306001 Result	Dup Result	RPD	Max RPD	Qualifiers
Free Liquids	no units	pass	pass			

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**QUALITY CONTROL DATA**

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

QC Batch: 303638

Analysis Method: SM 2710F

QC Batch Method: SM 2710F

Analysis Description: Spec.Gravity

Associated Lab Samples: 40177595001

SAMPLE DUPLICATE: 1773578

Parameter	Units	40177838001 Result	Dup Result	RPD	Max RPD	Qualifiers
Specific Gravity	no units	1.9	1.8	5	20	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

QC Batch:	317251	Analysis Method:	EPA 9014
QC Batch Method:	SW-846 7.3.3.2	Analysis Description:	733C Reactive Cyanide
Associated Lab Samples:	40177595001		

METHOD BLANK: 1547717 Matrix: Solid

Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide, Reactive	mg/kg	<0.40	0.99	10/19/18 00:02	

LABORATORY CONTROL SAMPLE: 1547718

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide, Reactive	mg/kg	99.6	<0.40	0	0-8	

SAMPLE DUPLICATE: 1547719

Parameter	Units	30268573001 Result	Dup Result	RPD	Max RPD	Qualifiers
Cyanide, Reactive	mg/kg	ND	<0.40		20	

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### QUALITY CONTROL DATA

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

QC Batch:	317250	Analysis Method:	SM4500S2F-00
QC Batch Method:	SW-846 7.3.4.2	Analysis Description:	734S Reactive Sulfide
Associated Lab Samples:	40177595001		

METHOD BLANK: 1547714 Matrix: Solid

Associated Lab Samples: 40177595001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfide, Reactive	mg/kg	<9.9	9.9	10/18/18 23:14	

LABORATORY CONTROL SAMPLE: 1547715

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfide, Reactive	mg/kg	199	35.9	18	0-52	

SAMPLE DUPLICATE: 1547716

Parameter	Units	30268573001 Result	Dup Result	RPD	Max RPD	Qualifiers
Sulfide, Reactive	mg/kg	ND	<10		20	

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## QUALIFIERS

Project: WESTON COAL FLY ASH-LF ACCEPTA  
Pace Project No.: 40177595

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-A Pace Analytical Services - Asheville  
PASI-G Pace Analytical Services - Green Bay  
PASI-PA Pace Analytical Services - Greensburg

### ANALYTE QUALIFIERS

1q Due to the sample matrix, DI water was added to this sample on a one to one basis and the sample was stirred before analysis.

2q Use of method EPA 1010A for flash point analysis on solid samples is for informational purposes only. It is the user's responsibility to verify the acceptance of this data for intended use.

H6 Analysis initiated outside of the 15 minute EPA required holding time.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

M6 Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.

N2 The lab does not hold NELAC/TNI accreditation for this parameter.

S0 Surrogate recovery outside laboratory control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WESTON COAL FLY ASH-LF ACCEPTA

Pace Project No.: 40177595

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40177595001	WESTON 4 FLY ASH	EPA 3010	303424	EPA 6010	303571
40177595001	WESTON 4 FLY ASH	EPA 7470	303426	EPA 7470	303467
40177595001	WESTON 4 FLY ASH	EPA 3510	303829	EPA 8270	303962
40177595001	WESTON 4 FLY ASH	EPA 8260	303318		
40177595001	WESTON 4 FLY ASH	ASTM D2974-87	303106		
40177595001	WESTON 4 FLY ASH	EPA 1010	303161		
40177595001	WESTON 4 FLY ASH	EPA 9040	303308		
40177595001	WESTON 4 FLY ASH	EPA 9076	437300		
40177595001	WESTON 4 FLY ASH	EPA 9095	303188		
40177595001	WESTON 4 FLY ASH	SM 2710F	303638		
40177595001	WESTON 4 FLY ASH	SW-846 7.3.3.2	317251	EPA 9014	317278
40177595001	WESTON 4 FLY ASH	SW-846 7.3.4.2	317250	SM4500S2F-00	317277

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4077595

**Outagamie County Landfill**  
**Brown Outagamie Winnebago Counties**  
**Analytical Protocol/Acceptance Criteria**  
**Protocol A**

(Foundry process waste; municipal, hospital and boiler ash; ink wastes; paint wastes and paint sludges; metal treatment/preparation sludges; waste glues and adhesives; ceramic production/manufacturing waste; soils contaminated with heavy metals.)

Analytical Parameter	Acceptance Criteria
pH	2.0 ≤ pH ≤ 12.5
Total solids	≥ 40%
Free liquids	0%
Flash point (closed cup)	>140°F
Chlorine	<1%
TCLP metals <sup>1</sup>	
arsenic	TCLP <5.0 mg/l
barium	TCLP <100.0 mg/l
cadmium	TCLP <1.0 mg/l
chromium	TCLP <5.0 mg/l
lead	TCLP <5.0 mg/l
mercury	TCLP <0.2 mg/l
selenium	TCLP <1.0 mg/l
silver	TCLP <5.0 mg/l
Total available sulfide	<500 mg/kg
Total available cyanide	<250 mg/kg
Phenol	<2000 mg/l
TCLP organics <sup>1</sup>	
benzene	TCLP <0.5 mg/l
carbon tetrachloride	TCLP <0.5 mg/l
chlorobenzene	TCLP <100.0 mg/l
chloroform	TCLP <6.0 mg/l
o - cresol <sup>2</sup>	TCLP <200.0 mg/l
m - cresol <sup>2</sup>	TCLP <200.0 mg/l
p - cresol <sup>2</sup>	TCLP <200.0 mg/l
1,4 - dichlorobenzene	TCLP <7.5 mg/l
1,2 - dichloroethane	TCLP <0.5 mg/l
1,1 - dichloroethene	TCLP <0.7 mg/l
2,4 - dinitrotoluene	TCLP <0.13 mg/l
hexachlorobenzene	TCLP <0.13 mg/l
hexachlorobutadiene	TCLP <0.5 mg/l
hexachloroethane	TCLP <3.0 mg/l
methyl ethyl ketone	TCLP <200.0 mg/l

40177595

Analytical Parameter	Acceptance Criteria
nitrobenzene	TCLP <2.0 mg/l
pentachlorophenol	TCLP <100.0 mg/l
pyridine	TCLP <5.0 mg/l
tetrachloroethene	TCLP <0.7 mg/l
trichloroethene	TCLP <0.5 mg/l
2,4,5 - trichlorophenol	TCLP <400.0 mg/l
2,4,6 - trichlorophenol	TCLP <2.0 mg/l
vinyl chloride	TCLP <0.2 mg/l

1. For all constituents which are identified as TCLP extraction, it is permissible to do a totals analysis if <20 times the regulatory level. If the totals analysis is >20 times regulatory limit, the TCLP extraction is required.
2. If o-, m-, and p-cresol concentrations cannot be differentiated, the total cresol concentration is used. The regulatory level for total cresol is 200 mg/l.





1241 Bellevue Street, Green Bay, WI 54302

Document Name: Sample Condition Upon Receipt (SCUR)  
Document No.: F-GB-C-031-Rev.07

Document Revised: 25Apr2018  
Issuing Authority: Pace Green Bay Quality Office

### Sample Condition Upon Receipt Form (SCUR)

Project #

WO#: 40177595



Client Name: WEC

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Walto  
 Client  Pace Other: \_\_\_\_\_

Tracking #: \_\_\_\_\_

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used SR - NA Type of Ice:  Wet  Blue  Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: \_\_\_\_\_ /Corr: (20)

Temp Blank Present:  yes  no

Biological Tissue is Frozen:  yes  no

Person examining contents:  
Date: 10/12/18  
Initials: AW

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>no time</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>S</u>	
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased): _____	

Client Notification/ Resolution: \_\_\_\_\_ If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Project Manager Review: [Signature]

Date: 10-12-18

Attachment 4  
Posi-Shell® Product Information and Formulations Guide



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PRODUCTS, LLC™

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## BASE MIX USAGE GUIDE



Revised September 2016 LF

For other LSC Products, Application Equipment, or parts call us at 1-800-800-7671

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**T**his guide gives you specific, easy to follow instructions for the safe and efficient usage of LSC Environmental Products Posi-Shell<sup>®</sup> Base Mix product. For best results and to ensure safety, please follow the instructions carefully.

## 1.0 Definition of Posi-Shell<sup>®</sup> Base Mix

Posi-Shell<sup>®</sup> is a spray applied mineral mortar coating, similar to stucco, used for waste cover, erosion control, and hydroseeding. It is a low-cost alternative to the conventional six inches (150 mm) of soil used as daily cover at most landfills. Posi-Shell<sup>®</sup> is a noncombustible blend of materials providing a thin, non-toxic, stucco-like coating that performs all functions of landfill daily cover, intermediate cover, and erosion control. Applied with a standard hydroseeding unit, this system provides increased landfill capacity while providing a more environmentally effective cover system for the landfill.

### 1.1 Background and Concept

Landfilled solid waste must be covered each day to control vectors, fires, odors, blowing litter, and scavenging. Cover material is generally defined as a six inch (150 mm) soil layer or other suitable material.

Posi-Shell<sup>®</sup> is an alternative to traditional landfill daily cover materials. The coating is a spray-on slurry composed of water, Posi-Shell<sup>®</sup> Base Mix, and optional Portland cement that forms a coating for various types of landfill cover. Posi-Shell<sup>®</sup> is designed for use by a landfill operator at the close of each operating day for compliance with cover regulations. The material meets and exceeds regulatory requirements for the control of landfill vectors, fires, odors, blowing litter, and scavenging.

For most situations Posi-Shell<sup>®</sup> provides cover ranging from 4 to 10 ft<sup>2</sup> per gallon (0.10 to 0.25m<sup>2</sup>/liter) of slurry but depending on conditions and desired quality coverage up to 40ft<sup>2</sup> per gallon (0.75m<sup>2</sup>/L) can be achieved. The coverage area is dependent upon the desired thickness and the texture of the covered surface. Application of Posi-Shell<sup>®</sup> is a one-man operation.

### 1.2 Environmental and Economic Benefits

Use of Posi-Shell<sup>®</sup> conserves energy, natural resources and improves air quality by eliminating the use of heavy earth-moving equipment for the transporting, laying, and reworking of some soil covers on the landfill.

The major benefit of the use of Posi-Shell<sup>®</sup> is the conservation of extremely valuable landfill capacity, commonly known as "air space". Landfill air space is a valuable asset and the need to conserve capacity is paramount to achieve environmental and economic objectives for both landfill operators and regulatory agencies. Efficient use of air space today can directly translate into longer landfill life, decreased operating costs, and increased revenue generation. An increase in air space efficiency up to 20% delays the need for the siting and construction of new facilities that ultimately may have severe environmental and economic impacts.

### 1.3 Equipment

The equipment used for Posi-Shell<sup>®</sup> consists of a standard hydroseeding unit, a towing unit, and a water source. The towing unit is used for moving the hydroseeding unit around the landfill site. If a nearby hydrant or other water source is not available, then a water trailer or truck is required.

### 1.4 Personnel

One operator is required for Posi-Shell<sup>®</sup>. This operator must be capable of operating heavy equipment and be familiar with the mechanics of all equipment used. The operator will be trained by LSC Environmental Products in the use of Posi-Shell<sup>®</sup>. If preferred, a

two man operation may be used to expedite coverage time.

## 1.5 Materials

### 1.5.1 Water

Potable water, non-potable water and landfill leachate can be used as the liquid portion of Posi-Shell<sup>®</sup>. Use of leachate requires site-specific regulatory approval, operations, and safety plan to assure proper health and safety practices are implemented.

In most Posi-Shell<sup>®</sup> mixtures approximately 800 gallons (3030liters) of water is used for each 1000 gallon (3785liters) load of Posi-Shell<sup>®</sup>. The water can either be supplied by a hydrant, pumped from a nearby pond, or brought to and stored adjacent to the hydroseeding unit by water truck or trailer. The sizing of the specific water supply method should be adequate to ensure that the filling of the hydroseeding unit occurs within a few minutes' time.

As stated, leachate can be used as a water source if specific regulatory approval is obtained. It is not recommended that a high-strength leachate be used due to odor concerns and the added safety precautions required to assure worker safety. However, use of relatively dilute leachate is an effective method for reducing a portion of a landfill's total leachate production. The inherent odor-neutralizing properties of Posi-Shell<sup>®</sup> EC Series can mitigate the potential odor problems of leachate when it is used as a water source.

### 1.5.2 Posi-Shell<sup>®</sup> Base Mix

A proprietary blend of finely ground clay, reinforcing fiber, and coloring mixed with water creates the Posi-Shell<sup>®</sup> Base Formulation. See the back of this manual for a GHS Safety Data Sheet for this material.

### 1.5.3 Portland Cement

For more durable covers, optional Portland cement can be used as the cementitious mineral binder component of Posi-Shell<sup>®</sup> EC Series. Approximately 2000 lbs. (907kg) of this material is used for each 1000 gallon (3785 liter) Posi-Shell<sup>®</sup> load. The Portland cement further helps neutralize odors and contaminants found in leachate. Material Safety Data for this material is available through local suppliers.

### 1.5.4 Xtreme Rain Shield™

During light rains, Posi-Shell<sup>®</sup> coatings will not typically wash off. However, if heavy rains are expected prior to the product fully curing (12-24 hours) the addition of Xtreme Rain Shield™ is necessary to prevent washing. See the back of this manual for a GHS Safety Data Sheet for this material.

## 2.0 Safety

Posi-Shell® is nonhazardous and is composed of nonhazardous materials. Certain safety measures are recommended during different aspects of Posi-Shell® use. **Follow safety procedures specific to your hydroseeding unit, towing unit, or other equipment used.**

## 3.0 Operator Attire

The operator should, at all times, wear appropriate protective clothing. Jewelry and loose fitting clothing should be avoided. Recommended protective clothing includes the following:

- Safety glasses with side shields
- Leather gloves
- Industrial grade work coveralls
- Leather steel-toed shoes
- Dust particulate mask

If leachate is being used as the liquid portion of the Posi-Shell® mixture, protective clothing in accordance with site regulations should be worn.

## 4.0 Towing Units

See table on Page 11 for Posi-Shell® material weights. To determine the total load weight, add the Posi-Shell® material weight to the weight of your hydroseeding unit. Ensure that the towing unit and hitch arrangement are capable of handling the total of these weights.

## 5.0 Loading and Mixing Procedure

*It is important to add the Posi-Shell® materials in the order specified.*

### 5.1 Liquid Addition (Step 1)

Before placing any dry material in the mixing tank, the tank must be filled with the appropriate amount of liquid (water or leachate). See chart on Page 11. If your hydroseeding unit has a reserve water tank, fill at this time with clean water. It is not recommended to use leachate as the clean out water.

All bags of material (Posi-Shell® Base Mix, Xtreme Rain Shield™, Portland cement) can be loaded through the side rails of the hydroseeding unit onto the mixing deck from the ground. Ensure that they do not obstruct the ladder area. Never attempt to carry materials up or down ladders. To avoid back injuries, always use proper lifting practices when handling bags. Frozen materials should not be used.

### 5.2 Posi-Shell® Base Mix Addition (Step 2) (If using component mix add Posi-Pak, PSM-200, and coloring at this time)

When handling Posi-Shell® Base Mix, Xtreme Rain Shield™, or Portland cement a dust mask is recommended to prevent inhalation, and coveralls and gloves to prevent skin contact. Safety glasses should be worn to keep dust from entering the eyes. Should eyes or skin come in physical contact with any Posi-Shell® ingredients thoroughly rinse with water.

With mixer paddles running at medium speed add Posi-Shell® Base Mix material by cutting open bag and dumping contents into the mixing tank (discard bag). See chart on Page 11 for quantities. Allow Posi-Shell® Base Mix to mix at high speed for about 5 minutes until peaks and craters are visible on the surface of the product. Properly thickened Posi-Shell® Base Mix will have the consistency of pudding. (see left photo below).



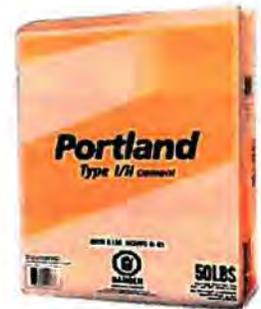
### 5.3 Optional Xtreme Rain Shield™

During light rains, Posi-Shell® coatings will not typically wash off. However, if heavier rains are expected prior to the product fully curing (12-24 hours), the addition of Xtreme Rain Shield™ may be necessary. Operator experience and discretion will determine which Xtreme Rain Shield™ formulation is best suited for the situation. With mixer paddles running at medium speed, add material to the already thickened Base Mix by cutting open the bag and gradually adding the contents into the mixing tank (discard bag). For better dispersion of this product into the Posi-Shell® Base Mix, recirculation through the pump and back to tank may be necessary. Properly thickened Posi-Shell® Base Mix with Xtreme Rain Shield™ added will be more sticky and "rubbery" than the Base Mix (see right photo below showing the elasticity of Xtreme Rain Shield™. Posi-Shell® Base Mix does not "stretch" this far). For best results, Portland cement should be added after the Xtreme Rain Shield™ has thickened to better activate the product. (See chart on Page 11 for quantities).



### 5.4 Optional Portland Cement Addition

At times more durable Posi-Shell® coatings may be desired. These can be achieved by the addition of Portland cement to the already thickened Posi-Shell® Base Mix. With mixer paddles still running at medium speed add Type I Portland cement material (regular Portland cement, NOT concrete.) by cutting open bag and dumping contents into the mixing tank (discard bag). See chart on Page 11 for quantities. After the Portland is added, the material will appear a more grayish brown and have a denser appearance. The thickness should still be about the same as the Posi-Shell® Base Mix (see middle photo below).



Properly Thickened Base Mix  
(Quarter used for perspective)



With Portland Cement Added  
(Quarter used for perspective)



With Xtreme Rain Shield™ Added  
(Showing dripping from spray nozzle)

## 6.0 Transporting

Close inlet hopper lid prior to transportation and leave mixer paddles turning at low speed.

### 6.1 Cold Weather Posi-Shell® Transport

To prevent freezing during extremely cold weather (below 20°F -6°C), recirculate product through system back to mixing tank. Prior to disconnecting spray wand from recirculation hose, be sure to disengage pump.

### 6.2 Towing on Slopes

To avoid the possibility of equipment tipping over, always tow up or back down slopes. DO NOT traverse (tow sideways) across slopes.



Proper orientation of equipment on slope

## 7.0 Application of Posi-Shell®

For overnight cover, conventional end-of-day waste compaction and surface preparation are normally adequate prior to Posi-Shell® application. A smoother surface will require less material due to reduced surface area. For intermediate cover applications it may be desirable to create a smoother, more uniform receiving area by spreading available materials such as greenwaste, ash, or processed waste as leveling material over the conventional waste.

Methods of application and the recommended finished appearance of Posi-Shell® are shown in the photographs on the next page. In general, the operator should position the application unit upwind, and should select the spray nozzle appropriate to the distance from the waste pile. When changing nozzles, be sure to disengage pump before disconnecting nozzle. In some cases, it will be necessary to spray a given area from two directions to compensate for "spray shadow" effects or wind dispersion. The most effective method of coverage will vary with each site, but generally, if opposite spray angles cannot be achieved due to operational constraints, the product is best applied from the location at which it will be observed most often.



An example of Spray Shadow  
(To correct, apply from opposing directions)

When high winds are encountered, it may be necessary to position the hydroseeding unit in an upwind position. Since pumps emit a high pressure stream of slurry it is not generally effected by light winds; however, wind direction should always be considered with respect to airborne dispersion of overspray.

The application process is not typically affected by cold weather. During extremely cold weather, Posi-Shell® will freeze before curing. After a thaw the material will cure. (See Page 16, Durability of Long Term Cover.)



Application of Posi-Shell® via  
Deck-Mounted Discharge Wand



Application of Posi-Shell® via  
Extension Hose



Daily and Intermediate Cover



Cured Long-Term Posi-Shell® Coating

### 7.1 Odor Control

The Posi-Shell® formulation has an inherent capability to suppress odors. By applying the Posi-Shell® as a daily cover, typical landfill odors will be reduced. Additionally if an EC Series coating is used the calcium oxide in Portland cement will further suppress odors.

Where excess or extreme odors warrant additional action, contact LSC for information about our Odor-Shell® product.

### 7.2 Vector Control

Posi-Shell® cover has proven effective at inhibiting the attraction of vectors to waste piles.

### 7.3 Scavenging

General animal scavenging is reduced since the Posi-Shell® seals in odors and hides the visible food source beneath the covering shell. Scavenging by humans is inhibited by the complete visual coverage of the waste pile and by the coating of slurry applied upon all surface objects.

### 7.4 Litter Control

Posi-Shell® cover is highly effective for litter control. Due to the sticky consistency and weight of the material, a shell is formed over the garbage which prevents litter from being blown away by high winds. A thin layer of Posi-Shell® cover is recommended for preventing blowing litter.

In extremely windy situations, Posi-Shell® can be applied to waste as it is being unloaded from garbage trucks. This technique has been proven highly effective.

### 7.5 Fire Control

Posi-Shell® cover is an extremely effective fire control material. Independent laboratory testing of Posi-Shell® by ASTM D4982 method has certified that Posi-Shell® is non-fuel contributing, non-smoke producing, and non-combustible. When an acetylene torch is applied directly to the Posi-Shell® cover, ignition of the Posi-Shell® cover or underlying waste does not occur.

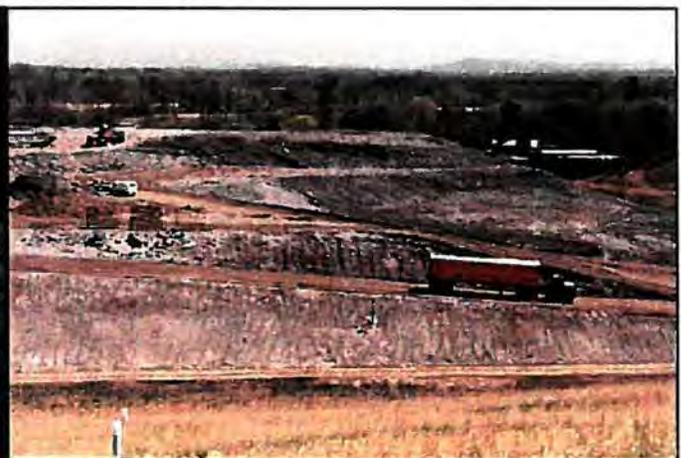
In addition to the non-flammable characteristic of Posi-Shell cover, the Posi-Shell® application unit can be used to fight landfill fires. Direct application of Posi-Shell® material to an open flame will smother it. If a subterranean landfill fire occurs, Posi-Shell® coating can be applied to the waste pile's surface and will form a fire smothering seal.

### 7.6 Additional Applications

Posi-Shell® cover fulfills the relevant performance criteria for various additional applications including erosion control, ditch lining, coating of sludge piles, contaminated soil piles, compost piles and temporary waste piles and excavations of various types. Posi-Shell® has been successfully applied to coal piles, salt piles, cement clinker piles and used at remediation sites to suppress volatile emissions. Posi-Shell® may also be used as the tackifier in hydroseeding mixtures.



Ditch Lining



Finished Appearance of Posi-Shell® Intermediate Cover, Daily Cover, and Erosion Control at a Major Municipal Landfill



Erosion Control



Odor Control

## Posi-Shell®

## Application Minimum Requirements Guideline

	<b>SHORT TERM COVER</b> (Depending on conditions cover can last overnight to several weeks)	<b>MEDIUM TERM COVER</b> (Depending on conditions cover can last several weeks to several months)	<b>LONG TERM COVER</b> (Depending on conditions cover can last several months to one year)
<b>SLURRY MIXTURE*</b>	Posi-Shell® Base Posi-Shell® EC-1 (See next page for mixtures)	Posi-Shell® EC-2 Posi-Shell® EC-4 (See next page for mixtures)	Posi-Shell® EC-2 Posi-Shell® EC-4 (See next page for mixtures)
<b>APPLICATION RATE</b>	Approx. 8-10 ft <sup>2</sup> /gal.** (0.20 to 0.25 m <sup>2</sup> /L.)	Approx. 6-8 ft <sup>2</sup> /gal. (0.15 to 0.20 m <sup>2</sup> /L.)	Approx. 4-6 ft <sup>2</sup> /gal. (0.10 to 0.15 m <sup>2</sup> /L.)
<b>COVERAGE METHOD</b>	Apply from two directions to eliminate spray shadow.	Apply from two directions to eliminate spray shadow.	Apply from two directions to eliminate spray shadow. For slope coverage extend cover 3-4 feet (0.9 to 1.2 meters) beyond crest of slope.
<b>COVERAGE THICKNESS</b>	Finished cover should be Approx. 1/8" (3.5 mm)	Finished cover should be Approx. 1/4" (6.5 mm)	Finished cover should be Approx. 3/8" (9.5 mm)
<b>COVERAGE APPEARANCE</b>	No waste/soil visible from any angle.	No waste/soil visible from any angle. Cover should have a "stucco-like" texture.	No waste/soil visible from any angle. Cover should have a "stucco-like" texture.
<b>COVERAGE MAINTENANCE</b>	None. Waste is placed over cover next working day.	Cover should be inspected periodically and touched up if waste/soil becomes visible.	Cover should be inspected periodically and touched up if waste/soil becomes visible.

\* These are manufacturer's recommendations. Use and practice will determine the best mixture for each situation.

\*\* Depending on conditions and desired quality, up to 40 ft<sup>2</sup>/gal. (0.75m<sup>2</sup>/L.) can be achieved.

## Posi-Shell® Formulations Guide

Materials	Base	EC Series			Xtreme Rain Shield™ Series (XRS)		
		EC-1	EC-2	EC-4	Light	Medium	Heavy
Water or Leachate (Gallons)*	800	800	800	800	800	800	800
Posi-Shell® Base Mix: 50 lb Bag	10	10 (500 lbs.)	10 (500 lbs.)	10 (500 lbs.)	10 (500 lbs.)	5 (250 lbs.)	5 (250 lbs.)
Portland cement (lbs)	-	500	1000	2000	500	1000	2000
Xtreme Rain Shield™ (50 lb Bag)	-	-	-	-	0.50 (25 lbs.)	2 (100 lbs.)	4 (200 lbs.)
Finished Product (Gallons)	800	850	900	1000	850	900	1000
Rain Guide (Inches)**	0.0-0.25	0.0-0.5	0.0-0.5	0.0-0.5	0.5-1.0	1.0-2.0	>2.0

\*Amount of rainfall product typically sustains without washing.

\*\*Some leachate, hard water, and salty water may require more Posi-Shell® Base Mix to achieve proper thickness.

Materials	Base	EC Series			Xtreme Rain Shield™ Series (XRS)		
		EC-1	EC-2	EC-4	Light	Medium	Heavy
Water or Leachate (Liters)	3030	3030	3030	3030	3030	3030	3030
Posi-Shell® Base Mix: 50 lb Bag	10	10 (225 kg.)	10 (225 kg.)	10 (225 kg.)	10 (225 kg.)	6 (138 kg.)	5 (138 kg.)
Portland cement (kgs)	-	225	450	900	225	450	900
Xtreme Rain Shield™ (23 kg Bag)	-	-	-	-	0.50	2	4
Finished Product (Liters)							
Rain Guide (Centimeters)	0.0-1.25	0.0-1.25	0.0-1.25	0.0-1.25	1.25-2.54	2.54-5.08	>5.08

### 7.7 Discharge Nozzle Selection

While other nozzles may be used, LSC Environmental Products offers numerous types of discharge nozzles for the effective spraying of Posi-Shell® at a variety of ranges. Experience and operator discretion will determine which nozzle to use in each situation.



Long Range (Solid Stream)  
for Distances of 100–150 feet  
(30–46 meters)



Medium/Long Range (15° Flat  
Spray) for Distances of 75–100  
feet (23–30 meters)



Medium Range (25° Flat Spray)  
for Distances of 25–75 feet  
(8–23 meters)



Short Range (50° Flat Spray)  
for Distances of 5–25 feet  
(1.5–8 meters)



High Efficiency (25° Low Flow Spray)  
for Distances of 5–25 feet  
(1.5–8 meters)

### 7.8 Handling the Discharge Spray Boom

Care must be taken to use the proper discharge nozzle in order to attain the desired spray range, as being too close to the surface will cause the Posi-Shell® stream to overturn waste on contact. At long range distances the Posi-Shell® stream will break up, causing the desired spray effect. At ranges under 75 ft. (23 meters) the medium or short nozzle should be used and are designed to spray in a wide ribbon pattern.

Blockages may occur in nozzles due to foreign objects in the raw materials. Refer to Section 11.1 for procedure on removing foreign object from discharge nozzle.

With the desired nozzle securely in place, firmly grasp discharge spray handle in one hand and point discharge nozzle in desired direction of spray. With the other hand engage product pump and begin covering area. For desired spray effect operator may adjust pump or throttle speed.

Never disconnect nozzles when pump is running. Never engage pump with discharge spray boom unattended. Never put hands in front of discharge nozzles.

Do not spray at or near other persons. Spray exits nozzle at a high velocity and could cause injury.

Do not spray toward power lines, transformers or other high voltage conductors. Avoid spraying into wind. When unavoidable, be sure to keep direction of spray near to ground. Safety glasses should be worn during spraying operation.

### 7.9 Coverage of Large Area

Coverage of a large area will require moving the application unit to several spray locations. Inspect the area from several perspectives to ensure that the spray has covered all areas.

### 7.10 Heavy Applications

Heavy applications may be applied in multiple coats by letting the previous coats partially dry between applications. Several thin applications provides a more consistent and durable shell than a single thick application.

## 8.0 Cleaning

It is recommended that the hydroseeding unit be cleaned after use. For sites using Posi-Shell<sup>®</sup> Base, the product MAY be used over several days and will not set up in the mixing tank. After the product is all used, the unit should be cleaned. For loads with Portland cement in the mixture, all the product should be used in one day and the unit cleaned after use.

1. When tank is empty of product, shut off pumps, paddles, and engine.
2. Open all inlet lids.
3. With clean water, rinse product from inlets, lids, deck, walls, etc.
4. Fill tank to mixing shaft.
5. Close inlet lids.
6. Agitate mixing paddles at high speed for several minutes, splashing water inside of tank.
7. Drain in approved location.
8. Repeat steps 4–7 as necessary.



A properly cleaned hydroseeding unit will remain free of any built-up product internally and externally.

## 9.0 Winter Care

In extreme cold it is imperative that engines and hydraulic systems are thoroughly warmed before introducing a load. Refer to the operations manual for your hydroseeding unit for proper winter usage and care. During cold weather periods, the hydroseeding unit tank and pump must be drained at the end of the day to avoid freezing. It is desirable, but not necessary, to bring the machinery into a heated building for overnight storage.

### 9.1 Posi-Shell<sup>®</sup> Winterizing Procedure

1. After cleanout, drain the mixing tank thoroughly. **DO NOT REPLACE DRAIN CAP.**
2. If your hydroseeding unit is equipped with a reserve water tank and/or pump, drain thoroughly. **DO NOT REPLACE DRAIN CAPS.**
3. Pour approximately one half gallon (1.9 L) of anti-freeze into pump or tank and slowly run through pump and lines to prevent freezing.

## 10.0 Materials Storage

All materials are inert, and can be stored on, or off, the boundaries of lined landfill cells.

### 10.1 Posi-Shell<sup>®</sup> Material Storage

#### 10.1.1 Posi-Shell<sup>®</sup> Base Mix

Posi-Shell<sup>®</sup> Base Mix should be kept dry. Stretch wrapped pallets can be easily covered with a tarp or plastic.

#### 10.1.2 Optional Portland Cement & Xtreme Rain Shield™

Portland cement & Xtreme Rain Shield™ should be kept dry. Stretch wrapped pallets can be easily covered with a tarp or plastic.

## 11.0 Troubleshooting

### 11.1 Removing Foreign Object from Discharge Nozzle

1. Immediately turn off pump.
2. If unit is equipped with pump reverse feature, reversing for a few seconds releases any potential pressure in lines. With nozzle pointing away, remove nozzle and clear obstruction.
3. Reconnect nozzle and continue spraying.

### 11.2 Removing Foreign Object from Mixing Tank

1. Shut off mixer, pump, and engine.
2. If object can be safely retrieved with extended gaff tool, remove and continue with operation. If object cannot be found, drain load in approved area, locate object, and safely remove with extended gaff tool.

### 11.3 Clearing Clogged Mixing Tank

1. In the unlikely event that the Posi-Shell<sup>®</sup> slurry has thickened in the mixing tank to the point that the mixer paddles will not turn, disengage mixer. Do not force mixer.
2. A strong stream of water applied to the surface of the material should begin to thin the slurry. Gently rocking the mixer should free up material and allow to mix back to normal consistency. If this procedure does not work, product would need to be manually removed from tank. It is recommended that deck plates are removed for this process, site specific PPE be worn, and confined space entry and lockout/tagout procedures are followed.

### 11.4 Lockout/Tagout & Confined Space Entry

1. The authorized employee must adhere to their own company's procedure for "Lockout/Tagout". He or she must understand the hazards and know how to control them.
2. If the equipment is operating, shut it down by normal stopping procedure (turn key switch off, depress emergency stop button, close valves, etc.) and remove the positive battery cable so that the machine or equipment is isolated from the battery.
3. Install tags on the battery cable lug and at the ignition control box with Date, Time, & Authorized Repair Employee's Name.
4. If repairing such items as springs, flywheels, hydraulic systems, air, gas or water pressure, etc..., stored or residual energy may be present and must be dissipated or restrained by methods such as grounding, repositioning, blocking, bleeding down, etc.
5. Ensure that no other personnel are in the engine compartment or areas of isolation. Then verify the isolation of the equipment by operating the normal controls, testing to make certain the equipment will not operate.
6. Return all controls to "Neutral" or "OFF" after verifying the isolation of the equipment.
7. If entry into confined space is necessary, the authorized employee must adhere to their own company's procedure for "Confined Space Entry"

## 12.0 Contingency Soil Supply

In the event that you are unable to apply Posi-Shell<sup>®</sup>, the landfill operator should have a three-day supply of soil for daily cover material available on-site.



## Recycling Waste Latex Paint With Posi-Shell®

**Liquids in Landfills** – To limit the generation of leachate in solid waste landfills, 40 CFR Part 264.314 and 265.314 cites restrictions on the disposal of material containing free liquids. The criteria used to determine whether a material contains free liquids is the ASTM B9095 Paint Filter Test Method in which 100-mL or 100-g of sample of material is placed into a standard conical paint filter (mesh number +/-5%, available at local paint stores). In short, if any of the material passes through and drops from the filter within a 5 minute test period, the material is deemed to contain free liquids.

**Household Hazardous Waste** - Household Hazardous Waste (HHW) departments offer various programs for residents and businesses to dispose of special wastes including but not limited to certain free liquids such as oils, aerosols, detergents, and paints most of which, after collection, are forwarded to specialty facilities for disposal or recycling.

**Waste Latex Paint** - Waste latex paint (WLP) can be generated in large quantities which results in high disposal costs for the solid waste facilities that collect it. Being water based, WLP is non-hazardous but is a free liquid and therefore may not be disposed in its original form in solid waste facilities.

**Traditional Methods of disposal** - Methods employed by solid waste facilities for disposing of WLP, once collected, are varied. In some cases, residents are instructed to solidify the WLP by mixing it with a product such as litter box media or other absorbent and then dispose of it along with their other residential waste, while others facilities may collect the WLP, warehouse it, and offer residents a "drop and swap" program. Many facilities not favoring these programs will pay to have WLP removed by third party firms permitted to dispose of or recycle it in some way.

**Beneficial Reuse with Posi-Shell®** - Numerous solid waste facilities utilizing the Posi-Shell® Cover System (for alternate daily cover, intermediate cover, erosion control, etc.) recycle WLP through the spray-applied Posi-Shell® product. Since Posi-Shell® is a thick, viscous, mineral mortar slurry which passes the ASTM B9095 Paint Filter Test Method, approval to add quantities of WLP into this slurry can be obtained, thus altering the WLP from a free liquid into a beneficially reused solid.

LSC Environmental Products endorses the use of WLP in the Posi-Shell® mixture as this additive actually enhances the coating in a number of ways and has no negative effect on application equipment. The WLP becomes a part of the hardened coating and does not recirculate through the landfill as a free liquid. Under the compaction of heavy landfill equipment, the WLP-enhanced Posi-Shell® breaks up and falls into surface voids already present on the working face. Posi-Shell® does not create impermeable layers within a landfill cell and has no negative effect on leachate or leachate collection systems.

Numerous methods exist for collecting and storing WLP for use with Posi-Shell®. Facilities collecting only small quantities usually store the WLP in the original cans or containers in an approved area. Facilities collecting larger quantities utilize automated can crushers which puncture, empty, and size reduce one and five gallon cans and collect the paint into larger drums. Regardless of the collection process it is recommended to screen the WLP through a 5/16" expanded metal sieve prior to pouring into application equipment.

**Approval** - Historically, obtaining approval for adding WLP to Posi-Shell® is not difficult. Generally, submittal to the state regulatory agency for a demonstration project period is required and possibly a minor modification to the operating permit.

**Mixture Ratio** - Approximately 10% WLP can be added to every gallon of finished Posi-Shell® slurry.

**Mixture Procedure** - WLP is added to the finished Posi-Shell® slurry, after all other ingredients have been mixed.



## Durability of Posi-Shell<sup>o</sup> Long Term Cover

When used for long term cover, Posi-Shell<sup>o</sup> Coatings should be applied at 4-6 sq. ft. per gallon using application techniques described in the Base Mix Usage Guide. For best results apply product while outdoor temperature is above 50° F with no precipitation, and on a dry surface. These "ideal conditions" should remain for 48 hours after application to allow product to cure properly. When applied as described above customers in various climate and precipitation zones regularly achieve 12 months of durable cover with little to no maintenance.

The "duration" or "durability" of long term cover is understood to mean that the cover will perform as well as it did shortly after application and curing. Around the 12 month point, if no maintenance has been performed, the cover could begin to deteriorate from exposure to various elements, but will likely continue performing it's desired function (i.e.: erosion control, dust control, etc.). In this case, "durability" of cover could extend well beyond this 12 month period.

If an end user wants to maintain cover at "just applied" conditions, they may expect to use 5-20% of the original application materials for touch up annually, depending on the application surface.

Long term durability is best achieved using Posi-Shell<sup>o</sup> Coatings with durability enhancer added; however, if the product is applied in less than "ideal conditions" (i.e.: below 50° F, in rainy conditions, or on wet surfaces), the duration of the cover may become shortened. Describing exactly the shortened duration period is difficult, but field experience shows that the product will likely perform for several months even when applied in less than ideal conditions. Product should not be applied to standing water, or in heavy rainfall. The addition of Xtreme Rain Shield is recommended when application during rainfall is unavoidable, or when heavy rainfall is forecasted.



# GHS Safety Data Sheet

# SDS

LSC Environmental Products, LLC  
Issue Date: June 15, 2015

Posi-Shell<sup>®</sup> Base Mix

Page 1 of 4

## 1 Identification

<b>Supplier</b>	LSC Environmental Products, LLC 2183 Pennsylvania Ave Apalachin, NY 13732
Telephone:	607-625-3050
Fax:	607-625-2688
Web:	www.lscenv.com
<b>Product Name</b>	<b>Posi-Shell<sup>®</sup> Base Mix</b>
Description:	Sodium Montmorillonite Clay (SMC) with Synthetic Fibers and Coloring
CAS Number:	N/A
Recommended Use:	Spray Applied Environmental Coatings.

## 2 Hazards Identification

Route of Entry:	Eye Contact, Skin Contact, Inhalation								
Hazards:	<table> <tr> <td>Eye:</td> <td>May cause mechanical irritation.</td> </tr> <tr> <td>Skin:</td> <td>May cause drying resulting in dermatitis.</td> </tr> <tr> <td>Ingestion:</td> <td>No known health effects.</td> </tr> <tr> <td>Inhalation:</td> <td> <p>Acute: Short term exposure may cause mechanical irritation resulting in dry cough. May aggravate existing respiratory illness.</p> <p>Chronic: Repeated inhalation of respirable* crystalline silica above exposure limits can cause lung disease, including silicosis and lung cancer.</p> </td> </tr> </table>	Eye:	May cause mechanical irritation.	Skin:	May cause drying resulting in dermatitis.	Ingestion:	No known health effects.	Inhalation:	<p>Acute: Short term exposure may cause mechanical irritation resulting in dry cough. May aggravate existing respiratory illness.</p> <p>Chronic: Repeated inhalation of respirable* crystalline silica above exposure limits can cause lung disease, including silicosis and lung cancer.</p>
Eye:	May cause mechanical irritation.								
Skin:	May cause drying resulting in dermatitis.								
Ingestion:	No known health effects.								
Inhalation:	<p>Acute: Short term exposure may cause mechanical irritation resulting in dry cough. May aggravate existing respiratory illness.</p> <p>Chronic: Repeated inhalation of respirable* crystalline silica above exposure limits can cause lung disease, including silicosis and lung cancer.</p>								

NFPA: Not regulated, Non-hazardous

## 3 Composition / Information on Ingredients

Component	CAS#	Amount
Sodium Montmorillonite Clay (SMC)*	N/A	> 90%

\*Typical western SMC contains 1-6% crystalline silica as quartz CAS# 14808-60-7.

## 4 First-Aid Measures

Eye:	Flush eyes and under eye lids with plenty of water until irritation ceases. Contact physician if irritation persists.
Skin:	Wash with soap and water until clean. Contact physician if irritation develops.
Ingestion:	None known.
Inhalation:	Move to area free from dust. If symptoms of irritation persist, contact physician. Inhalation may aggravate existing respiratory illness.



# GHS Safety Data Sheet

# SDS

LSC Environmental Products, LLC

Issue Date: June 15, 2015

Posi-Shell® Base Mix

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## 5 Fire Fighting Measures

Flammability: Non-flammable

## 6 Accidental Release Measures

Personal Precaution: Avoid breathing dust; wear respirator approved for silica bearing dust.  
 Cleanup: Vacuum to avoid generating airborne dust. Avoid using water. Material becomes slippery when wet.

## 7 Handling and Storage

Handling: Use NIOSH/MSHA respirators approved for silica bearing dust when airborne SMC dust levels exceed PEL/TLVs. Clean up spills promptly to avoid making dust. Storage area floors may become slippery if wetted.  
 Storage: Store in a dry place.

## 8 Exposure Controls / Personal Protection

Exposure Guidelines (Inhalation):

Component	OSHA PEL (8 hr TWA)	ACGIH TVL
Crystalline Silica as Quartz	0.1 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>
Particles not Otherwise Regulated		
Total Dust	15 mg/m <sup>3</sup>	N/A
Respirable Dust	5 mg/m <sup>3</sup>	N/A

Engineering Controls: None required for outdoor mixing and application. Use local ventilation to maintain PELs/TLVs if handling indoors.

Personal Protective Equipment:

Eye and Face Protection: Wear safety glasses or goggles during loading and application to protect from dust, splashing, and spray mist.  
 Skin Protection: Wear gloves and overalls to protect skin and clothing from contact with product. Personal hygiene measures, such as washing hands and face after working with materials, are recommended.  
 Respiratory Protection: When handling generates dust levels above exposure limits, use respirators approved by NIOSH/MSHA for silica bearing dust.

## 9 Physical and Chemical Properties

Appearance: Off-white dry powder. Small quantity of brown powder and fine white fibers also present in package.



## GHS Safety Data Sheet

## SDS

LSC Environmental Products, LLC  
Issue Date: June 15, 2015

Posi-Shell® Base Mix

Page 3 of 4

Odor:	Not Determined
pH:	8-10 (5% aqueous suspension)
Relative Density (H <sub>2</sub> O=1):	2.45-2.55
Bulk Density (at 20° C):	55 lbs/cu ft as dry product
Melting Point:	Approx. 1450° C
Solubility in Water:	<2% soluble by weight.
Flammability:	Non-flammable

### 10 Stability and Reactivity

Stability:	Stable
Hazardous Decomposition Products:	None under normal handling conditions.
Hazardous Polymerization:	Will not occur.
Incompatible Materials:	Hydrofluoric Acid.

### 11 Toxicological Information

- Carcinogenicity:
- Sodium Montmorillonite Clay is not listed by ACGIH, IARC, NTP, or OSHA.
  - IARC, 1997, concludes that there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica from occupational sources (IARC Class 1), that carcinogenicity was not detected in all industrial circumstances studied and that carcinogenicity may depend on characteristics of the crystalline silica or on external factors affecting its biological activity. NTP classifies respirable crystalline silica as "known to be a human carcinogen" (NTP 9th Report on Carcinogens - 2000). ACGIH classifies crystalline silica quartz as a suspected human carcinogen (A2).

### 12 Ecological Information

No information available.

### 13 Disposal Considerations

Bury in licensed landfill according to local, state, and federal regulations.

### 14 Transportation Information

US DOT: Non-regulated

### 15 Regulatory Information

None of the components in this product are known to be regulated by national or international regulatory bodies.



## GHS Safety Data Sheet

## SDS

LSC Environmental Products, LLC

Issue Date: June 15, 2015

Posi-Shell® Base Mix

Page 4 of 4

16	Other Information
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SDS Status: Revised from MSDS format in 2015 to comply with GHS requirements.

All information presented herein is believed to be accurate; however, it is the user's responsibility to determine in advance of need that the information is current and suitable for their circumstances.

No warranty or guarantee, expressed or implied, is made by LSC Environmental Products, LLC as to this information or as to the safety, toxicity, or effect of the use of this product.

## **Attachment 5**

### **WDNR Plan Mod Approvals for ADC/Beneficial Use Materials**



November 29, 2022

FID 405132860  
Brown County  
SW / Approval

Mr. Chad Doverspike  
Brown County Port & Resource Recovery Department  
2561 S Broadway  
Green Bay, WI 54304

Subject: Conditional Plan of Operation Approval Modification for the use of NEW Water Ash/Sand Mixture as alternate daily cover (ADC) and other beneficial uses within the Brown County South Landfill, Town of Holland, Brown County, License No. 3565

Dear Mr. Doverspike:

The Department of Natural Resources (department) has reviewed the requested plan of operation modification dated August 15, 2022. The department conditionally approves the plan of operation modification. Please include the attached plan of operation approval modification in the written operating record for the landfill as specified in s. NR 506.17, Wis. Adm. Code.

The Brown County Port & Resource Recovery Department (BCPRRD) requested use of NEW Water incinerator ash and sand as well as Manitowoc Grey Iron Foundry sand and slag for ADC and other beneficial uses within the landfill. In an email dated October 21, 2022, Foth (on behalf of BCPRRD) requested to remove the Manitowoc Grey Iron Foundry material from the request. The NEW Water incinerator ash and sand will be used for berm construction, for stabilization of interior roadways and the deck area, and for ADC within the landfill.

Please keep in mind that this approval does not relieve the BCPRRD of obligations to meet all other applicable federal, state or local permits, zoning and regulatory requirements. If you have questions regarding this approval, please contact Sally Hronek at 920-609-5236 or email: [Sally.Hronek@wisconsin.gov](mailto:Sally.Hronek@wisconsin.gov).

Sincerely,

Kristin DuFresne  
Waste and Materials Management Program Supervisor  
Northeast Region

Enclosed - Approval

cc: Dan Michiels – Foth (e-mail)  
Sara Beine – Foth (email)  
Ben Hintz – BC (email)  
Sally Hronek – DNR/WA (email)  
Kevin Lincicum – DNR/WA (e-mail)  
Valerie Joosten – DNR/WA (e-mail)

**BEFORE THE  
STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES**

**CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION  
FOR THE  
BROWN COUNTY SOUTH LANDFILL  
LICENSE NO. 3565**

**FINDINGS OF FACT**

The Department of Natural Resources (department) finds that:

1. The Brown County Port & Resource Recovery Department (BCPRRD) owns and operates a non-hazardous solid waste disposal facility (Brown County South Landfill [BCSLF]) in the E ½ of the SW ¼ of Section 18, Township 21N, Range 20E, town of Holland, Brown County, Wisconsin.
2. On January 16, 2020, the department issued a conditional plan of operation approval for the BCSLF.
3. On August 15, 2022, Foth Infrastructure and Environment, LLC (Foth), on behalf of the BCPRRD, submitted a request for an expedited plan of operation modification. On September 9, 2022, BCPRRD withdrew the request for an expedited plan of operation modification and requested a modification to the plan of operation in accordance with s. NR 514.04(6), Wis. Adm. Code. The department received the review fee of \$1,000 for an expedited plan of operation modification on August 19, 2022. The remaining review fee of \$650 for a regular plan of operation modification was received by the department on November 14, 2022.
4. The information submitted in connection with the plan modification request includes the following:
  - a. A letter and attachments prepared by Foth titled, “Expedited Plan Modification Beneficial Use and ADC Request – Ash, Sand, and Slag Brown County South Landfill – WDNR License No. 3565” and dated August 15, 2022.
  - b. An email dated September 29, 2022 from Foth revising the request to a regular plan modification to allow more time to collect additional information for the Manitowoc Grey Iron Foundry sand and slag material.
  - c. An email dated October 21, 2022 from Foth requesting to remove the Manitowoc Grey Iron Foundry sand and slag material from the plan of operation modification request.
5. Additional documents reviewed in connection with the plan modification request include the following:
  - a. The department’s November 18, 2021 approval for BCSLF to use papermill sludge as ADC from Green Bay Packaging (GBP), Inc. and Sonoco.
  - b. The department’s January 16, 2020 conditional plan of operation approval for BCSLF.
  - c. The department’s Alternate Daily Cover for Municipal Solid Waste Landfills, PUB-WA-1699, dated 2014.

- d. The department's files pertaining to the BCSLF (License No. 3565).
6. Additional facts relevant to the review of the plan modification request include:
- a. NEW Water incinerator ash and sand is generated as part of the wastewater treatment plant (WWTP) sludge incineration process.
    - i. Ash from the incineration process is stockpiled in ponds and then dewatered.
    - ii. A berm of clean sand is placed between the dewatering ash and the pond to filter the dewatered ash and provide a wind barrier.
    - iii. The dewatered ash and sand, primarily sand by weight, make up the material that is proposed for beneficial use.
  - b. BCSLF anticipates receiving 3,000-4,000 tons of NEW Water incinerator ash and sand per year.
  - c. BCSLF use of the ash/sand material for beneficial use includes berm construction, road base, and decking surfaces. The request also proposed used as ADC.
    - i. The material will be used for stabilization of interior roadways and the deck area.
    - ii. BCSLF may mix it with other materials (i.e., breaker run, foundry sand, construction and demolition materials, slag, etc.) to form a solid base for the hauling vehicles to operate on.
7. The special conditions set forth below are needed to assure that the sites are operated and maintained in an environmentally sound manner. If the special conditions are complied with, the proposed modifications will not inhibit compliance with the standards set forth in the applicable portions of chs. NR 500-538, Wis. Adm. Code.

### **CONCLUSIONS OF LAW**

1. The department has the authority under s. 289.30(6), Wis. Stats., to modify a plan of operation approval if the modification would not inhibit compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.
2. The department has the authority to approve a modification to the plan of operation with special conditions if the conditions are needed to ensure compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.
3. The conditions of approval set forth below are needed to ensure compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.
4. In accordance with the foregoing, the department has the authority under s. 289.30(6), Wis. Stats., to issue the following conditional plan of operation modification approval.

### **CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION**

The department hereby approves the proposed plan of operation modification for the BCSLF, subject to compliance with chs. NR 500-538, Wis. Adm. Code and the following conditions:

1. Waste materials used as ADC shall not contain free liquids.
2. The landfill operator shall remove, scarify or mix-in to the extent possible, at the beginning of the next operating day, any alternative daily cover material that would create a barrier to the movement of leachate and gas.
3. ADC materials shall be stored within the lined footprint of the landfill.
4. The NEW Water incinerator ash and sand material shall not be used within 10-feet of the landfill drainage blanket.
5. The use of the NEW Water incinerator ash within the landfill shall be limited to weather conditions that do not make the material windblown. If the material becomes windblown, it must be covered with a material that prevents windblown conditions.

Unless specifically noted, the conditions of this approval do not supersede or replace any previous conditions of approval for this facility.

This approval is based on the information available to the department as of the date of approval. If additional information, project changes or other circumstances indicate a possible need to modify this approval, the department may ask you to provide further information relating to this activity. Likewise, the department accepts proposals to modify approvals, as provided for in state statutes and administrative codes.

#### NOTICE OF APPEAL RIGHTS

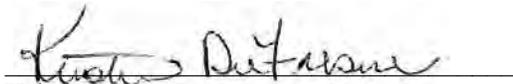
If you believe you have a right to challenge this decision made by the department, you should know that Wisconsin statutes and administrative codes establish time periods and requirements for reviewing department decisions.

To seek judicial review of the department's decision, sections 227.52 and 227.53, Wis. Stats., establish criteria for filing a petition for judicial review. You have 30 days after the decision is mailed or otherwise served by the department to file your petition with the appropriate circuit court and serve the petition on the department. The petition shall name the Department of Natural Resources as the respondent.

Dated: November 29, 2022

#### DEPARTMENT OF NATURAL RESOURCES

For the Secretary



Kristin DuFresne  
Waste and Materials Management Program Supervisor  
Northeast Region



Sally Hronek  
Waste Management Engineer  
Northeast Region



November 17, 2023

FID 405132860  
Brown County  
SW/Approval

Mr. Chad Doverspike  
Brown County Port & Resource Recovery Department  
2561 S Broadway  
Green Bay, WI 54304

Subject: Conditional Plan of Operation Approval Modification for the Beneficial Use of Tire Chips at the Brown County South Landfill, Town of Holland, Brown County, License No. 3565

Dear Mr. Doverspike:

The Department of Natural Resources (department) is approving the requested plan of operation modification (the plan) dated September 5, 2023, for the Brown County South Landfill. The department is conditionally approving the plan of operation modification to beneficially use tire derived aggregate (TDA) as horizontal gas extraction well and leachate recirculation trench pipe bedding. Please include the attached plan of operation approval modification in the written operating record for the landfill as specified in s. NR 506.17, Wis. Adm. Code.

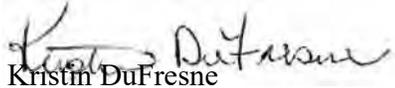
Brown County Port & Resource Recovery Department (BCPRRD) is proposing to replace stone aggregate in horizontal gas collection and leachate recirculation trenches with TDA. The TDA will be 2-inch by 2-inch nominally sized tire chips or shreds with 95% of embedded metals removed and wire strands limited to ½ inch protrusions from tire chips. The TDA will additionally have 95% of fines passing the ½ inch screen removed. The TDA will be stockpiled off of the landfill footprint on a concrete pad located north of the landfill.

The horizontal gas extraction trench and leachate recirculation trench widths will be increased to 42-inches to account for anticipated consolidation of the tire chips. BCPRRD is proposing to try various configurations of the horizontal gas extraction trenches by installing one or multiple low points in the horizontal gas extraction trenches for leachate drainage. Tires chips will be set back 20 feet from exterior sideslopes for horizontal gas extraction trenches and 100 feet for leachate recirculation trenches.

After installation of the active gas extraction system infrastructure, BCPRRD will evaluate the performance of the horizontal gas extraction wells and include a summary of the evaluation in the landfill's annual report. In accordance with condition 1 of this approval, if at any time the department determines the TDA horizontal gas extraction wells are not preventing nuisance odor conditions or are creating other adverse conditions, the department reserves the right to discontinue the use of TDA in horizontal gas extraction trenches.

Please keep in mind that this approval does not relieve you of obligations to meet all other applicable federal, state or local permits, zoning and regulatory requirements. If you have questions regarding this approval, please contact Tess Brester at (920) 419-9219 or email [Tess.Brester@wisconsin.gov](mailto:Tess.Brester@wisconsin.gov).

Sincerely,



Kristin DuFresne  
Waste and Materials Management Supervisor  
Northeast Region

cc: Dan Michiels – Foth ([dan.michiels@foth.com](mailto:dan.michiels@foth.com))  
Sara Beine – Foth ([sara.beine@foth.com](mailto:sara.beine@foth.com))  
Casey Krausensky – DNR/WA (e-copy)  
Dan Kroll – DNR/WA (e-copy)  
Jackie Marciulionis – DNR/WA (e-copy)  
Tess Brester – DNR/WA (e-copy)

**BEFORE THE  
STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES**

**CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION  
FOR THE  
BROWN COUNTY SOUTH LANDFILL, LICENSE #3565**

**FINDINGS OF FACT**

The Department of Natural Resources (department) finds that:

1. The Brown County Port & Resource Recovery Department (BCPRRD) owns and operates a solid waste disposal facility (Brown County South Landfill [BCSLF]) in the E ½ of the SW ¼ of Section 18, Township 21N, Range 20E, Town of Holland, Brown County, Wisconsin.
2. The department issued a conditional plan of operation approval for the solid waste disposal facility on January 16, 2020.
3. On September 5, 2023, Foth Infrastructure and Environment, LLC (Foth), on behalf of the BCPRRD, submitted a request to beneficially use tire chips within the landfill. The department received the review fee of \$1,650 on September 18, 2023.
4. The information submitted in connection with the plan of operation modification request includes the following:
  - a. A letter titled “Plan Modification for Beneficial Use Request - Tire Derived Aggregate, Brown County South Landfill – WDNR License No. 3565” which was dated and received by the department on September 5, 2023.
  - b. An email from Foth received by the department on August 25, 2023, containing the following articles or links to the articles:
    - i. SCS Engineers paper titled, “Use of Tire Chips in Landfill Gas Extraction Applications” (paper undated).
    - ii. Ohio Environmental Protection Agency Policy Document #599, titled, “Use of Shredded Tire in Landfill Construction” and dated October 2014 (originally published on March 21, 2005).
    - iii. California Department of Resource Recycling and Recovery document titled, “Usage Guide, Tire-Derived Aggregate (TDA)” and dated January 2016.
    - iv. Ohio Environmental Protection Agency Policy Document #671, titled, “Beneficial Use of Scrap Tires” and dated May 2018.
    - v. ASTM D6270-20, titled, “Standard Practice for Use of Scrap Tires in Civil Engineering Applications,” and last updated September 22, 2020.
    - vi. U.S. Tire Manufacturers Association paper titled, “2021 US Scrap Tire Management Summary” and dated October 25, 2022.

- c. An email and attachments from Foth received by the department on November 2, 2023, in response to the department’s October 12, 2023, request for additional information email.
5. Additional documents reviewed in connection with the plan of operation modification request include the following:
    - a. The department’s October 12, 2023, request for additional information email.
    - b. Appendix K of BCPRRD’s plan of operation report titled “Alternative Daily Cover and Beneficial Reuse Plan” and dated April 30, 2019.
    - c. The department’s January 16, 2020, plan of operation approval.
    - d. The department’s files pertaining to the BCSLF (License No. 3565).
  6. Additional facts relevant to the review of the plan of operation modification request include:
    - a. Horizontal gas extraction wells (with or without tire derived aggregate) are supplemental to the permanent, vertical gas extraction system and are anticipated to be abandoned prior to final cover construction.
    - b. Tire derived aggregate will be stockpiled off of the landfill footprint in quantities limited to the volume needed for each sequence of horizontal gas extraction well and leachate recirculation trench installation.
  7. The special conditions set forth below are needed to assure that the sites are operated and maintained in an environmentally sound manner. If the special conditions are complied with, the proposed modifications will not inhibit compliance with the standards set forth in the applicable portions of chs. NR 500-538, Wis. Adm. Code.

#### **CONCLUSIONS OF LAW**

1. The department has the authority under s. 289.30(6), Wis. Stats., to modify a plan of operation approval if the modification would not inhibit compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.
2. The department has the authority to approve a modification to the plan of operation with special conditions if the conditions are needed to ensure compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.
3. The conditions of approval set forth below are needed to ensure compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.
4. In accordance with the foregoing, the department has the authority under s. 289.30(6), Wis. Stats., to issue the following conditional plan of operation modification approval.

## CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION

The department hereby approves the proposed plan of operation modification for the BCSLF, subject to compliance with chs. NR 500-538, Wis. Adm. Code, and the following conditions:

1. If at any time the department determines that the horizontal gas extraction wells with tire derived aggregate are not preventing nuisance odor conditions or are creating adverse effects on the landfill, BCPRRD shall discontinue the use of TDA in horizontal gas extraction trenches.
2. BCPRRD shall submit a written plan to control the nuisance odors or other adverse conditions to the department within 30 days of the department's determination for BCPRRD to discontinue the use of TDA in horizontal gas extraction trenches.
3. BCPRRD shall place enough select waste over the constructed horizontal gas extraction wells and leachate recirculation trenches to minimize the chance of smolders/fires from the active disposal area from reaching the tire derived aggregate.
4. BCPRRD shall submit a revised beneficial use plan (Appendix K of the plan of operation) to the department within 90 days to include the acceptance of tire derived aggregate. The department shall charge a separate review fee if the department determines that the revised 'Appendix K' includes modifications outside of the beneficial use of tires outlined in this approval.

Unless specifically noted, the conditions of this approval do not supersede or replace any previous conditions of approval for this facility.

This approval is based on the information available to the department as of the date of approval. If additional information, project changes or other circumstances indicate a possible need to modify this approval, the department may ask you to provide further information relating to this activity. Likewise, the department accepts proposals to modify approvals, as provided for in state statutes and administrative codes.

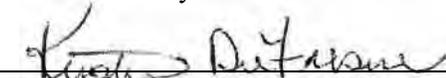
### NOTICE OF APPEAL RIGHTS

If you believe you have a right to challenge this decision made by the department, you should know that Wisconsin statutes and administrative codes establish time periods and requirements for reviewing department decisions.

To seek judicial review of the department's decision, sections 227.52 and 227.53, Wis. Stats., establish criteria for filing a petition for judicial review. You have 30 days after the decision is mailed or otherwise served by the department to file your petition with the appropriate circuit court and serve the petition on the department. The petition shall name the Department of Natural Resources as the respondent.

Dated: November 17, 2023

DEPARTMENT OF NATURAL RESOURCES  
For the Secretary



Kristin DuFresne  
Waste and Materials Management Program Supervisor  
Northeast Region



Tess Brestor, P.E.  
Waste Management Lead Engineer  
Waste and Materials Management Program



December 6, 2024

FID #405132860  
Brown County  
SW/Approval

Chad Doverspike, Assistant Director  
Brown County Port & Resource Recovery Department  
2561 South Broadway  
Green Bay, WI 54304

Subject: Conditional Plan of Operation Approval Modification for Beneficial Use, Leachate and Gas Piping Modifications, and Proposed NR 140 Exemptions and Calculated PALs/ACLs at the Brown County South Landfill, Brown County, License No. 3565

Dear Mr. Doverspike:

The Department of Natural Resources (department) has reviewed and approves the requested modification to the plan of operation for the Brown County South Landfill (License No. 3565), subject to the conditions listed in the attached approval. The modifications were requested in a submittal dated September 18, 2024. Please include the attached approval in the written operating record for the landfill as specified in s. NR 506.17, Wis. Adm. Code.

The plan modification request included the following:

- Beneficial Use Material Request – Poly Rejects and Crushed Pallets,
- Updated Site Plan with Digester Piping,
- Modification to Leachate Recirculation Design,
- Modification to Horizontal Gas Well Design,
- Proposed NR 140 Exemptions and Preventive Action Limit (PAL) and Alternative Concentration Limit (ACL) Calculations

The modifications and changes incorporated into this approval are discussed in more detail in the attached project summary. Attachment 1 of this approval provides a comprehensive summary of required environmental monitoring that incorporates the changes approved in this modification. Attachment 2 of this approval provides a comprehensive summary of approved PAL and ACL concentrations, including those previously approved.

Please keep in mind that this approval does not relieve you of obligations to meet all other applicable federal, state, and local permits, or zoning and regulatory requirements. If you have questions regarding this approval, please contact Anne Ebent at (920) 857-4540 or [annem.ebent@wisconsin.gov](mailto:annem.ebent@wisconsin.gov), Emily Storm at (920) 873-0773 or [emily.storm@wisconsin.gov](mailto:emily.storm@wisconsin.gov), or Drae Rogers at (920) 461-0291 or [drae.rogers@wisconsin.gov](mailto:drae.rogers@wisconsin.gov).

Sincerely,

Kristin DuFresne  
Waste and Materials Management Program Supervisor  
Northeast Region

Enclosed

- Project Summary
- Approval
- Attachment 1: Environmental Monitoring Tables
  - o Table 1-1A: Groundwater Monitoring Detection Monitoring
  - o Table 1-1B: Groundwater Monitoring Private Water Supply Wells
  - o Table 1-1C: Groundwater Monitoring Groundwater Gradient Control
  - o Table 1-2: Leachate Quantity, Quality and Head Monitoring
  - o Table 1-3A: Landfill Gas Monitoring Gas Probes
  - o Table 1-3B: Landfill Gas Monitoring Gas Extraction System
  - o Table 1-4: Surface Water Monitoring
- Attachment 2: PAL and ACL Summary Table
  - o Table 2-1: Approved Preventative Action Limits (PALs) and Alternative Concentration Limits (ACLs)

cc: Chad Doverspike – Brown County (via email [Chad.Doverspike@browncountywi.gov](mailto:Chad.Doverspike@browncountywi.gov))  
Benjamin Hintz – Brown County (via email [benjamin.hintz@browncountywi.gov](mailto:benjamin.hintz@browncountywi.gov))  
Dean Haen – Brown County (via email [dean.haen@browncountywi.gov](mailto:dean.haen@browncountywi.gov))  
Daniel Michiels – Foth (via email [dan.michiels@foth.com](mailto:dan.michiels@foth.com))  
Bob Meller – Foth (via email [Bob.Meller@Foth.com](mailto:Bob.Meller@Foth.com))  
Dixit Solanki – Foth (via email [dixit.solanki@foth.com](mailto:dixit.solanki@foth.com))  
Sara Beine – Foth (via email [sara.beine@foth.com](mailto:sara.beine@foth.com))  
Anne Ebent – DNR/WA (via email [annem.ebent@wisconsin.gov](mailto:annem.ebent@wisconsin.gov))  
Drae Rogers – DNR/WA (via email [drae.rogers@wisconsin.gov](mailto:drae.rogers@wisconsin.gov))  
Tess Brester – DNR/WA (via email [tess.brester@wisconsin.gov](mailto:tess.brester@wisconsin.gov))  
Joe Lourigan – DNR/WA (via email [Joseph.Lourigan@wisconsin.gov](mailto:Joseph.Lourigan@wisconsin.gov))  
Emily Storm – DNR/WA (via email [emily.storm@wisconsin.gov](mailto:emily.storm@wisconsin.gov))

## **PROJECT SUMMARY FOR CONDITIONAL PLAN OF OPERATION MODIFICATION AT THE BROWN COUNTY SOUTH LANDFILL**

The Brown County Port & Resource Recovery Department (BCPRRD) is presently disposing of waste in Phase 1 of the Brown County South Landfill (BCSLF). On September 18, 2024, BCPRRD submitted a request for modifications to the BCSLF plan of operation for various items. The proposed modifications are summarized in the following section.

### **PROPOSED MODIFICATIONS**

#### **Beneficial Use Material**

BCPRRD has existing approval to accept various materials to use beneficially (daily cover, internal berms, road base, etc.) at the BCSLF. BCPRRD has requested approval to also use poly rejects and crushed pallets as alternative daily cover (ADC).

#### **Modification to Phase 1 Leachate Recirculation Force Main**

A leachate recirculation plan was submitted in the Plan of Operation and Addendum 1 to the Plan of Operation. Drawing No. 21 included a general conceptual layout of pressurized conveyance line (force main) and distribution trenches for recirculation of leachate through the waste mass. Leachate recirculation trenches are planned to be installed every 30 vertical feet with a force main supply of leachate from the sump within each development phase.

BCSLF proposed modifications to the layout of the pressurized force main for Phase 1 leachate recirculation. The purpose for this modification is for constructability and maintenance purposes. During active filling periods of Phase 1, an intermediate haul road is constructed along the eastern slope of the cell. In this scenario, the force main pipe would need to be routed under the haul road, which would make access to the pipe difficult. The requested modification to the layout is to locate the force main pipe to the western slope. Relocating the piping to the western slope will eliminate the need to place the force main piping below the road. The valves for recirculation trenches will also be relocated to the west slope, making for more effective observation, and monitoring due to consistency with future system additions.

#### **Modification to Horizontal Gas Well Design**

The design of the gas collection system includes a series of horizontal and vertical gas wells. The supplemental horizontal gas well layout was presented as Drawing No. 20R as part of Addendum 1 to the Plan of Operation. As noted in the Addendum 1, Section 7, the horizontal gas extraction wells will be installed as temporary control devices during active filling to control gas prior to vertical gas well installation. The horizontal gas extraction wells were approved as temporary devices that could be abandoned or eliminated if a sufficient number of vertical gas wells were in place to control gas generation by the landfill.

Four horizontal gas extraction wells have been installed to date (H1, H2, H3, and H4). Gas wells were installed in accordance with the planned layout and design details, with the exception of H3. During construction of H3, conditions were encountered that required a change in piping construction. Due to safety concerns resulting from elevated gas readings and the depth of the trench, the perforated piping was installed as a continuous pipe without pipe sleeves so that workers did not need to enter the trench excavation. Notification to the department on the

change was made by Brown County on June 4, 2024, and details of this change are shown in Figure 1 of Attachment 2.

BCPRRD requested approval for installation of future horizontal gas header piping with a continuous gas extraction pipe. The proposed changes include removal of the HDPE pipe/contraction sleeve installed every 100 feet along the trench. The perforated gas collection pipe will consist of a continuous perforated pipe for the full length of the collection trench. Future horizontal gas well trenches will continue to be installed in accordance with the proposed details included with the September 5, 2023, Plan Modification.

### **NR 140 Exemptions and Calculated PALs and ACLs**

Baseline groundwater data collected from May 2022 to October 2023 in groundwater monitoring wells MW-73A, MW-75A, and MW-100, as well as from September 2019 to October 2023 in groundwater monitoring well MW-10AR indicate background groundwater quality for some substances exceed ch. NR 140, Wis. Adm. Code (NR 140), preventive action limits (PAL) and enforcement standards (ES). Exceedances proposed in the plan modification over the above-referenced time frame include alkalinity, hardness, specific conductance, sodium, sulfate, and manganese.

BCPRRD requested exemptions to NR 140 groundwater quality standards for those parameters and wells where exceedances were observed. In addition, BCPRRD proposed calculated PALs for indicator parameters and ACLs for substances and wells with requested exemptions. The requested NR 140 exemptions are granted in this approval and PALs and ACLs are approved. The approved PALs and ACLs, including those granted in previous approvals, are summarized in Attachment 2 of this approval.

**BEFORE THE  
STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES**

**CONDITIONAL PLAN OF OPERATION  
APPROVAL MODIFICATION FOR  
THE BROWN COUNTY SOUTH LANDFILL LICENSE NO. 3565**

**FINDINGS OF FACT**

The Department of Natural Resources (department) finds that:

1. The Brown County Port & Resource Recovery Department (BCPRRD) owns and operates a non-hazardous solid waste disposal facility (Brown County South Landfill [BCSLF]) in the E ½ of the SW ¼ of Section 18, Township 21N, Range 20E, town of Holland, Brown County, Wisconsin.
2. The department issued a conditional plan of operation approval for the solid waste disposal facility on January 16, 2020.
3. On September 18, 2024, Foth Infrastructure and Environment, LLC (Foth), on behalf of BCPRRD, submitted a request to the department for modifications including a beneficial use material request, an updated site plan with digester piping, various design changes, and proposed preventative action limits (PALs) and alternative concentration limits (ACLs), as well as proposed exemptions to a ch. NR 140, Wis. Adm. Code (NR 140), groundwater quality standard. The department received the review fee of \$1,650 on September 30, 2024.
4. The information submitted in connection with the plan of operation modification request includes the following:
  - a. A report prepared by Foth titled “Plan Modification – Beneficial Use, Leachate and Gas Piping Modifications, and Groundwater Baseline Results, Brown County South Landfill – License No. 3565,” dated and received on September 18, 2024.
  - b. An email dated October 21, 2024, from Foth, on behalf of BCPRRD, providing concurrence with changes to the proposed PALs, ACLs, and NR140 exemptions outlined in the department letter dated October 11, 2024.
  - c. An email dated November 22, 2024, from Foth, on behalf of BCPRRD, providing additional clarification of narrative and plan details, including an updated plan sheet.
5. Additional documents considered in connection with the review of the plan of operation modification request includes the following:
  - a. The department’s October 23, 1996, feasibility determination.
  - b. The April 20, 2019, Plan of Operation Report for BCSLF, from Foth on behalf of BCPRRD.
  - c. The October 11, 2019, Addendum No. 1 to the Plan of Operation Report for BCSLF, from Foth on behalf of BCPRRD.
  - d. The department’s January 16, 2020, conditional plan of operation approval.

- e. The department's April 20, 2021, conditional plan of operation approval modification for changes to the leachate sump and cleanout configuration, leachate tank design, and sedimentation basin.
  - f. The department's September 10, 2021, conditional plan of operation approval modification for environmental monitoring changes, including updated PALs and ACLs.
  - g. The department's November 17, 2023, conditional plan of operation approval modification for the beneficial use of tire chips in horizontal gas collection and recirculation trenches.
  - f. A letter dated May 13, 2024, from Foth, regarding monitoring well abandonment and installation documentation.
  - g. A memo dated October 22, 2024, to the department's Drinking and Groundwater Program, requesting concurrence in granting the NR 140 exemption requested in BCPRRD's September 18, 2024, submittal.
  - h. A memo dated November 5, 2024, from the department's Drinking and Groundwater Program, providing concurrence to grant the NR 140 groundwater quality standard exemption granted in this approval.
  - i. A memo to the BCSLF (Lic. No. 3565) file dated November 15, 2024, summarizing the department's evaluation of the PALs, ACLs, and NR 140 exemptions proposed in the September 18, 2024, plan modification request.
  - j. The department's guidance document titled 'How to Calculate Preventive Action Limits (PALs) and Alternative Concentration Limits (ACLs) for Solid Waste Facilities,' PUB-WA-1105, Rev. 2007.
  - k. The department's files and data in the department's Groundwater Environmental Monitoring System (GEMS) pertaining to the BCSLF (Lic. No. 3565).
6. The department considered the following information while reviewing the requested NR 140 groundwater standard exemptions:
- a. Baseline groundwater monitoring data provided in Attachment 4 of the September 18, 2024 plan modification, which was collected between September 2019 and October 2023, as well as groundwater data in GEMS for the BCSLF.
  - b. NR 140 groundwater quality exemptions previously granted in the October 23, 1996 feasibility determination, as well as additional exemptions granted and rescinded in the January 16, 2020 conditional plan of operation approval.
  - c. Annual groundwater monitoring reports from 2022 and 2023, which provide a summary of groundwater conditions around the BCSLF.
  - d. Based on an examination of site conditions and baseline groundwater monitoring data for the BCSLF, the department finds the following:
    - i. Groundwater concentrations of sulfate and manganese exceeding NR 140 groundwater quality standards in the site area are due to background groundwater quality associated with natural hydrogeologic conditions or human activities.

- ii. Manganese can be elevated during the early stages of a monitoring well due to drilling and installation activities and tends to stabilize after several round of samples have been collected.
  - iii. Concentrations that are elevated relative to other concentrations in the baseline dataset may not be representative of background groundwater quality. Apparent outliers and trends were considered in determining groundwater quality exemptions that are warranted.
- e. The department finds the following related to the design of the landfill and substances associated with the BCSLF that exceed NR 140 groundwater quality standards for sulfate and manganese:
- i. To minimize any incremental increase in contamination from the BCSLF, the facility is designed to contain and collect leachate. The approved design includes a 4-foot thick compacted clay liner overlain by a 60-mil geomembrane, a leachate collection system, an active gas extraction system, and a composite final cover system. The design features limit increases of contaminants in the groundwater.
  - ii. In accordance with s. NR 504.05(1), Wis. Adm. Code, the department considers landfills designed in substantial conformance with these design criteria to be designed to achieve the lowest possible concentration of these substances in the groundwater which is technically and economically feasible.
  - iii. The proposed facility will not cause the concentrations of the substances with baseline concentrations between the PAL and enforcement standard (ES) to attain or exceed the ES for these substances at a point of standards application because of the facility design.
  - iv. The anticipated increase in the concentrations of these substances does not present a threat to public health or welfare because of the landfill design.
  - v. The anticipated incremental increase in the concentrations of the substances with baseline concentrations above the ES will not attain or exceed the PAL because of the landfill design.
- f. Based on an examination of the groundwater quality data for the proposed expansion and the information in findings of fact 6a through 6f above, the department finds the requested groundwater quality exemptions to be warranted for the following wells and substances:
- i. **PAL** exemptions for substances of **public health concern (other than nitrate plus nitrite (as N))** in accordance with s. NR 140.28(3)(b), Wis. Adm. Code:

<u>Substance:</u>	<u>Monitoring Wells:</u>
Manganese	MW-10AR
Notes: <ul style="list-style-type: none"> <li>- Baseline concentrations attain or exceed the <b>PAL</b> but are below the ES in <b>two or more</b> sample rounds at the monitoring wells.</li> <li>- PALs for substances of public health concern are established in s. NR 140.10, Wis. Adm. Code.</li> </ul>	

- ii. **Enforcement Standard (ES)** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with s. NR 140.28(4)(a), Wis. Adm. Code:

<u>Substance:</u>	<u>Monitoring Wells:</u>
Sulfate	MW-73A, MW-75A, MW-100
Notes: <ul style="list-style-type: none"> <li>- Baseline concentrations attain or exceed the <b>ES</b> in at least <b>one or more</b> sample rounds at the monitoring wells.</li> <li>- ESs for substances of public welfare concern are established in s. NR 140.12, Wis. Adm. Code, and for nitrate + nitrite (as N) in s. NR 140.10, Wis. Adm. Code.</li> </ul>	

- g. Chapter NR 140, Wis. Adm. Code, groundwater quality standard exemptions requested in the plan modification were modified from the original request in accordance with the email concurrence dated October 21, 2024.
  - h. Granting the exemptions that are set forth below will not inhibit compliance with Wisconsin solid waste management standards in chs. NR 500 through 538, Wis. Adm. Code.
7. The department considered the following information while reviewing the proposed PALs and ACLs:
- a. The PALs for indicator parameters and the ACLs established in this approval are based on at least 8 sample results for each substance at each monitoring well.
  - b. The PALs for indicator parameters established in this approval are equal to the mean background water quality plus 3 standard deviations or the mean background water quality plus the minimum increase specified in Table 3, ch. NR 140, Wis. Adm. Code, whichever is greater.
  - c. The ACLs established in this approval are equal to the mean background water quality plus 2 standard deviations.
  - d. The calculated PALs and ACLs were rounded up to 2 significant figures.
  - e. The indicator parameter PALs, ACLs, and special conditions set forth below are needed to assure that an increase in the concentration of alkalinity, hardness, specific conductance, sodium, sulfate, and manganese does not cause an increased threat to public health or welfare or inhibit compliance with ch. NR 500 through 538, Wis. Adm. Code.
8. The special conditions set forth below are needed to assure that the sites are operated and maintained in an environmentally sound manner. If the special conditions are complied with, the proposed modification will not inhibit compliance with the standards set forth in the applicable portions of chs. NR 500-538, Wis. Adm. Code.

### GRANTS OF EXEMPTION

- 1. BCRRD has demonstrated circumstances which warrant an exemption to the groundwater quality standards in ch. NR 140, Wis. Adm. Code, as provided in s. NR 140.28, Wis. Adm. Code, for the wells and substances listed below to allow operation of a municipal solid waste landfill in an area where a PAL or ES has been attained or exceeded. These exemptions apply only to the BCSLF and do not apply to any other present or past facility or activity. Sections NR 507.28 and NR 507.30, Wis. Adm. Code, require notification to the department when sample concentrations attain or exceed an NR 140.10 or NR 140.12 standard or an approved

ACL. If an exemption is granted and an ACL is not approved, notification of attainment or exceedance of an NR 140.10 or NR 140.12 standard is still required; however, responses under ss NR 140.24 and NR 140.26, Wis. Adm. Code, are not required. If sample concentrations attain or exceed and approved ACL, response actions under NR 140.10 or NR 140.12 are required.

- a. **PAL** exemptions for substances of **public health concern (other than nitrate plus nitrite (as N))** in accordance with NR 140.28(3)(b):

<u>Substance:</u>	<u>Monitoring Wells:</u>
Manganese	MW-10AR

- b. **Enforcement Standard (ES)** exemptions for substances of **public welfare concern and nitrate plus nitrite (as N)** in accordance with NR 140.28(4)(a):

<u>Substance:</u>	<u>Monitoring Wells:</u>
Sulfate	MW-73A, MW-75A, MW-100

### CONCLUSIONS OF LAW

1. The department has the authority under s. 289.30(6), Wis. Stats., to modify a plan of operation approval if the modification would not inhibit compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.
2. The department has the authority to approve a modification to the plan of operation with special conditions if the conditions are needed to ensure compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.
3. The conditions of approval set forth below are needed to ensure compliance with the applicable portions of chs. NR 500-538, Wis. Adm. Code.
4. In accordance with the foregoing, the department has the authority under s. 289.30(6), Wis. Stats., to issue the following conditional plan of operation approval modification.

### CONDITIONAL PLAN OF OPERATION APPROVAL MODIFICATION

The department hereby approves the proposed plan of operation modification for the BCSLF, subject to compliance with chs. NR 500-538, Wis. Adm. Code, and the following conditions:

1. BCPRRD shall implement environmental monitoring at the BCSLF in accordance with the schedules provided in Attachment 1 (Tables 1-1 through 1-4). This condition supersedes condition 5 of the September 10, 2021, plan of operation approval modification for the BCSLF.
2. Calculated NR 140 PALs and ACLs shall apply for the parameters and substances at the respective groundwater monitoring points as specified in Attachment 2. This condition supersedes condition 6 of the September 10, 2021, plan of operation approval modification for the BCSLF.
3. The PALs and ESs for all other substances not identified in Attachment 2 shall be as specified in NR 140, unless specifically approved by the department in writing.

4. Waste materials used as alternative daily cover (ADC) shall not contain free liquids.
5. The landfill operator shall remove, scarify or mix-in to the extent possible, at the beginning of the next operating day, any alternative daily cover material that would create a barrier to the movement of leachate and gas.
6. ADC materials shall be stored within the lined footprint of the landfill.
7. The use of the ADC proposed shall be limited to weather conditions that do not make the material windblown. If the material becomes windblown, it must be covered with a material that prevents windblown conditions.
8. The ADC shall not be used within 10-feet of the landfill drainage blanket.

Unless specifically noted, the conditions of this approval do not supersede or replace any previous conditions of approval for this facility.

This approval is based on the information available to the department as of the date of approval. If additional information, project changes or other circumstances indicate a possible need to modify this approval, the department may ask you to provide further information relating to this activity. Likewise, the department accepts proposals to modify approvals, as provided for in state statutes and administrative codes.

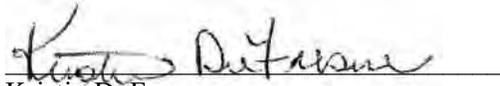
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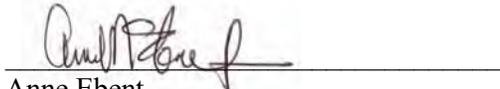
To seek judicial review of the department's decision, sections 227.52 and 227.53, Wis. Stats., establish criteria for filing a petition for judicial review. You have 30 days after the decision is mailed or otherwise served by the department to file your petition with the appropriate circuit court and serve the petition on the department. The petition shall name the Department of Natural Resources as the respondent.

Dated: December 6, 2024

DEPARTMENT OF NATURAL RESOURCES  
For the Secretary



Kristin DuFresne  
Waste and Materials Management Program Supervisor  
Northeast Region



Anne Ebent  
Waste Management Engineer  
Northeast Region



Drae Rogers  
Waste Management Hydrogeologist  
Northeast Region

**TABLE 1-1A: GROUNDWATER MONITORING  
 DETECTION MONITORING**

Monitoring Location	WUWN	DNR Point ID	Sampling and Reporting Frequency <sup>2</sup>	Parameters		
<b>Group A Wells:</b>			Semiannually (April and October)	00010 Temperature, Water (°C) 00094 Specific Conductance, Field (umho/cm @ 25°C) 00400 pH, Field (Standard Units) 00941 Chloride, Dissolved (mg/L) 04189 Elevation, Groundwater (ft MSL) 22413 Hardness, Total Filtered (mg/L) 39036 Alkalinity, Total Filtered (mg/L)  Note sample odor (00001), color (00002), and turbidity (00003), if present		
MW-2	IM357	108				
MW-2A	IM431	110				
MW-2B	IM432	112				
MW-6	IM365	120				
MW-6A	IM366	122				
MW-6B	IM434	124				
MW-7	IM367	126				
MW-10	IM372	128				
MW-10AR	VS939	131				
MW-12	IM375	132				
MW-12A	IM376	134				
MW-12B	IM435	136				
MW-12C	BW178	137				
MW-33 <sup>1</sup>	IM410	178				
MW-49	IM444	184				
<b>RCRA Subtitle D Wells:</b>					Annually (October)	VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)
MW-49B	IM446	188				
MW-52 <sup>1</sup>	IM447	190				
MW-58	IM451	198				
MW-58A	IM452	200				
MW-58B	IM453	202				
MW-71	IM455	220				
MW-75A	WA654	292				
<b>RCRA Subtitle D Wells:</b>			Semiannually (April and October)	00010 Temperature, Water (°C) 00094 Specific Conductance, Field (umho/cm @ 25°C) 00400 pH, Field (Standard Units) 00941 Chloride, Dissolved (mg/L) 04189 Elevation, Groundwater (ft MSL) 22413 Hardness, Total Filtered (mg/L) 39036 Alkalinity, Total Filtered (mg/L)  Note sample odor (00001), color (00002), and turbidity (00003), if present		
MW-42X	IM466	182				
MW-49A	IM445	186				
MW-73A	WA655	224				
MW-100	WA657	365				
				VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)		

**TABLE 1-1A: GROUNDWATER MONITORING  
 DETECTION MONITORING**

Monitoring Location	WUWN	DNR Point ID	Sampling and Reporting Frequency <sup>2</sup>	Parameters
<b>Groundwater Elevation Wells:</b>				
MW-1	IM356	102	Annually (October)	04189 Elevation, Groundwater (ft MSL)
MW-1A	IM429	104		
MW-1B	IM430	106		
MW-3	IM358	113		
MW-4	IM359	266		
MW-4A	IM360	268		
MW-9	IM370	270		
MW-9A	IM371	272		
MW-13	IM377	274		
MW-13A	IM378	276		
MW-14	IM379	278		
MW-14A	IM380	280		
MW-15	IM381	282		
MW-16	IM382	284		
MW-16A	IM383	286		
MW-17AR	IM387	140		
MW-17B	IM436	142		
MW-17R	IM385	138		
MW-18A	IM437	260		
MW-18B	IM438	144		
MW-18R	IM389	258		
MW-20	IM391	288		
MW-20A	IM392	290		
MW-21	IM393	146		
MW-22A	IM395	150		
MW-22B	IM439	152		
MW-22C	BW179	153		
MW-24	IM397	156		
MW-25	IM398	158		
MW-25A	IM399	160		
MW-25B	IM440	162		
MW-26	IM400	164		
MW-28	IM403	169		
MW-41	IM442	180		
MW-78	IM458	230		
MW-79	IM459	233		
MW-83	IM460	240		
MW-84	IM461	244		
MW-98	IM462	250		
MW-98A	IM463	251		
MW-98B	IM464	252		
MW-99	IM465	255		

Notes:

- <sup>1</sup> Groundwater monitoring well is located within the footprint of a future phase of the landfill and will be monitored until the monitoring well is abandoned for construction of the future phase.
- <sup>2</sup> Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.  
Trip Blank (999) and/or Field Blank (997) Data must also be submitted electronically

**TABLE 1-1B: GROUNDWATER MONITORING  
 PRIVATE WATER SUPPLY WELLS**

Monitoring Location	WUWN	DNR Point ID	Well Address	Owner	Sampling and Report Frequency <sup>1</sup>	Parameters
<b>Private Wells:</b>						
PY402	PY402	18	1239 Lamers Clancy Road	Matthew Krepline	Semiannually (April and October)	00010 Temperature, Water (°C)
8KH365	8KH365	16	1216 Lamers Clancy Road	David Duquaine		00094 Specific Conductance, Field (umho/cm @ 25°C)
8KH366	8KH366	20	1252 Lamers Clancy Road	Daniel Pleshek		00400 pH, Field (Standard Units)
YG310	YG310	22	1139 Lamers Clancy Road	Paul Kalscheur		00410 Alkalinity, Total (mg/L)
P-1	AAO986	24	Landfill Property	BCPRRD		00900 Hardness, Total (mg/L)
						00940 Chloride, Total (mg/L)
						Note sample odor (00001), color (00002), and turbidity (00003), if present
					Annually (October)	VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)

Notes:

<sup>1</sup>Data shall be submitted within 10 days following the receipt of sampling results, in accordance with s. NR 507.26(2), Wis. Adm. Code, unless otherwise specified.

Trip Blank (999) and/or Field Blank (997) Data must also be submitted electronically

BCPRRD - Brown County Port and Resource Recover Department

**TABLE 1-1C: GROUNDWATER MONITORING  
 GROUNDWATER GRADIENT CONTROL**

<b>Monitoring Location</b>	<b>DNR Point ID</b>	<b>Sampling and Reporting Frequency<sup>1</sup></b>	<b>Parameters</b>
<b>Head Wells:</b>			
GHW-1	501	Semiannually (April and October)	04189 Elevation, Groundwater (ft MSL)
GHW-2	502		
GHW-3	503		
GHW-4	504		
GHW-5	505		
GHW-6	506		
<b>Pump Discharge:</b>			
GW-1	511	Semiannually (April and October)	00010 Temperature, Water (°C) 00094 Specific Conductance, Field (umho/cm @ 25°C) 00400 pH, Field (Standard Units) 00941 Chloride, Dissolved (mg/L) 22413 Hardness, Total Filtered (mg/L) 39036 Alkalinity, Filtered (mg/L)  Note sample odor (00001), color (00002), and turbidity (00003), if present
GW-2	512		
GW-3	513		
		Annually (October)	VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)
		Monthly <i>Report semiannually with data for April and October Sampling</i>	50052 Groundwater Volume Pumped (1000 Gals)

Notes:

<sup>1</sup> Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

Trip Blank (999) and/or Field Blank (997) Data must also be submitted electronically

**TABLE 1-2: LEACHATE QUANTITY, QUALITY AND HEAD MONITORING**

Monitoring Location	DNR Point ID	Sampling and Reporting Frequency <sup>1</sup>	Parameters
<b>Leachate Pump Discharge (Junction manhole Locations):</b> JMH-1                      401 JMH-2                      402 JMH-3                      403		Monthly  <i>Report semiannually with data for April and October Sampling Period</i>	00032 Leachate, Volume Pumped (1000 Gallons)
		Semiannually <sup>2</sup> (April and October)	00094 Specific Conductance, Field (umho/cm @ 25°C) 00310 Biochemical Oxygen Demand (mg/L, 5 Day @ 20°C) 00340 Chemical Oxygen Demand, Unfiltered (mg/L) 00400 pH, Field (Standard Units) 00410 Alkalinity, Total (mg/L) 00610 Nitrogen, Ammonia Total (mg/L) 00900 Hardness, Total (mg/L)  Note sample odor (00001), color (00002), and turbidity (00003), if present
		Semiannually (April and October)	00010 Temperature, Water (°C) 00150 Total Suspended Solids (mg/L) 00625 Nitrogen, Kjeldahl, Total (mg/L) 00929 Sodium, Total (mg/L) 00940 Chloride, Total (mg/L) 00945 Sulfate, Total (mg/L) 01027 Cadmium, Total (ug/L) 01051 Lead, Total (ug/L) 01055 Manganese, Total (ug/L) 71900 Mercury, Total (ug/L) 74010 Iron, Total (mg/L)  VOCs (ch. NR 507, Appendix III, including acetone, carbon disulfide, methyl ethyl ketone and tetrahydrofuran)
		Annually (October)	SVOCs (ch. NR 507 Appendix IV substances)
<b>Leachate Storage Tank:</b> LST-1                      410		Monitoring will be conducted in accordance with the wastewater treatment plant discharge permit	

**TABLE 1-2: LEACHATE QUANTITY, QUALITY AND HEAD MONITORING**

<b>Leachate Headwells:</b>			
LHW-1	420	Quarterly <sup>3</sup>	
LHW-2	422	(January, April,	99423 Elevation, Leachate (ft MSL)
LHW-3	424	July, and October),	00031 Leachate, Depth (from top to bottom in ft)
LHW-4	426		
LHW-5	428	<i>Report semiannually</i>	
LHW-6	430	<i>with data for April and October Sampling Period</i>	

Notes:

- <sup>1</sup> Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.
- <sup>2</sup> Quarterly sampling is required (January, April, July, and October) if operating under an RD&D approval or leachate recirculation is being perform.
- <sup>3</sup> Monthly measurements are required (January, April, July, and October) if operating under an RD&D approval or leachate recirculation is being perform.

**TABLE 1-3A: LANDFILL GAS MONITORING  
 GAS PROBES**

<b>Name    DNR Point ID</b>	<b>Sampling and Reporting Frequency<sup>1</sup></b>	<b>Parameters</b>
<b>Gas Probes:</b> GP-1            701 GP-2            702 GP-3            703 GP-4            704	Quarterly (January, April, July, and October)  <i>Report semiannually            with data for April and            October Sampling            Period</i>	00021    Temperature, Air (°F) 00025    Barometric Pressure (mm Of Hg) 46381    Trend in Barometric Pressure 85547    Percent Methane, by volume 85550    Percent Oxygen, by volume  Note ground condition and initial methane reading if stabilized reading drops to zero.

Notes:

<sup>1</sup> Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

**TABLE 1-3B: LANDFILL GAS MONITORING  
 GAS EXTRACTION SYSTEM**

<b>DNR Name</b>	<b>DNR Point ID</b>	<b>DNR Name</b>	<b>DNR Point ID</b>	<b>Sampling and Reporting Frequency<sup>1</sup></b>	<b>Parameters</b>
<b>Horizontal Gas Extraction Wells:</b>					
H-1E	601	H-1W	631	Monthly  <i>Report semiannually                      with data for April and                      October Sampling                      Period</i>	46385 Well Head Pressure (in. of water column)
H-2E	602	H-2W	632		46387 Valve Opening (% open)
H-3E	603	H-3W	633		46388 Temperature, Gas (°F)
H-4E	604	H-4W	634		85544 Percent Carbon Dioxide, by volume
H-5E	605	H-5W	635		85547 Percent Methane, by volume
H-6E	606	H-6W	636		85550 Percent Oxygen, by volume
H-7E	607	H-7W	637		99098 Gas Flow Rate (cfm)
H-8E	608	H-8W	638		99848 Percent Balance Gas, by volume
H-9E	609	H-9W	639		
H-10E	610	H-10W	640		
H-11E	611	H-11W	641		
H-12E	612	H-12W	642		
H-13E	613	H-13W	643		
H-14E	614	H-14W	644		
H-15E	615	H-15W	645		
H-16E	616	H-16W	646		
H-17E	617	H-17W	647		
H-18E	618	H-18W	648		
H-19E	619	H-19W	649		
H-20E	620	H-20W	650		
H-21E	621	H-21W	651		
H-22E	622	H-22W	652		
H-23E	623	H-23W	653		
H-24E	624	H-24W	654		
H-25E	625	H-25W	655		
H-26E	626	H-26W	656		
H-27E	627	H-27W	657		
H-28E	628	H-28W	658		
H-29E	629	H-29W	659		
H-30E	630	H-30W	660		

**TABLE 1-3B: LANDFILL GAS MONITORING  
 GAS EXTRACTION SYSTEM**

<b>Name</b>	<b>DNR Point ID</b>	<b>Name</b>	<b>DNR Point ID</b>	<b>Sampling and Reporting Frequency<sup>1</sup></b>	<b>Parameters</b>
<b>Vertical Gas Extraction Wells:</b>				Monthly  <i>Report semiannually                      with data for April and                      October Sampling                      Period</i>	46385 Well Head Pressure (in. of water column) 46387 Valve Opening (% open) 46388 Temperature, Gas (°F) 85544 Percent Carbon Dioxide, by volume 85547 Percent Methane, by volume 85550 Percent Oxygen, by volume 99098 Gas Flow Rate (cfm) 99848 Percent Balance Gas, by volume
VW-1	756	VW-37	828		
VW-2	758	VW-38	830		
VW-3	760	VW-39	832		
VW-4	762	VW-40	834		
VW-5	764	VW-41	836		
VW-6	766	VW-42	838		
VW-7	768	VW-43	840		
VW-8	770	VW-44	842		
VW-9	772	VW-45	844		
VW-10	774	VW-46	846		
VW-11	776	VW-47	848		
VW-12	778	VW-48	850		
VW-13	780	VW-49	852	Semiannually (April and October)	00031 Leachate, Depth (from top to bottom in ft)
VW-14	782	VW-50	854		
VW-15	784	VW-51	856		
VW-16	786	VW-52	858		
VW-17	788	VW-53	860		
VW-18	790	VW-54	862		
VW-19	792	VW-55	864		
VW-20	794	VW-56	866		
VW-21	796	VW-57	868		
VW-22	798	VW-58	870		
VW-23	800	VW-59	872		
VW-24	802	VW-60	874		
VW-25	804	VW-61	876		
VW-26	806	VW-62	878		
VW-27	808	VW-63	880		
VW-28	810	VW-64	882		
VW-29	812	VW-65	884		
VW-30	814	VW-66	886		
VW-31	816	VW-67	888		
VW-32	818	VW-68	890		
VW-33	820	VW-69	892		
VW-34	822	VW-70	894		
VW-35	824	VW-71	896		
VW-36	826				

**TABLE 1-3B: LANDFILL GAS MONITORING  
 GAS EXTRACTION SYSTEM**

<b>Name</b>	<b>DNR Point ID</b>	<b>Sampling and Reporting Frequency<sup>1</sup></b>	<b>Parameters</b>
<b>Flare:</b> F-1	754	Monthly  <i>Report semiannually with data for April and October Sampling Period</i>	85547 Percent Methane, by volume
<b>Blower:</b> Blower	753	Monthly  <i>Report semiannually with data for April and October Sampling Period</i>	46382 Header Pressure (in. of water column) 46388 Temperature, Gas (°F) 85544 Percent Carbon Dioxide, by volume 85547 Percent Methane, by volume 85550 Percent Oxygen, by volume 98927 Gas Extracted, Total Monthly Volume (1000 cu. Ft. /month) 99098 Gas Flow Rate (cfm) 99848 Percent Balance Gas, by volume
		Annually (October)	VOCs using USEPA Method TO-15 or TO-14A <sup>2</sup>

Notes:

<sup>1</sup> Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

<sup>2</sup> Refer to department guidance Volatile Organic Compound Parameters for Landfill Gas Monitoring at Municipal Solid Waste Landfills (PUB-WA 1701), dated August 1, 2014.

**TABLE 1-4: SURFACE WATER MONITORING**

<b>Monitoring Location</b>	<b>DNR Point ID</b>	<b>Sampling and Reporting Frequency<sup>1</sup></b>	<b>Parameters</b>
<b>Surface Water:</b>			
SW-1	525	Semiannually (April and October during Active Discharge <sup>2</sup> )	00010 Temperature, Water (°C)
SW-2	526		00094 Specific Conductance, Field (umho/cm @ 25°C)
			00150 Total Suspended Solids (mg/L)
			00400 pH, Field (Standard Units)
			00410 Alkalinity, Total (mg/L)
			00900 Hardness, Total (mg/L)
			00940 Chloride, Total (mg/L)
			Note sample odor (00001), color (00002), and turbidity (00003), if present
		Annually (October)	Visual Inspection
SW-3	527	Quarterly (January, April July, and October)	Visual Inspection
SW-4	528		
SW-5	529		
SW-6	530		
SW-7	531		
SW-8	532		

Notes:

<sup>1</sup> Data shall be submitted within 60 days after the end of the sampling period, in accordance with s. NR 507.26(3), Wis. Adm. Code, unless otherwise specified.

<sup>2</sup> The sampling months may vary based on when there is active discharge

**TABLE 2-1: APPROVED PREVENTIVE ACTION LIMITS (PALs) AND ALTERNATIVE CONCENTRATION LIMITS (ACLs)**

Parameter Code			Indicator Parameters					Public Health and Welfare Substances							
			Alkalinity, Total Filtered (mg/L)	Hardness, Total Filtered (mg/L)	Field Specific Conductivity @25°C (mhos/cm)	Sodium, Diss. (mg/L)	COD, Filtered (mg/L) <sup>1</sup>	Arsenic, Diss. (ug/L)	Boron, Diss. (mg/L)	Chloride, Dissolved (mg/L)	Fluoride, Diss. (mg/L)	Manganese, Diss. (ug/L)	Nitrate + Nitrite (mg/L)	Sulfate, Diss. (mg/L)	Vanadium, Diss. (ug/L)
Parameter Code			39036	22413	00094	00930	00341	01000	01020	00941	00950	01056	00631	00946	01085
Point Name	WUWN	DNR Point ID	PALs					ACLs							
MW-2	IM357	108	600	900	1700	40	29	--	--	--	--	120	--	--	--
MW-2A	IM431	110	160	270	1100	99	33	19	0.31	--	--	--	--	310	--
MW-2B	IM432	112	150	240	920	120	63	13	0.23	--	--	--	--	350	--
MW-6	IM365	120	670	900	1800	42	30	--	--	--	--	--	3.1	290	--
MW-6A	IM366	122	160	310	1200	120	41	12	0.29	--	--	--	--	410	11
MW-6B	IM434	124	150	230	890	110	47	12	0.25	--	--	--	--	310	--
MW-7	IM367	126	780	880	1800	48	31	--	--	--	--	--	20	--	--
MW-10	IM372	128	600	1300	2600	140	31	--	--	--	--	250	--	600	--
MW-10AR	VS939	131	170	980	2100	210	--	--	0.28	--	--	210	--	980	--
MW-12	IM375	132	770	1100	2200	63	35	--	--	--	--	--	--	240	7.1
MW-12A	IM376	134	130	870	3200	300	32	6.9	0.24	--	--	150	--	2100	--
MW-12B	IM435	136	690	800	2700	310	33	--	1.0	--	--	88	--	850	--
MW-12C	BW178	137	370	1200	4400	550	61	--	3.9	--	--	--	--	2800	--
MW-30	IM405	172	980	1500	2800	67	--	--	--	150	--	--	--	790	--
MW-41	IM442	180	730	790	2100	190	--	--	--	--	--	--	--	600	--
MW-42X	IM466	182	690	790	1600	89	41	--	--	--	--	--	--	450	--
MW-49R	IM444	184	650	2200	3700	180	35	--	--	--	--	--	--	1300	14
MW-49A	IM445	186	160	560	2100	240	40	8.8	0.24	--	--	--	--	1300	23
MW-49B	IM446	188	270	2600	4100	450	63	6.4	0.39	--	--	240	--	2300	--
MW-58	IM451	198	780	1700	2300	120	33	--	--	--	--	--	--	340	--
MW-58A	IM452	200	150	410	1600	140	36	7.4	0.32	--	--	96	--	760	15
MW-58B	IM453	202	230	310	1000	110	47	17	--	--	--	56	--	310	--
MW-75A	WA654	292	180	570	1600	140	--	--	--	--	--	--	--	730	--
MW-73A	WA655	224	180	1100	2500	250	--	--	--	--	--	--	--	1500	--
MW-100	WA657	365	480	1200	2300	150	--	--	--	--	--	--	--	1100	--

Notes:

-- PAL or ACL has not been established.

<sup>1</sup> PALs for COD were established in the April 7, 1999 conditional plan of operation approval for the Brown County South Landfill.

COD = Chemical Oxygen Demand

**Attachment 3**  
**VOC and HAP Emissions**



Client: Brown County South Landfill Project ID.: 24B027.00  
 Project: Air Permit Application  
 Prepared by: JRV1 Date: 09/24/24  
 Checked by: SMB2 Date: 09/24/24

**Brown County South Landfill  
 NMOC (VOC) and HAP Emissions**  
 Fugitive LFG, Controlled Flare Emissions

	Actual Data 2023 <sup>(1)</sup>		Max. Theoretical Data 2032 <sup>(2)</sup>	
lb-moles LFG Generated	2.60E+05 (lb-moles LFG/yr)	6.12E+06 (lb-moles LFG/yr)		
CH4 Generated	1,401,150.54 (m3/yr)	32,943,256.13 (m3/yr)		
CH4 Generated	4.95E+07 (ft3/yr)	1.16E+09 (ft3/yr)		
LFG Generated	2,802,301.08 (m3/yr)	65,886,512.25 (m3/yr)		
LFG Generated	9.90E+07 (ft3/yr)	2.33E+09 (ft3/yr)		
Uncaptured LFG	9.90E+07 (ft3/yr)	5.82E+08 (ft3/yr)		
LFG Captured - Actual for 2023, Anticipated for 2032	0.00E+00 (ft3/yr)	1.75E+09 (ft3/yr)		

Note: Both Actual and Maximum based on LandGEM.  
 Note: To calculate PTE, assumes all max. theoretical LFG is flared on-site

Conversion Factors			
1 m <sup>3</sup>	=	35.31466672	ft <sup>3</sup>
1 kg	=	2.2046223	lb
1 lb	=	0.0005	tons
1 yr	=	8,760	hrs

Average methane % in LFG	50.0%
Average Flare Capture Efficiency (Average of CE4 & CE5 from Table HH-3, 40 CFR 98)	75.0%
Destruction Efficiency for Flare from AP-42, Table 2.4-3	99.2% NMOC
	98.0% Halogenated
	99.7% Non-Halogenated
	0.0% Mercury

HAP Information					Landfill Gas Generation and Emissions				Flare			Landfill & Flare		Landfill	
Pollutant	CAS No.	Pollutant Type	AP-42 Concentration <sup>(3)</sup> (ppmV)	Molecular Weight	Maximum Theoretical Landfill Fugitive		Potential Landfill Fugitive		Maximum			Potential		Actual	
					Total Combined Landfill Generated Emissions		Uncaptured Emissions	Uncaptured Emissions	Captured Gas	MTE/PTE	MTE/PTE	Uncaptured + Uncontrolled	Uncaptured Emissions	Uncaptured Emissions	
					(lbs/hr)	(ton/yr)	(lbs/hr)	(ton/yr)	(lbs/yr)	(lbs/yr)	(lbs/hr)	(ton/yr)	(lb/yr)	(lb/yr)	(lb/yr)
NMOC/VOC		NMOC	2400	86.18	144.6	633.2	36.1	158.3	949,832.5	7,598.7	0.8674	162.105	53,864.7	6.1	
1,1,1-trichloroethane (f, n)	71-55-6	Halogen	0.48	133.42	0.0448	0.19607	1.12E-02	0.0490	294.1	5.9	0.0007	0.0520	16.7	0.0019	
1,1,2,2-tetrachloroethane (f)	79-34-5	Halogen	1.1	167.85	0.1291	0.56526	3.23E-02	0.1413	847.9	17.0	0.0019	0.1498	48.1	0.0055	
1,1-dichloroethane (s, f)	75-34-3	Halogen	2.4	98.97	0.1660	0.72720	4.15E-02	0.1818	1,090.8	21.8	0.0025	0.1927	61.9	0.0071	
1,1-dichloroethene (s, f) (vinylidene chloride)	75-35-4	Halogen	0.20	96.94	0.0136	0.05936	3.39E-03	0.0148	89.0	1.8	0.0002	0.0157	5.0	0.0006	
1,2-dichloroethane (s, f)	107-06-2	Halogen	0.41	98.96	0.0284	0.12422	7.09E-03	0.0311	186.3	3.7	0.0004	0.0329	10.6	0.0012	
1,2-dichloropropane (s, f) (propylene dichloride)	78-87-5	Halogen	0.18	112.99	0.0142	0.06227	3.55E-03	0.0156	93.4	1.9	0.0002	0.0165	5.3	0.0006	
acrylonitrile (s, f)	107-13-1	Non-hal	6.3	53.06	0.2337	1.02340	5.84E-02	0.2559	1,535.1	4.6	0.0005	0.2582	87.1	0.0099	
bromodichloromethane (s)	75-27-4	Halogen	3.1	163.83	0.3550	1.55487	8.87E-02	0.3887	2,332.3	46.6	0.0053	0.4120	132.3	0.0151	
carbon disulfide (s, f)	75-15-0	Non-hal	0.58	76.13	0.0309	0.13518	7.72E-03	0.0338	202.8	6.6	0.0001	0.0341	11.5	0.0013	
carbon tetrachloride (s, f)	56-23-5	Halogen	0.004	153.84	0.0004	0.00188	1.08E-04	0.0005	2.8	0.1	0.0000	0.0005	0.2	0.0000	
carbonyl sulfide (f)	463-58-1	Non-hal	0.49	60.07	0.0206	0.09011	5.14E-03	0.0225	135.2	0.4	0.0000	0.0227	7.7	0.0009	
chlorobenzene (s, f)	108-90-7	Halogen	0.25	112.56	0.0197	0.08615	4.92E-03	0.0215	129.2	2.6	0.0003	0.0228	7.3	0.0008	
chlorodifluoromethane (freon 22) (s, n)	75-45-6	Halogen	1.3	86.47	0.0786	0.34415	1.96E-02	0.0860	516.2	10.3	0.0012	0.0912	29.3	0.0033	
chloroethane (f)	75-00-3	Halogen	1.3	64.52	0.0586	0.25679	1.47E-02	0.0642	385.2	7.7	0.0009	0.0680	21.8	0.0025	
Chloroform (s, f)	67-66-3	Halogen	0.03	119.39	0.0025	0.01097	6.26E-04	0.0027	16.4	0.3	0.0000	0.0029	0.9	0.0001	
chloromethane (s)	74-87-3	Halogen	1.2	50.49	0.0423	0.18549	1.06E-02	0.0464	278.2	5.6	0.0006	0.0492	15.8	0.0018	
dichlorobenzene (s, f)	106-46-7	Halogen	0.21	147	0.0216	0.09451	5.39E-03	0.0236	141.8	2.8	0.0003	0.0250	8.0	0.0009	
dichloromethane (Methylene chloride) (s, f)	75-09-2	Halogen	14	84.94	0.8312	3.64064	2.08E-01	0.9102	5,461.0	109.2	0.0125	0.9648	309.7	0.0354	
ethylbenzene (s, f)	100-41-4	Non-hal	4.6	106.16	0.3413	1.49505	8.53E-02	0.3738	2,242.6	6.7	0.0008	0.3771	127.2	0.0145	
Ethylene dibromide (s, f)	106-93-4	Halogen	0.001	187.88	0.0001	0.00058	3.29E-05	0.0001	0.9	0.0	0.0000	0.0002	0.0	0.0000	
hexane (s, f)	110-54-3	Non-hal	6.6	86.18	0.3976	1.74136	9.94E-02	0.4353	2,612.0	7.8	0.0009	0.4393	146.1	0.0169	
hydrogen sulfide (s, f, n)	7782-06-4	Non-hal	218.00	34.08	5.1930	22.74543	1.36E+00	5.6664	34,118.1	102.4	0.0117	5.7375	1,934.8	0.2209	
mercury (s, f, n)	7439-97-6	Mercury	0.0029	200.61	0.0000	0.00018	1.02E-05	0.0000	0.3	0.3	0.0000	0.0002	0.0	0.0000	
Methyl isobutyl Ketone (s, f)	108-10-1	Non-hal	1.9	100.16	0.1330	0.58262	3.33E-02	0.1457	873.9	2.6	0.0003	0.1470	49.6	0.0057	
tetrachloroethene (s, f, n) (perchloroethylene)	127-18-4	Halogen	3.7	165.83	0.4289	1.87846	1.07E-01	0.4696	2,817.7	56.4	0.0064	0.4978	159.8	0.0182	
trichloroethylene (s, f, n)	79-01-6	Halogen	2.8	131.4	0.2572	1.12640	6.43E-02	0.2816	1,689.6	33.8	0.0039	0.2985	95.8	0.0109	
vinyl chloride (s, f)	75-01-4	Halogen	7.3	62.5	0.3189	1.39682	7.97E-02	0.3492	2,095.2	41.9	0.0048	0.3702	118.8	0.0136	
xylenes (s, f)	1330-20-7	Non-hal	12	106.17	0.8905	3.90051	2.23E-01	0.9751	5,850.8	17.6	0.0020	0.9839	331.8	0.0379	
<b>GHG Information</b>															
carbon dioxide (CO <sub>2</sub> )		N/A	500000	44.011	15,381.38	134,740,847.51	3.85E+03	33,685,211.88	202,111,271,271.8	1,616,890,170.2	184,576.5034	1,650,575,382.0532	5,730,830.3	654.2044	
methane (CH <sub>4</sub> )		Non-hal	500000	16.0426	5,606.72	49,114,846.75	4.49E+01	392,918.77	73,672,270,125.8	589,378,161.0	67,280.6120	589,771,079.7802	2,088,964.5	238.4663	

Maximum Fugitive LF HAP Emissions		Potential Fugitive LF HAP Emissions		Actual Fugitive LF HAP Emissions	
Total HAPs <sup>(4)</sup> =	42.190 (tons/year)	10.548	(tons/year)	Total HAPs <sup>(4)</sup> =	0.410 (tons/year)

f = federal hazardous air pollutant  
 s = state (NR 445) hazardous air contaminant  
 n = non-VOC

**Footnotes**

1. Base year of 2023 used for projected actual emissions.
2. Based on EPA's LandGEM model output, the maximum combined landfill gas generation will occur in 2032, and continue to decline in each of the following years. Thus, maximum and potential emissions related to landfill gas are calculated based on the 2032 combined landfill gas generation rate.
3. Values taken from AP-42 Emission Factor Tables 2.4-1 & 2.4-2 (August 2024), except for Hydrogen Sulfide which is the average of the test data between local MSW landfills: 373 ppm at the Outagamie County Landfill in April 2024 and 63 ppm at the Winnebago County Landfill in 2006 (when active).
4. Total HAPs equals the sum of fugitive emission of all federal CAA hazardous air pollutants (state-only HAPs are not included)