NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT

PERMITTEE: 3M COMPANY

FACILITY LOCATION: 3M GUIN LANDFILL
COUNTY ROAD 83
GUIN, ALABAMA 35563
MARION COUNTY

PERMIT NUMBER: AL0084425

RECEIVING WATERS: DSN 001: UNNAMED TRIBUTARY TO LUXAPALLILA CREEK
DSN 002: UNNAMED TRIBUTARY TO LUXAPALLILA CREEK

In accordance with and subject to the provisions of the Federal Water Pollution Control Act, as amended, 33 U.S.C. §§1251-1388 (the "FWPCA"), the Alabama Water Pollution Control Act, as amended, Code of Alabama 1975, §§ 22-22-1 to 22-22-14 (the "AWPCA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§22-22A-1 to 22-22A-17, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the Permittee is hereby authorized to discharge into the above-named receiving waters.

ISSUANCE DATE:

EFFECTIVE DATE:

EXPIRATION DATE:

DRAFT

Alabama Department of Environmental Management

Table of Contents

Table of Contents (continued)

PART I: DISCHARGE LIMITATIONS, CONDITIONS, AND REQUIREMENTS

A. DISCHARGE LIMITATIONS AND MONITORING REQUIREMENTS

DSN 001S: Stormwater runoff associated with an industrial landfill 3/ 4/

DSN 002S: Stormwater runoff associated with an industrial landfill 3/ 4/

During the period beginning on the effective date of this permit and lasting through the expiration date of this permit, the Permittee is authorized to discharge from the outfall(s) listed above and described more fully in the Permittee's application. Such discharges shall be limited and monitored by the Permittee as specified below:

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Frequency[2]	Sample Type[1]	Seasonal
BOD, 5-Day (20 Deg. C) (00310) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Semi-Annually	Grab	All Months
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15.0 Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Zinc Total Recoverable (01094) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Cadmium, Total Recoverable (01113) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Lead, Total Recoverable (01114) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Chromium Total Recoverable (01118) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Semi-Annually	Measured	All Months
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months

THE DISCHARGE SHALL HAVE NO SHEEN, AND THERE SHALL BE NO DISCHARGE OF VISIBLE OIL, FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.

1/ Samples collected to comply with the monitoring requirements specified above shall be collected at the following location: At the nearest accessible location just prior to discharge and after final treatment. Unless otherwise specified, composite samples shall be time composite samples collected using automatic sampling equipment or a minimum of eight (8) equal volume grab samples collected over equal time intervals. All composite samples shall be collected for the total period of discharge not to exceed 24 hours.

2/ If only one sampling event occurs during a month, the sample result shall be reported on the discharge monitoring report as both the monthly average and daily maximum value for all parameters with a monthly average limitation.

3/ See Part IV.A for Best Management Practices (BMP) Plan Requirements.

4/ See Part IV.B for Stormwater Measurement and Sampling Requirements.

B. Discharge Monitoring and Record Keeping Requirements

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge and shall be in accordance with the provisions of this permit.

2. Test Procedures

For the purpose of reporting and compliance, permittees shall use one of the following procedures:

a. For parameters with an EPA established Minimum Level (ML), report the measured value if the analytical result is at or above the ML and report "0" for values below the ML. Test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and guidelines published pursuant to Section 304(h) of the FWPCA, 33 U.S.C. Section 1314(h). If more than one method for analysis of a substance is approved for use, a method having a minimum level lower than the permit limit shall be used. If the minimum level of all methods is higher than the permit limit, the method having the lowest minimum level shall be used and a report of less than the minimum level shall be reported as zero and will constitute compliance; however, should EPA approve a method with a lower minimum level during the term of this permit the permittee shall use the newly approved method.

b. For pollutants parameters without an established ML, an interim ML may be utilized. The interim ML shall be calculated as 3.18 times the Method Detection Level (MDL) calculated pursuant to 40 CFR Part 136, Appendix B.

Permittees may develop an effluent matrix-specific ML, where an effluent matrix prevents attainment of the established ML. However, a matrix specific ML shall be based upon proper laboratory method and technique. Matrix-specific MLs must be approved by the Department, and may be developed by the permittee during permit issuance, reissuance, modification, or during compliance schedule.

In either case the measured value should be reported if the analytical result is at or above the ML and "0" reported for values below the ML.

c. For parameters without an EPA established ML, interim ML, or matrix-specific ML, a report of less than the detection limit shall constitute compliance if the detection limit of all analytical methods is higher than the permit limit using the most sensitive EPA approved method. For the purpose of calculating a monthly average, "0" shall be used for values reported less than the detection limit.

The Minimum Level utilized for procedures A and B above shall be reported on the permittee's DMR. When an EPA approved test procedure for analysis of a pollutant does not exist, the Director shall approve the procedure to be used.

3. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

a. The facility name and location, point source number, date, time and exact place of sampling;

b. The name(s) of person(s) who obtained the samples or measurements;

c. The dates and times the analyses were performed;

d. The name(s) of the person(s) who performed the analyses;

e. The analytical techniques or methods used, including source of method and method number; and

f. The results of all required analyses.

4. Records Retention and Production

The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the above reports or the application for this permit, for a period of at least three years from the date of the sample measurement, report or application. This period may be extended by request of the Director at any time. If litigation or other enforcement action, under the AWPCA and/or the FWPCA, is ongoing which involves any of the above records, the records shall be kept until the litigation is resolved. Upon the written request of the Director or his designee, the

permittee shall provide the Director with a copy of any record required to be retained by this paragraph. Copies of these records shall not be submitted unless requested.

All records required to be kept for a period of three years shall be kept at the permitted facility or an alternate location approved by the Department in writing and shall be available for inspection.

5. Monitoring Equipment and Instrumentation

All equipment and instrumentation used to determine compliance with the requirements of this permit shall be installed, maintained, and calibrated in accordance with the manufacturer's instructions or, in the absence of manufacturer's instructions, in accordance with accepted practices. The permittee shall develop and maintain quality assurance procedures to ensure proper operation and maintenance of all equipment and instrumentation. The quality assurance procedures shall include the proper use, maintenance, and installation, when appropriate, of monitoring equipment at the plant site.

C. DISCHARGE REPORTING REQUIREMENTS

1. Reporting of Monitoring Requirements

a. The permittee shall conduct the required monitoring in accordance with the following schedule:

MONITORING REQUIRED MORE FREQUENTLY THAN MONTHLY AND MONTHLY shall be conducted during the first full month following the effective date of coverage under this permit and every month thereafter.

QUARTERLY MONITORING shall be conducted at least once during each calendar quarter. Calendar quarters are the periods of January through March, April through June, July through September, and October through December. The permittee shall conduct the quarterly monitoring during the first complete calendar quarter following the effective date of this permit and is then required to monitor once during each quarter thereafter. Quarterly monitoring may be done anytime during the quarter, unless restricted elsewhere in this permit, but it should be submitted with the last DMR due for the quarter, i.e., (March, June, September and December DMR's).

SEMIANNUAL MONITORING shall be conducted at least once during the period of January through June and at least once during the period of July through December. The permittee shall conduct the semiannual monitoring during the first complete calendar semiannual period following the effective date of this permit and is then required to monitor once during each semiannual period thereafter. Semiannual monitoring may be done anytime during the semiannual period, unless restricted elsewhere in this permit, but it should be submitted with the last DMR for the month of the semiannual period, i.e. (June and December DMR's).

ANNUAL MONITORING shall be conducted at least once during the period of January through December. The permittee shall conduct the annual monitoring during the first complete calendar annual period following the effective date of this permit and is then required to monitor once during each annual period thereafter. Annual monitoring may be done anytime during the year, unless restricted elsewhere in this permit, but it should be submitted with the December DMR.

b. The permittee shall submit discharge monitoring reports (DMRs) on the forms provided by the Department and in accordance with the following schedule:

REPORTS OF MORE FREQUENTLY THAN MONTHLY AND MONTHLY TESTING shall be submitted on a **monthly** basis. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period.

REPORTS OF QUARTERLY TESTING shall be submitted on a **quarterly** basis. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period.

REPORTS OF SEMIANNUAL TESTING shall be submitted on a semiannual basis. The reports are due on the 28th day of JANUARY and the 28th day of JULY. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period.

REPORTS OF ANNUAL TESTING shall be submitted on an annual basis. The first report is due on the 28th day of JANUARY. The reports shall be submitted so that they are received by the Department no later than the 28th day of the month following the reporting period.

c. Except as allowed by Provision I.C.1.c.(1) or (2), the permittee shall submit all Discharge Monitoring Reports (DMRs) required by Provision I.C.1.b electronically.

(1) If the permittee is unable to complete the electronic submittal of DMR data due to technical problems originating with the Department's electronic system (this could include entry/submittal issues with an entire set of DMRs or individual parameters), the permittee is not relieved of their obligation to submit DMR data to the Department by the date specified in Provision I.C.1.b, unless otherwise directed by the Department.

If the Department's electronic system is down on the 28th day of the month in which the DMR is due or is down for an extended period of time, as determined by the Department, when a DMR is required to be submitted, the permittee may submit the data in an alternate manner and format acceptable to the Department. Preapproved alternate acceptable methods include faxing, e-mailing, mailing, or hand-delivery of data such that they are received by the required reporting date. Within 5 calendar days of the Department's electronic system resuming operation, the permittee shall enter the data into the Department's electronic system, unless an alternate timeframe is approved by the Department. A comment should be included on the electronic DMR submittal verifying the original submittal date (date of the fax, copy of the dated e-mail, or hand-delivery stamped date), if applicable.

(2) The permittee may submit a request to the Department for a temporary electronic reporting waiver for DMR submittals. The waiver request should include the permit number; permittee name; facility/site name; facility address; name, address, and contact information for the responsible official or duly authorized representative; a detailed statement regarding the basis for requesting such a waiver; and the duration for which the waiver is requested. Approved electronic reporting waivers are not transferrable.

Permittees with an approved electronic reporting waiver for DMRs may submit hard copy DMRs for the period that the approved electronic reporting waiver request is effective. The permittee shall submit the Department-approved DMR forms to the address listed in Provision I.C.1.e.

(3) If a permittee is allowed to submit a hard copy DMR, the DMR must be legible and bear an original signature. Photo and electronic copies of the signature are not acceptable and shall not satisfy the reporting requirements of this permit.

(4) If the permittee, using approved analytical methods as specified in Provision I.B.2, monitors any discharge from a point source for a limited substance identified in Provision I.A. of this permit more frequently than required by this permit, the results of such monitoring shall be included in the calculation and reporting of values on the DMR and the increased frequency shall be indicated on the DMR.

(5) In the event no discharge from a point source identified in Provision I.A. of this permit and described more fully in the permittee's application occurs during a monitoring period, the permittee shall report "No Discharge" for such period on the appropriate DMR.

d. All reports and forms required to be submitted by this permit, the AWPCA and the Department's Rules, shall be electronically signed (or, if allowed by the Department, traditionally signed) by a "responsible official" of the permittee as defined in ADEM Administrative Code Rule 335-6-6-.09 or a "duly authorized representative" of such official as defined in ADEM Administrative Code Rule 335-6-6-.09 and shall bear the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

e. Discharge Monitoring Reports required by this permit, the AWPCA, and the Department's Rules that are being submitted in hard copy shall be addressed to:

Alabama Department of Environmental Management
Water Division
Office of Water Services
Post Office Box 301463
Montgomery, Alabama 36130-1463

Certified and Registered Mail containing Discharge Monitoring Reports shall be addressed to:

Alabama Department of Environmental Management
Water Division
Office of Water Services
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

f. All other correspondence and reports required to be submitted by this permit, the AWPCA, and the Department's Rules shall be addressed to:

Alabama Department of Environmental Management`
Water Division
Post Office Box 301463
Montgomery, Alabama 36130-1463

Certified and Registered Mail shall be addressed to:

Alabama Department of Environmental Management
Water Division
1400 Coliseum Boulevard
Montgomery, Alabama 36110-2400

g. If this permit is a re-issuance, then the permittee shall continue to submit DMRs in accordance with the requirements of their previous permit until such time as DMRs are due as discussed in Part I.C.1.b above.

2. Noncompliance Notification

a. 24-Hour Noncompliance Reporting

The permittee shall report to the Director, within 24-hours of becoming aware of the noncompliance, any noncompliance which may endanger health or the environment. This shall include but is not limited to the following circumstances:

(1) does not comply with any daily minimum or maximum discharge limitation for an effluent characteristic specified in Provision I. A. of this permit which is denoted by an "(X)";

(2) threatens human health or welfare, fish or aquatic life, or water quality standards;

(3) does not comply with an applicable toxic pollutant effluent standard or prohibition established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a);

(4) contains a quantity of a hazardous substance which has been determined may be harmful to public health or welfare under Section 311(b)(4) of the FWPCA, 33 U.S.C. Section 1321(b)(4);

(5) exceeds any discharge limitation for an effluent characteristic as a result of an unanticipated bypass or upset; and

(6) is an unpermitted direct or indirect discharge of a pollutant to a water of the state (unpermitted discharges properly reported to the Department under any other requirement are not required to be reported under this provision).

The permittee shall orally report the occurrence and circumstances of such discharge to the Director within 24-hours after the permittee becomes aware of the occurrence of such discharge. In addition to the oral report, the permittee shall submit to the Director or Designee a written report as provided in Part I.C.2.c no later than five (5) days after becoming aware of the occurrence of such discharge.

b. If for any reason, the permittee's discharge does not comply with any limitation of this permit, the permittee shall submit to the Director or Designee a written report as provided in Part I.C.2.c below, such report shall be submitted with the next Discharge Monitoring Report required to be submitted by Part I.C.1 of this permit after becoming aware of the occurrence of such noncompliance.

c. Any written report required to be submitted to the Director or Designee by Part I.C.2 a. or b. shall be submitted using a Noncompliance Notification Form (ADEM Form 421) available on the Department's website (http://adem.alabama.gov/DeptForms/Form421.pdf) and include the following information:

(1) A description of the discharge and cause of noncompliance;

(2) The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and

(3) A description of the steps taken and/or being taken to reduce or eliminate the noncomplying discharge and to prevent its recurrence.

D. Other Reporting and Notification Requirements

1. Anticipated Noncompliance

The permittee shall give the Director written advance notice of any planned changes or other circumstances regarding a facility which may result in noncompliance with permit requirements.

2. Termination of Discharge

The permittee shall notify the Director, in writing, when all discharges from any point source(s) identified in Provision I. A. of this permit have permanently ceased. This notification shall serve as sufficient cause for instituting procedures for modification or termination of the permit.

3. Updating Information

a. The permittee shall inform the Director of any change in the permittee's mailing address, telephone number or in the permittee's designation of a facility contact or office having the authority and responsibility to prevent and abate violations of the AWPCA, the Department's Rules, and the terms and conditions of this permit, in writing, no later than ten (10) days after such change. Upon request of the Director or his designee, the permittee shall furnish the Director with an update of any information provided in the permit application.

b. If the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information with a written explanation for the mistake and/or omission.

4. Duty to Provide Information

The permittee shall furnish to the Director, within a reasonable time, any information which the Director or his designee may request to determine whether cause exists for modifying, revoking and re-issuing, suspending, or terminating this permit, in whole or in part, or to determine compliance with this permit.

5. Cooling Water and Boiler Water Additives

a. The permittee shall notify the Director in writing not later than thirty (30) days prior to instituting the use of any biocide corrosion inhibitor or chemical additive in a cooling or boiler system, not identified in the application for this permit, from which discharge is allowed by this permit. Notification is not required for additives that do not contain a heavy metal(s) as an active ingredient and that pass through a wastewater treatment system prior to discharge nor is notification required for additives that should not reasonably be expected to cause the cooling water or boiler water to exhibit toxicity as determined by analysis of manufacturer's data or testing by the permittee. Such notification shall include:

(1) name and general composition of biocide or chemical;

(2) 96-hour median tolerance limit data for organisms representative of the biota of the waterway into which the discharge will ultimately reach;

(3) quantities to be used;

(4) frequencies of use;

(5) proposed discharge concentrations; and

(6) EPA registration number, if applicable.

b. The use of a biocide or additive containing tributyl tin, tributyl tin oxide, zinc, chromium or related compounds in cooling or boiler system(s), from which a discharge regulated by this permit occurs, is prohibited except as exempted below. The use of a biocide or additive containing zinc, chromium or related compounds may be used in special circumstances if (1) the permit contains limits for these substances, or (2) the applicant demonstrates during the application process that the use of zinc, chromium or related compounds as a biocide or additive will not pose a reasonable potential to violate the applicable State water quality standards for these substances. The use of any additive, not identified in this permit or in the

application for this permit or not exempted from notification under this permit is prohibited, prior to a determination by the Department that permit modification to control discharge of the additive is not required or prior to issuance of a permit modification controlling discharge of the additive.

6. Permit Issued Based on Estimated Characteristics

a. If this permit was issued based on estimates of the characteristics of a process discharge reported on an EPA NPDES Application Form 2D (EPA Form 3510-2D), the permittee shall complete and submit an EPA NPDES Application Form 2C (EPA Form 3510-2C) no later than two years after the date that discharge begins. Sampling required for completion of the Form 2C shall occur when a discharge(s) from the process(s) causing the new or increased discharge is occurring. If this permit was issued based on estimates concerning the composition of a stormwater discharge(s), the permittee shall perform the sampling required by EPA NPDES Application Form 2F (EPA Form 3510-2F) no later than one year after the industrial activity generating the stormwater discharge has been fully initiated.

b. This permit shall be reopened if required to address any new information resulting from the completion and submittal of the Form 2C and or 2F.

E. SCHEDULE OF COMPLIANCE

1. The permittee shall achieve compliance with the discharge limitations specified in Provision I. A. in accordance with the following schedule:

COMPLIANCE SHALL BE ATTAINED ON THE EFFECTIVE DATE OF THIS PERMIT

2. No later than 14 calendar days following a date identified in the above schedule of compliance, the permittee shall submit either a report of progress or, in the case of specific actions being required by identified dates, a written notice of compliance or noncompliance. In the latter case, the notice shall include the cause of noncompliance, any remedial actions taken, and the probability of meeting the next scheduled requirement.

PART II: OTHER REQUIREMENTS, RESPONSIBILITIES, AND DUTIES

A. OPERATIONAL AND MANAGEMENT REQUIREMENTS

1. Facilities Operation and Maintenance

The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities only when necessary to achieve compliance with the conditions of the permit.

2. Best Management Practices

a. Dilution water shall not be added to achieve compliance with discharge limitations except when the Director or his designee has granted prior written authorization for dilution to meet water quality requirements.

b. The permittee shall prepare, implement, and maintain a Spill Prevention, Control and Countermeasures (SPCC) Plan in accordance with 40 C.F.R. Section 112 if required thereby.

c. The permittee shall prepare, submit for approval and implement a Best Management Practices (BMP) Plan for containment of any or all process liquids or solids, in a manner such that these materials do not present a significant potential for discharge, if so required by the Director or his designee. When submitted and approved, the BMP Plan shall become a part of this permit and all requirements of the BMP Plan shall become requirements of this permit.

3. Spill Prevention, Control, and Management

The permittee shall provide spill prevention, control, and/or management sufficient to prevent any spills of pollutants from entering a water of the state or a publicly or privately owned treatment works. Any containment system used to implement this requirement shall be constructed of materials compatible with the substance(s) contained and which shall prevent the contamination of groundwater and such containment system shall be capable of retaining a volume equal to 110 percent of the capacity of the largest tank for which containment is provided.

B. OTHER RESPONSIBILITIES

1. Duty to Mitigate Adverse Impacts

The permittee shall promptly take all reasonable steps to mitigate and minimize or prevent any adverse impact on human health or the environment resulting from noncompliance with any discharge limitation specified in Provision I. A. of this permit, including such accelerated or additional monitoring of the discharge and/or the receiving waterbody as necessary to determine the nature and impact of the noncomplying discharge.

2. Right of Entry and Inspection

The permittee shall allow the Director, or an authorized representative, upon the presentation of proper credentials and other documents as may be required by law to:

a. enter upon the permittee's premises where a regulated facility or activity or point source is located or conducted, or where records must be kept under the conditions of the permit;

b. have access to and copy, at reasonable times, any records that must be kept under the conditions of the permit;

c. inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and

d. sample or monitor, for the purposes of assuring permit compliance or as otherwise authorized by the AWPCA, any substances or parameters at any location.

C. BYPASS AND UPSET

1. Bypass

a. Any bypass is prohibited except as provided in b. and c. below:

b. A bypass is not prohibited if:

(1) It does not cause any discharge limitation specified in Provision I. A. of this permit to be exceeded;

(2) It enters the same receiving stream as the permitted outfall; and

(3) It is necessary for essential maintenance of a treatment or control facility or system to assure efficient operation of such facility or system.

c. A bypass is not prohibited and need not meet the discharge limitations specified in Provision I. A. of this permit if:

(1) It is unavoidable to prevent loss of life, personal injury, or severe property damage;

(2) There are no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime (this condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance); and

(3) The permittee submits a written request for authorization to bypass to the Director at least ten (10) days prior to the anticipated bypass (if possible), the permittee is granted such authorization, and the permittee complies with any conditions imposed by the Director to minimize any adverse impact on human health or the environment resulting from the bypass.

d. The permittee has the burden of establishing that each of the conditions of Provision II.C.1.b. or c. have been met to qualify for an exception to the general prohibition against bypassing contained in a. and an exemption, where applicable, from the discharge limitations specified in Provision I. A. of this permit.

2. Upset

a. A discharge which results from an upset need not meet the discharge limitations specified in Provision I. A. of this permit if:

(1) No later than 24-hours after becoming aware of the occurrence of the upset, the permittee orally reports the occurrence and circumstances of the upset to the Director or his designee; and

(2) No later than five (5) days after becoming aware of the occurrence of the upset, the permittee furnishes the Director with evidence, including properly signed, contemporaneous operating logs, or other relevant evidence, demonstrating that (i) an upset occurred; (ii) the permittee can identify the specific cause(s) of the upset; (iii) the permittee's facility was being properly operated at the time of the upset; and (iv) the permittee promptly took all reasonable steps to minimize any adverse impact on human health or the environment resulting from the upset.

b. The permittee has the burden of establishing that each of the conditions of Provision II. C.2.a. of this permit have been met to qualify for an exemption from the discharge limitations specified in Provision I.A. of this permit.

D. Duty to Comply with Permit, Rules, and Statutes

1. Duty to Comply

a. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the AWPCA and the FWPCA and is grounds for enforcement action, for permit termination, revocation and reissuance, suspension, modification; or denial of a permit renewal application.

b. The necessity to halt or reduce production or other activities in order to maintain compliance with the conditions of the permit shall not be a defense for a permittee in an enforcement action.

c. The discharge of a pollutant from a source not specifically identified in the permit application for this permit and not specifically included in the description of an outfall in this permit is not authorized and shall constitute noncompliance with this permit.

d. The permittee shall take all reasonable steps, including cessation of production or other activities, to minimize or prevent any violation of this permit or to minimize or prevent any adverse impact of any permit violation.

e. Nothing in this permit shall be construed to preclude and negate the permittee's responsibility or liability to apply for, obtain, or comply with other ADEM, Federal, State, or Local Government permits, certifications, licenses, or other approvals.

2. Removed Substances

Solids, sludges, filter backwash, or any other pollutant or other waste removed in the course of treatment or control of wastewaters shall be disposed of in a manner that complies with all applicable Department Rules.

3. Loss or Failure of Treatment Facilities

Upon the loss or failure of any treatment facilities, including but not limited to the loss or failure of the primary source of power of the treatment facility, the permittee shall, where necessary to maintain compliance with the discharge limitations specified in Provision I. A. of this permit, or any other terms or conditions of this permit, cease, reduce, or otherwise control production and/or all discharges until treatment is restored. If control of discharge during loss or failure of the primary source of power is to be accomplished by means of alternate power sources, standby generators, or retention of inadequately treated effluent, the permittee must furnish to the Director within six months a certification that such control mechanisms have been installed.

4. Compliance with Statutes and Rules

a. This permit has been issued under ADEM Administrative Code, Chapter 335-6-6. All provisions of this chapter, that are applicable to this permit, are hereby made a part of this permit. A copy of this chapter may be obtained for a small charge from the Office of General Counsel, Alabama Department of Environmental Management, 1400 Coliseum Blvd., Montgomery, AL 36130.

b. This permit does not authorize the noncompliance with or violation of any Laws of the State of Alabama or the United States of America or any regulations or rules implementing such laws. FWPCA, 33 U.S.C. Section 1319, and Code of Alabama 1975, Section 22-22-14.

E. PERMIT TRANSFER, MODIFICATION, SUSPENSION, REVOCATION, AND REISSUANCE

1. Duty to Reapply or Notify of Intent to Cease Discharge

a. If the permittee intends to continue to discharge beyond the expiration date of this permit, the permittee shall file a complete permit application for reissuance of this permit at least 180 days prior to its expiration. If the permittee does not intend to continue discharge beyond the expiration of this permit, the permittee shall submit written notification of this intent which shall be signed by an individual meeting the signatory requirements for a permit application as set forth in ADEM Administrative Code Rule 335-6-6-.09.

b. Failure of the permittee to apply for reissuance at least 180 days prior to permit expiration will void the automatic continuation of the expiring permit provided by ADEM Administrative Code Rule 335-6-6-.06 and should the permit not be reissued for any reason any discharge after expiration of this permit will be an unpermitted discharge.

2. Change in Discharge

a. The permittee shall apply for a permit modification at least 180 days in advance of any facility expansion, production increase, process change, or other action that could result in the discharge of additional pollutants or increase the quantity of a discharged pollutant such that existing permit limitations would be exceeded or that could result in an additional discharge point. This requirement applies to pollutants that are or that are not subject to discharge limitations in this permit. No new or increased discharge may begin until the Director has authorized it by issuance of a permit modification or a reissued permit.

b. The permittee shall notify the Director as soon as it is known or there is reason to believe:

(1) That any activity has occurred or will occur which would result in the discharge on a routine or frequent basis, of any toxic pollutant which is not limited in this permit, if that discharge will exceed the highest of the following notification levels:

(i) one hundred micrograms per liter;

(ii) two hundred micrograms per liter for acrolein and acrylonitrile; five hundred micrograms per liter for 2,4-dinitrophenol and for 2-methyl-4,6-dini-trophenol; and one milligram per liter for antimony;

(iii) five times the maximum concentration value reported for that pollutant in the permit application; or

(2) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following notification levels:

(i) five hundred micrograms per liter;

(ii) one milligram per liter for antimony;

(iii) ten times the maximum concentration value reported for that pollutant in the permit application.

3. Transfer of Permit

This permit may not be transferred or the name of the permittee changed without notice to the Director and subsequent modification or revocation and reissuance of the permit to identify the new permittee and to incorporate any other changes as may be required under the FWPCA or AWPCA. In the case of a change in name, ownership or control of the permittee's premises only, a request for permit modification in a format acceptable to the Director is required at least 30 days prior to the change. In the case of a change in name, ownership or control of the permittee's premises accompanied by a change or proposed change in effluent characteristics, a complete permit application is required to be submitted to the Director at least 180 days prior to the change. Whenever the Director is notified of a change in name, ownership or control, he may decide not to modify the existing permit and require the submission of a new permit application.

4. Permit Modification and Revocation

a. This permit may be modified or revoked and reissued, in whole or in part, during its term for cause, including but not limited to, the following:

(1) If cause for termination under Provision II. E. 5. of this permit exists, the Director may choose to revoke and reissue this permit instead of terminating the permit;

(2) If a request to transfer this permit has been received, the Director may decide to revoke and reissue or to modify the permit; or

(3) If modification or revocation and reissuance is requested by the permittee and cause exists, the Director may grant the request.

b. This permit may be modified during its term for cause, including but not limited to, the following:

(1) If cause for termination under Provision II. E. 5. of this permit exists, the Director may choose to modify this permit instead of terminating this permit;

(2) There are material and substantial alterations or additions to the facility or activity generating wastewater which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit;

(3) The Director has received new information that was not available at the time of permit issuance and that would have justified the application of different permit conditions at the time of issuance;

(4) A new or revised requirement(s) of any applicable standard or limitation is promulgated under Sections 301(b)(2)(C), (D), (E), and (F), and 307(a)(2) of the FWPCA;

(5) Errors in calculation of discharge limitations or typographical or clerical errors were made;

(6) To the extent allowed by ADEM Administrative Code, Rule 335-6-6-.17, when the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued;

(7) To the extent allowed by ADEM Administrative Code, Rule 335-6-6-.17, permits may be modified to change compliance schedules;

(8) To agree with a granted variance under 301(c), 301(g), 301(h), 301(k), or 316(a) of the FWPCA or for fundamentally different factors;

(9) To incorporate an applicable 307(a) FWPCA toxic effluent standard or prohibition;

(10) When required by the reopener conditions in this permit;

(11) When required under 40 CFR 403.8(e) (compliance schedule for development of pretreatment program);

(12) Upon failure of the state to notify, as required by Section 402(b)(3) of the FWPCA, another state whose waters may be affected by a discharge permitted by this permit;

(13) When required to correct technical mistakes, such as errors in calculation, or mistaken interpretations of law made in determining permit conditions; or

(14) When requested by the permittee and the Director determines that the modification has cause and will not result in a violation of federal or state law, regulations or rules.

5. Permit Termination

This permit may be terminated during its term for cause, including but not limited to, the following:

a. Violation of any term or condition of this permit;

b. The permittee's misrepresentation or failure to disclose fully all relevant facts in the permit application or during the permit issuance process or the permittee's misrepresentation of any relevant facts at any time;

c. Materially false or inaccurate statements or information in the permit application or the permit;

d. A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge;

e. The permittee's discharge threatens human life or welfare or the maintenance of water quality standards;

f. Permanent closure of the facility generating the wastewater permitted to be discharged by this permit or permanent cessation of wastewater discharge;

g. New or revised requirements of any applicable standard or limitation that is promulgated under Sections 301(b)(2)(C), (D), (E), and (F), and 307(a)(2) of the FWPCA that the Director determines cannot be complied with by the permittee; or

h. Any other cause allowed by the ADEM Administrative Code, Chapter 335-6-6.

6. Permit Suspension

This permit may be suspended during its term for noncompliance until the permittee has taken action(s) necessary to achieve compliance.

7. Request for Permit Action Does Not Stay Any Permit Requirement

The filing of a request by the permittee for modification, suspension or revocation of this permit, in whole or in part, does not stay any permit term or condition.

F. Compliance with Toxic Pollutant Standard or Prohibition

If any applicable effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the FWPCA, 33 U.S.C. Section 1317(a), for a toxic pollutant discharged by the permittee and such standard or prohibition is more stringent than any discharge limitation on the pollutant specified in Provision I. A. of this permit, or controls a pollutant not limited in Provision I. A. of this permit, this permit shall be modified to conform to the toxic pollutant effluent standard or prohibition and the permittee shall be notified of such modification. If this permit has not been modified to conform to the toxic pollutant effluent standard or prohibition before the effective date of such standard or prohibition, the permittee shall attain compliance with the requirements of the standard or prohibition within the time period required by the standard or prohibition and shall continue to comply with the standard or prohibition until this permit is modified or reissued.

G. Discharge of Wastewater Generated by Others

The discharge of wastewater, generated by any process, facility, or by any other means not under the operational control of the permittee or not identified in the application for this permit or not identified specifically in the description of an outfall in this permit is not authorized by this permit.

PART III: OTHER PERMIT CONDITIONS

A. CIVIL AND CRIMINAL LIABILITY

1. Tampering

Any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained or performed under the permit shall, upon conviction, be subject to penalties as provided by the AWPCA.

2. False Statements

Any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be subject to penalties as provided by the AWPCA.

3. Permit Enforcement

a. Any NPDES permit issued or reissued by the Department is a permit for the purpose of the AWPCA and the FWPCA and as such any terms, conditions, or limitations of the permit are enforceable under state and federal law.

b. Any person required to have a NPDES permit pursuant to ADEM Administrative Code Chapter 335-6-6 and who discharges pollutants without said permit, who violates the conditions of said permit, who discharges pollutants in a manner not authorized by the permit, or who violates applicable orders of the Department or any applicable rule or standard of the Department, is subject to any one or combination of the following enforcement actions under applicable state statutes.

(1) An administrative order requiring abatement, compliance, mitigation, cessation, clean-up, and/or penalties;

(2) An action for damages;

(3) An action for injunctive relief; or

(4) An action for penalties.

c. If the permittee is not in compliance with the conditions of an expiring or expired permit the Director may choose to do any or all of the following provided the permittee has made a timely and complete application for reissuance of the permit:

(1) initiate enforcement action based upon the permit which has been continued;

(2) issue a notice of intent to deny the permit reissuance. If the permit is denied, the owner or operator would then be required to cease the activities authorized by the continued permit or be subject to enforcement action for operating without a permit;

(3) reissue the new permit with appropriate conditions; or

(4) take other actions authorized by these rules and AWPCA.

4. Relief from Liability

Except as provided in Provision II.C.1 (Bypass) and Provision II.C.2 (Upset), nothing in this permit shall be construed to relieve the permittee of civil or criminal liability under the AWPCA or FWPCA for noncompliance with any term or condition of this permit.

B. OIL AND HAZARDOUS SUBSTANCE LIABILITY

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities or penalties to which the permittee is or may be subject under Section 311 of the FWPCA, 33 U.S.C. Section 1321.

C. PROPERTY AND OTHER RIGHTS

This permit does not convey any property rights in either real or personal property, or any exclusive privileges, nor does it authorize any injury to persons or property or invasion of other private rights, trespass, or any infringement of federal, state, or local laws or regulations, nor does it authorize or approve the construction of any physical structures or facilities or the undertaking of any work in any waters of the state or of the United States.

D. AVAILABILITY OF REPORTS

Except for data determined to be confidential under Code of Alabama 1975, Section 22-22-9(c), all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Department. Effluent data shall not be considered confidential.

E. EXPIRATION OF PERMITS FOR NEW OR INCREASED DISCHARGES

1. If this permit was issued for a new discharger or new source, this permit shall expire eighteen months after the issuance date if construction of the facility has not begun during the eighteen-month period.

2. If this permit was issued or modified to allow the discharge of increased quantities of pollutants to accommodate the modification of an existing facility and if construction of this modification has not begun during the eighteen month period after issuance of this permit or permit modification, this permit shall be modified to reduce the quantities of pollutants allowed to be discharged to those levels that would have been allowed if the modification of the facility had not been planned.

3. Construction has begun when the owner or operator has:

   a. begun, or caused to begin as part of a continuous on-site construction program:

      (1) any placement, assembly, or installation of facilities or equipment; or

      (2) significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or

   b. entered into a binding contractual obligation for the purpose of placement, assembly, or installation of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under the paragraph. The entering into a lease with the State of Alabama for exploration and production of hydrocarbons shall also be considered beginning construction.

F. COMPLIANCE WITH WATER QUALITY STANDARDS

1. On the basis of the permittee's application, plans, or other available information, the Department has determined that compliance with the terms and conditions of this permit should assure compliance with the applicable water quality standards.

2. Compliance with permit terms and conditions notwithstanding, if the permittee's discharge(s) from point sources identified in Provision I. A. of this permit cause or contribute to a condition in contravention of state water quality standards, the Department may require abatement action to be taken by the permittee in emergency situations or modify the permit pursuant to the Department's Rules, or both.

3. If the Department determines, on the basis of a notice provided pursuant to this permit or any investigation, inspection or sampling, that a modification of this permit is necessary to assure maintenance of water quality standards or compliance with other provisions of the AWPCA or FWPCA, the Department may require such modification and, in cases of emergency, the Director may prohibit the discharge until the permit has been modified.

G. GROUNDWATER

Unless specifically authorized under this permit, this permit does not authorize the discharge of pollutants to groundwater. Should a threat of groundwater contamination occur, the Director may require groundwater monitoring to properly assess the degree of the problem and the Director may require that the Permittee undertake measures to abate any such discharge and/or contamination.

H. DEFINITIONS

1. Average monthly discharge limitation - means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).

2. Average weekly discharge limitation - means the highest allowable average of "daily discharges" over a calendar week, calculated as the sum of all "daily discharges" measured during a calendar week divided by the number of "daily discharges" measured during that week (zero discharge days shall not be included in the number of "daily discharges" measured and a less than detectable test result shall be treated as a concentration of zero if the most sensitive EPA approved method was used).

3. Arithmetic Mean – means the summation of the individual values of any set of values divided by the number of individual values.

4. AWPCA - means the Alabama Water Pollution Control Act.

5. BOD – means the five-day measure of the pollutant parameter biochemical oxygen demand.

6. Bypass - means the intentional diversion of waste streams from any portion of a treatment facility.

7. CBOD – means the five-day measure of the pollutant parameter carbonaceous biochemical oxygen demand.

8. Daily discharge - means the discharge of a pollutant measured during any consecutive 24-hour period in accordance with the sample type and analytical methodology specified by the discharge permit.

9. Daily maximum - means the highest value of any individual sample result obtained during a day.

10. Daily minimum - means the lowest value of any individual sample result obtained during a day.

11. Day - means any consecutive 24-hour period.

12. Department - means the Alabama Department of Environmental Management.

13. Director - means the Director of the Department.

14. Discharge - means "[t]he addition, introduction, leaking, spilling or emitting of any sewage, industrial waste, pollutant or other wastes into waters of the state". Code of Alabama 1975, Section 22-22-1(b)(8).

15. Discharge Monitoring Report (DMR) - means the form approved by the Director to accomplish reporting requirements of an NPDES permit.

16. DO – means dissolved oxygen.

17. 8HC – means 8-hour composite sample, including any of the following:

    a. The mixing of at least 5 equal volume samples collected at constant time intervals of not more than 2 hours over a period of not less than 8 hours between the hours of 6:00 a.m. and 6:00 p.m. If the sampling period exceeds 8 hours, sampling may be conducted beyond the 6:00 a.m. to 6:00 p.m. period.

    b. A sample continuously collected at a constant rate over period of not less than 8 hours between the hours of 6:00 a.m. and 6:00 p.m. If the sampling period exceeds 8 hours, sampling may be conducted beyond the 6:00 a.m. to 6:00 p.m. period.

18. EPA - means the United States Environmental Protection Agency.

19. FC – means the pollutant parameter fecal coliform.

20. Flow – means the total volume of discharge in a 24-hour period.

21. FWPCA - means the Federal Water Pollution Control Act.

22. Geometric Mean – means the Nth root of the product of the individual values of any set of values where N is equal to the number of individual values. The geometric mean is equivalent to the antilog of the arithmetic mean of the logarithms of the individual values. For purposes of calculating the geometric mean, values of zero (0) shall be considered one (1).

23. Grab Sample – means a single influent or effluent portion which is not a composite sample. The sample(s) shall be collected at the period(s) most representative of the discharge.

24. Indirect Discharger – means a nondomestic discharger who discharges pollutants to a publicly owned treatment works or a privately owned treatment facility operated by another person.

25. Industrial User – means those industries identified in the Standard Industrial Classification manual, Bureau of the Budget 1967, as amended and supplemented, under the category "Division D – Manufacturing" and such other classes of significant waste producers as, by regulation, the Director deems appropriate.

26. MGD – means million gallons per day.

27. Monthly Average – means, other than for fecal coliform bacteria, the arithmetic mean of the entire composite or grab samples taken for the daily discharges collected in one month period. The monthly average for fecal coliform bacteria is the geometric mean of daily discharge samples collected in a one month period. The monthly average for flow is the arithmetic mean of all flow measurements taken in a one month period.

28. New Discharger – means a person, owning or operating any building, structure, facility or installation:

    a. from which there is or may be a discharge of pollutants;

    b. that did not commence the discharge of pollutants prior to August 13, 1979, and which is not a new source; and

    c. which has never received a final effective NPDES permit for dischargers at that site.

29. NH3-N – means the pollutant parameter ammonia, measured as nitrogen.

30. Permit application - means forms and additional information that is required by ADEM Administrative Code Rule 335-6-6-.08 and applicable permit fees.

31. Point source - means "any discernible, confined and discrete conveyance, including but not limited to any pipe, channel, ditch, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, . . . from which pollutants are or may be discharged." Section 502(14) of the FWPCA, 33 U.S.C. Section 1362(14).

32. Pollutant - includes for purposes of this permit, but is not limited to, those pollutants specified in Code of Alabama 1975, Section 22-22-1(b)(3) and those effluent characteristics specified in Provision I. A. of this permit.

33. Privately Owned Treatment Works – means any devices or system which is used to treat wastes from any facility whose operator is not the operator of the treatment works, and which is not a "POTW".

34. Publicly Owned Treatment Works – means a wastewater collection and treatment facility owned by the State, municipality, regional entity composed of two or more municipalities, or another entity created by the State or local authority for the purpose of collecting and treating municipal wastewater.

35. Receiving Stream – means the "waters" receiving a "discharge" from a "point source".

36. Severe property damage - means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

37. Significant Source – means a source which discharges 0.025 MGD or more to a POTW or greater than five percent of the treatment work's capacity, or a source which is a primary industry as defined by the U.S. EPA or which discharges a priority or toxic pollutant.

38. Solvent – means any virgin, used or spent organic solvent(s) identified in the F-Listed wastes (F001 through F005) specified in 40 CFR 261.31 that is used for the purpose of solubilizing other materials.

39. TKN – means the pollutant parameter Total Kjeldahl Nitrogen.

40. TON – means the pollutant parameter Total Organic Nitrogen.

41. TRC – means Total Residual Chlorine.

42. TSS – means the pollutant parameter Total Suspended Solids.

43. 24HC – means 24-hour composite sample, including any of the following:

    a. the mixing of at least 12 equal volume samples collected at constant time intervals of not more than 2 hours over a period of 24 hours;

    b. a sample collected over a consecutive 24-hour period using an automatic sampler composite to one sample. As a minimum, samples shall be collected hourly and each shall be no more than one twenty-fourth (1/24) of the total sample volume collected; or

    c. a sample collected over a consecutive 24-hour period using an automatic composite sampler composited proportional to flow.

44. Upset - means an exceptional incident in which there is an unintentional and temporary noncompliance with technology-based permit discharge limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

45. Waters - means "[a]ll waters of any river, stream, watercourse, pond, lake, coastal, ground or surface water, wholly or partially within the state, natural or artificial. This does not include waters which are entirely confined and retained completely upon the property of a single individual, partnership or corporation unless such waters are used in interstate commerce." Code of Alabama 1975, Section 22-22-1(b)(2). Waters "include all navigable waters" as defined in Section 502(7) of the FWPCA, 22 U.S.C. Section 1362(7), which are within the State of Alabama.

46. Week - means the period beginning at twelve midnight Saturday and ending at twelve midnight the following Saturday.

47. Weekly (7-day and calendar week) Average – is the arithmetic mean of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. The calendar week is defined as beginning on Sunday and ending on Saturday. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for the calendar week shall be included in the data for the month that contains the Saturday.18. EPA - means the United States Environmental Protection Agency.

I. SEVERABILITY

The provisions of this permit are severable, and if any provision of this permit or the application of any provision of this permit to any circumstance is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

PART IV: ADDITIONAL REQUIREMENTS, CONDITIONS, AND LIMITATIONS

A. BEST MANAGEMENT PRACTICES (BMP) PLAN REQUIREMENTS

1. BMP Plan

The permittee shall develop and implement a Best Management Practices (BMP) Plan which prevents, or minimizes the potential for, the release of pollutants from ancillary activities, including material storage areas; plant site runoff; in-plant transfer, process and material handling areas; loading and unloading operations, and sludge and waste disposal areas, to the waters of the State through plant site runoff; spillage or leaks; sludge or waste disposal; or drainage from raw material storage.

2. Plan Content

The permittee shall prepare and implement a best management practices (BMP) plan, which shall:

a. Establish specific objectives for the control of pollutants:

(1) Each facility component or system shall be examined for its potential for causing a release of significant amounts of pollutants to waters of the State due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(2) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g. precipitation), or circumstances to result in significant amounts of pollutants reaching surface waters, the plan should include a prediction of the direction, rate of flow, and total quantity of pollutants which could be discharged from the facility as a result of each condition or circumstance.

b. Establish specific best management practices to meet the objectives identified under paragraph a. of this section, addressing each component or system capable of causing a release of significant amounts of pollutants to the waters of the State, and identifying specific preventative or remedial measures to be implemented;

c. Establish a program to identify and repair leaking equipment items and damaged containment structures, which may contribute to contaminated stormwater runoff. This program must include regular visual inspections of equipment, containment structures and of the facility in general to ensure that the BMP is continually implemented and effective;

d. Prevent the spillage or loss of fluids, oil, grease, gasoline, etc. from vehicle and equipment maintenance activities and thereby prevent the contamination of stormwater from these substances;

e. Prevent or minimize stormwater contact with material stored on site;

f. Designate by position or name the person or persons responsible for the day to day implementation of the BMP;

g. Provide for routine inspections, on days during which the facility is manned, of any structures that function to prevent stormwater pollution or to remove pollutants from stormwater and of the facility in general to ensure that the BMP is continually implemented and effective;

h. Provide for the use and disposal of any material used to absorb spilled fluids that could contaminate stormwater;

i. Develop a solvent management plan, if solvents are used on site. The solvent management plan shall include as a minimum lists of the solvents on site; the disposal method of solvents used instead of dumping, such as reclamation, contract hauling; and the procedures for assuring that solvents do not routinely spill or leak into the stormwater;

j. Provide for the disposal of all used oils, hydraulic fluids, firefighting foams, solvent degreasing material, etc. in accordance with good management practices and any applicable state or federal regulations;

k. Include a diagram of the facility showing the locations where stormwater exits the facility, the locations of any structure or other mechanisms intended to prevent pollution of stormwater or to remove pollutants from stormwater, the locations of any collection and handling systems;

l. Provide control sufficient to prevent or control pollution of stormwater by soil particles to the degree required to maintain compliance with the water quality standard for turbidity applicable to the waterbody(s) receiving discharge(s) under this permit;

m. Provide spill prevention, control, and/or management sufficient to prevent or minimize contaminated stormwater runoff. Any containment system used to implement this requirement shall be constructed of materials compatible with the

substance(s) contained and shall prevent the contamination of groundwater. The containment system shall also be capable of retaining a volume equal to 110 percent of the capacity of the largest tank for which containment is provided;

n. Provide and maintain curbing, diking or other means of isolating process areas to the extent necessary to allow segregation and collection for treatment of contaminated stormwater from process areas;

o. Be reviewed by plant engineering staff and the plant manager; and

p. Bear the signature of the plant manager.

3. Compliance Schedule

The permittee shall have reviewed (and revised if necessary) and fully implemented the BMP plan as soon as practicable but no later than six months after the effective date of this permit.

4. Department Review

a. When requested by the Director or his designee, the permittee shall make the BMP available for Department review.

b. The Director or his designee may notify the permittee at any time that the BMP is deficient and require correction of the deficiency.

c. The permittee shall correct any BMP deficiency identified by the Director or his designee within 30 days of receipt of notification and shall certify to the Department that the correction has been made and implemented.

5. Administrative Procedures

a. A copy of the BMP shall be maintained at the facility and shall be available for inspection by representatives of the Department.

b. A log of the routine inspection required above shall be maintained at the facility and shall be available for inspection by representatives of the Department. The log shall contain records of all inspections performed for the last three years and each entry shall be signed by the person performing the inspection.

c. The permittee shall provide training for any personnel required to implement the BMP and shall retain documentation of such training at the facility. This documentation shall be available for inspection by representatives of the Department. Training shall be performed prior to the date that implementation of the BMP is required.

d. BMP Plan Modification. The permittee shall amend the BMP plan whenever there is a change in the facility or change in operation of the facility which materially increases the potential for the ancillary activities to result in a discharge of significant amounts of pollutants.

e. BMP Plan Review. The permittee shall complete a review and evaluation of the BMP plan at least once every three years from the date of preparation of the BMP plan. Documentation of the BMP Plan review and evaluation shall be signed and dated by the Plant Manager.

B. STORMWATER FLOW MEASUREMENT AND SAMPLING REQUIREMENTS

1. Stormwater Flow Measurement

a. All stormwater samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches.

b. The total volume of stormwater discharged for the event must be monitored, including the date and duration (in hours) and rainfall (in inches) for storm event(s) sampled. The duration between the storm event sampled and the end of the previous measurable (greater than 0.1 inch rainfall) storm event must be a minimum of 72 hours. This information must be recorded as part of the sampling procedure and records retained according to Part I.B. of this permit.

c. The volume may be measured using flow measuring devices, or estimated based on a modification of the Rational Method using total depth of rainfall, the size of the drainage area serving a stormwater outfall, and an estimate of the runoff coefficient of the drainage area. This information must be recorded as part of the sampling procedure and records retained according to Part I.B. of this permit.

2. Stormwater Sampling

a. A grab sample, if required by this permit, shall be taken during the first thirty minutes of the discharge (or as soon thereafter as practicable); and a flow-weighted composite sample, if required by this permit, shall be taken for the entire event or for the first three hours of the event.

b. All test procedures will be in accordance with part I.B. of this permit.

ADEM PERMIT RATIONALE

PREPARED DATE: March 15, 2023
REVISED DATE: March 14, 2024
PREPARED BY: Theo Pinson

Permittee Name: 3M Company

Facility Name: 3M Guin Landfill

Permit Number: AL0084425

PERMIT IS AN INITIAL ISSUANCE

DISCHARGE SERIAL NUMBERS (DSN) & DESCRIPTIONS:

DSN 001: Stormwater runoff associated with an industrial landfill

DSN 002: Stormwater runoff associated with an industrial landfill

INDUSTRIAL CATEGORY: NON-CATEGORICAL

MAJOR: **No**

STREAM INFORMATION:

Receiving Stream:	Unnamed Tributary to Luxapallila Creek
Classification:	Fish and Wildlife
River Basin:	Tombigbee
7Q10:	0 cfs
303(d) List:	No
Impairment:	No
TMDL:	No

DISCUSSION:
The 3M Guin Landfill is a private industrial landfill which receives materials from the 3M Company Guin manufacturing plant. Significant materials received include reflective sheeting, rubber, paper, glass, polyethylene sheets, polyester sheets, pallets, office trash, etc. 3M uses a private contractor to operate the landfill who provides all the required equipment and vehicles. All fueling, washing, and maintenance of equipment is performed at the contractor's offsite facility. Landfill leachate is captured and transported to the 3M Guin plant for treatment prior to discharge through SID Permit IU384700050 to the Guin Lagoon. This permit only authorizes the discharge of stormwater to a Water of the State.

The proposed discharges have previously been authorized under General NPDES Permit ALG160037. ADEM Administrative Rule 335-6-10-.12 requires applicants to new or expanded discharges to Tier II waters demonstrate that the proposed discharge is necessary for important economic or social development in the area in which the waters are located. The application submitted by the facility is not for a new or expanded discharge; therefore, the applicant is not required to demonstrate that the discharge is necessary for economic and social development.

EPA has not promulgated specific guidelines for the discharges covered under the proposed permit. The proposed permit limits are based on Best Professional Judgment. The proposed frequencies are based on a review of site specific conditions and an evaluation of similar facilities..

DSN 001S: Stormwater runoff associated with an industrial landfill

DSN 002S: Stormwater runoff associated with an industrial landfill

Parameter	Quantity or Loading		Units	Quality or Concentration			Units	Sample Freq	Sample Type	Seasonal	Basis
BOD, 5-Day (20 Deg. C) (00310) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months	BPJ
pH (00400) Effluent Gross Value	*****	*****	*****	(Report) Minimum Daily	*****	(Report) Maximum Daily	S.U.	Semi-Annually	Grab	All Months	BPJ
Solids, Total Suspended (00530) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months	BPJ
Oil & Grease (00556) Effluent Gross Value	*****	*****	*****	*****	*****	15.0 Maximum Daily	mg/l	Semi-Annually	Grab	All Months	BPJ
Zinc Total Recoverable (01094) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months	BPJ
Cadmium, Total Recoverable (01113) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months	BPJ
Lead, Total Recoverable (01114) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months	BPJ
Chromium Total Recoverable (01118) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months	BPJ
Flow, In Conduit or Thru Treatment Plant (50050) Effluent Gross Value	*****	(Report) Maximum Daily	MGD	*****	*****	*****	*****	Semi-Annually	Measured	All Months	BPJ
Chemical Oxygen Demand (COD) (2) (81017) Effluent Gross Value	*****	*****	*****	*****	*****	(Report) Maximum Daily	mg/l	Semi-Annually	Grab	All Months	BPJ

*Basis for Permit Limitation

- BPJ – Best Professional Judgment

Discussion

Best Management Practices (BMPs) are believed to be the most effective way to control the contamination of stormwater from areas of industrial activities. This facility is required to maintain a BMP plan. The requirements of the BMP plan call for minimization of stormwater contact with waste materials, products and by-products, and for prevention of spills or loss of fluids from equipment maintenance activities. The effectiveness of the BMPs will be measured through the monitoring of the pollutants of concern.

Best Professional Judgment (BPJ)

The parameters of concern for this facility are based on the parameters of concern listed in EPA Form 2F and from the current general permit. These parameters are consistent with similar facilities in the state and have been proven to be reflective of the operations at this facility.

Oil & Grease

The daily maximum limit for Oil and Grease should prevent the occurrence of a visible sheen in the stream and has been shown to be achievable through the use of proper BMPs.

BOD, pH, TSS, Zinc, Cadmium, Lead, Chromium, COD

Monitoring is proposed based on a review of site-specific conditions and an evaluation of similar facilities to measure BMP effectiveness.

REVISION March 14, 2024

3M submitted the following updated permit application information as requested by the Department:

- Revision of the latitude and longitude coordinates for the landfill front gate on ADEM Form 187,
- Revision of the latitude and longitude coordinates for Outfall 001 on EPA Form 2F,
- To provide a narrative description of the landfill location in Section 2.5 of EPA Form 1 based on the nearest intersection,
- To provide an overview map of the landfill identifying the general property boundary, Outfall 001, and Outfall 002,
- To provide a signature for the non-stormwater discharges certification on EPA Form 2F, and
- To update Table 3-2 of EPA Form 2F to reflect operations at the site with regards to managing stormwater runoff.

The Department has updated the Permittee Name to be listed as 3M Company and the Facility Name to be listed as the 3M Guin Landfill. The Department has not proposed any permit changes at this time based on the updated information.

Pinson, Theo

From: Pinson, Theo
Sent: Thursday, February 29, 2024 5:53 PM
To: Blaine Pyron
Cc: Reni Keane-Dengel CW
Subject: 3M Guin Landfill Proposed Permit

Blaine,

I am writing to request updated information be provided regarding proposed NPDES Permit AL0084425 for the 3M Guin Landfill. The latitude and longitude coordinates listed on Form 187 appear to correspond to the location of the 3M Guin Manufacturing plant. This should be updated to provide the coordinates to the front gate of the landfill. On EPA Form 1, it would be helpful if you could provide a mile marker on Highway 83 that is nearest to the landfill entrance or some way to provide an address other than just Highway 83. Possibly the nearest crossroads or mile marker. The outfall coordinates provided on EPA Form 2F do not appear to be correct for Outfall 001. Please also confirm that the coordinates are correct for Outfall 002. On EPA Form 2F, section 5, there is a missing signature certifying non-stormwater discharges. The forms should be updated and resigned by the responsible official.

I think it would also be helpful to provide a satellite imagery map of the landfill outlining the property boundary and marking the 2 outfalls so that it is very clear to the public what is being proposed to be permitted.

A question arose about the Table 3-2 provided with Form 2F from the wording "Rainfall may come into contact with solid waste and drain into the stormwater system." Stormwater that comes into contact with solid waste is considered leachate and not stormwater. The proposed permit only authorizes the discharge of stormwater to a Water of the State. Please provide some clarification regarding the management of stormwater that contacts waste materials.

Table 3-2

Potential Sources of Stormwater Contamination
3M Guin Landfill Facility

Potential Area of Concern	Potential Problem	Potential Pollutant
Uncovered Solid Waste Area	Rainfall may come into contact with solid waste and drain into the stormwater system.	Particulates, Leachate
Grassy Areas	Chemicals that have been applied to the grass cover could come into direct contact with rainfall and enter the stormwater drainage system.	Fertilizers
Bare Areas	Rainfall and runoff may cause erosion to occur.	Sediment

You may email the application updates and requested information to me. Please let me know if there are any questions.

Thank you,

Theo

Theo Pinson
Industrial Section
Water Division
Alabama Department of Environmental Management
(334) 274 – 4202

NEW ADEM ELECTRONIC SYSTEM: Alabama Environmental Permitting and Compliance System (AEPACS)

AEPACS is an electronic system that allows facilities to apply for and maintain permits as well as submit other required applications, registrations, and certifications. In addition, the system allows facilities to submit required compliance reports or other information to the Department. For general information about AEPACS, visit http://adem.alabama.gov/egov/AEPACS.cnt. For NPDES and SID program specific information about AEPACS, visit http://adem.alabama.gov/egov/AEPACSwater.cnt.

If you have questions or need assistance with AEPACS, please contact the ADEM Web Portal/AEPACS Help Desk at ademwebportal@adem.alabama.gov. The email box is monitored Monday through Friday, 7:00 am –5:00 pm.

3M Guin

6675 US Highway 43
Guin, AL 35563

3M

March 8, 2024

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IND/MUN BRANCH

Sent via email: tpinson@adem.alabama.gov

Theo Pinson
Alabama Department of Environmental Management
Industrial/Municipal Branch
PO Box 301463
Montgomery, AL 36130-1463

Subject: 3M Guin Landfill Draft NPDES Permit (Permit No. AL0084425) Response to Comments

Mr. Pinson:

3M Company (3M) is submitting the following enclosures in response to comments received regarding the Draft National Pollutant Discharge Elimination System (NPDES) Permit (Draft Permit), Permit Number AL8004425, issued on March 27, 2023, for the 3M Guin Landfill located on County Road 83, Guin, AL 35563.

Below, is a summary of the comments and the response actions from 3M. Please note, 3M is providing revised copies of the applicable application pages and not complete revised applications.

Comment 1

The latitude and longitude coordinates listed on Form 187 appear to correspond to the location of the 3M Guin Manufacturing plant. This should be updated to provide the coordinates to the front gate of the landfill.

- 3M Revised the latitude and longitude coordinates on Form 187.

Comment 2

On EPA Form 1, it would be helpful if you could provide a mile marker on Highway 83 that is nearest to the landfill entrance or some way to provide an address other than just Highway 83. Possibly the nearest crossroads or mile marker.

- 3M provided a narrative description of the location of landfill based on the nearest intersection as there are no mile markers on Alabama Highway 83.

Comment 3

The outfall coordinates provided on EPA Form 2F do not appear to be correct for Outfall 001. Please also confirm that the coordinates are correct for Outfall 002. On EPA Form 2F, section 5, there is a missing signature certifying non-stormwater discharges.

- 3M updated the Outfall 001 coordinates and confirmed the coordinates for Outfall 002.
- The Plant Director signed the non-stormwater discharges certification field on EPA Form 2F.

Comment 4

I think it would also be helpful to provide a satellite imagery map of the landfill outlining the property boundary and marking the 2 outfalls so that it is very clear to the public what is being proposed to be permitted.

- 3M created a simple, overview map showing the locations of the two outfalls and a general outline of the property boundary.

Comment 5

A question arose about the Table 3-2 provided with Form 2F from the wording "Rainfall may come into contact with solid waste and drain into the stormwater system." Stormwater that comes into contact with solid waste is considered leachate and not stormwater. The proposed permit only authorizes the discharge of stormwater to a Water of the State. Please provide some clarification regarding the management of stormwater that contacts waste materials.

- 3M updated Table 3-2 to accurately reflect operations at the site with regards to managing stormwater runoff.

3M appreciates the opportunity to work with ADEM during the permitting process. If you have any additional questions or comments, please contact Blaine Pyron at (659) 333-7047 or by email at bpyron@mmm.com or me at (256) 2808-6478 or by email at tpbragwell@mmm.com.

Sincerely,

Trevor Bragwell
3M Guin Plant Director

Cc: Jonathan Frederick, 3M Guin EHS Supervisor
Blaine Pyron, 3M Guin EHS Engineer

Enclosures

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM)
NPDES INDIVIDUAL PERMIT APPLICATION
SUPPLEMENTARY INFORMATION FOR INDUSTRIAL FACILITIES

Instructions: This form should be used to submit the required supplementary information for an application for an NPDES individual permit for industrial facilities. The completed application should be submitted to ADEM in duplicate. If insufficient space is available to address any item, please continue on an attached sheet of paper. Please mark "N/A" in the appropriate box when an item is not applicable to the applicant. Please type or print legibly in blue or black ink. Mail the completed application to:

ADEM-Water Division
Industrial Section
P O Box 301463
Montgomery, AL 36130-1463

PURPOSE OF THIS APPLICATION

- ☐ Initial Permit Application for New Facility*
- ☐ Modification of Existing Permit
- ☐ Revocation & Reissuance of Existing Permit
- ■ Initial Permit Application for Existing Facility*
- ☐ Reissuance of Existing Permit

* *An application for participation in the ADEM's Electronic Environmental (E2) Reporting must be submitted to allow permittee to electronically submit reports as required.*

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SECTION A – GENERAL INFORMATION

1. Facility Name: 3M Guin - Landfill
2. NPDES Permit Number: AL_____ (not applicable if initial permit application)
3. SID Permit Number (if applicable): IU_____
4. NPDES General Permit Number (if applicable): ALG160037
5. Facility Location (Front Gate): Latitude: 33.998889 Longitude: -87.847778
7. Responsible Official (as described on the last page of this application):

   Name: Tevor Bragwell Title: Plant Director

   Address: 6675 US Highway 43

   City: Guin State: AL Zip: 35563

   Phone Number: (256) 280-6478 Email Address: tpbragwell@mmm.com

8. Designated Discharge Monitoring Report (DMR) Contact:

   Name: Blaine Pyron Title: EHS Engineer

   Phone Number: (205) 468-8442 Email Address: brpyron@mmm.com

9. Type of Business Entity:

   ☒ Corporation ☐ General Partnership ☐ Limited Partnership ☐ Limited Liability Company ☐ Sole Proprietorship
   ☐ Other (Please Specify)_____

10. Complete this section if the Applicant's business entity is a Corporation

    a) Location of Incorporation:

    Address: 3M Center

    City: St. Paul County: Ramsey State: MN Zip: 55144

    b) Parent Corporation of Applicant:

    Name: N/A

    Address:_____

    City:_____ State:_____ Zip:_____

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
ALG160037		3M Guin - Landfill	

Name, Mailing Address, and Location Continued

2.5 Facility Location

Street, route number, or other specific identifier
County Road 83 - approximately 0.65 miles southeast of the intersection of Alabama 253 and County Road 83

County name	County code (if known)	
Marion		

City or town	State	ZIP code
Guin	AL	35563

SECTION 3. SIC AND NAICS CODES (40 CFR 122.21(f)(3))

SIC and NAICS Codes

3.1 SIC Code(s)	Description (optional)
4953	Industrial Landfill

3.2 NAICS Code(s)	Description (optional)
562212	Landfill

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SECTION 4. OPERATOR INFORMATION (40 CFR 122.21(f)(4))

Operator Information

4.1 Name of Operator
3M Company

4.2 Is the name you listed in Item 4.1 also the owner?
☑ Yes ☐ No

4.3 Operator Status
☐ Public—federal ☐ Public—state ☐ Other public (specify)_____
☑ Private ☐ Other (specify) _____

4.4 Phone Number of Operator
(800) 553-9215

Operator Information Continued

4.5 Operator Address
Street or P.O. Box
3M Company

City or town	State	ZIP code
St. Paul	MN	55144

Email address of operator

SECTION 5. INDIAN LAND (40 CFR 122.21(f)(5))

Indian Land

5.1 Is the facility located on Indian Land?
☐ Yes ☑ No

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19
ALG160037		3M Guin - Landfill	OMB No. 2040-0004

Form 2F NPDES | EPA

U.S Environmental Protection Agency
Application for NPDES Permit to Discharge Wastewater

STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

SECTION 1. OUTFALL LOCATION (40 CFR 122.21(g)(1))

Outfall Location

1.1 Provide information on each of the facility's outfalls in the table below

Outfall Number	Receiving Water Name	Latitude	Longitude
DSN001	Luxapallila Creek	33° 59' 47" N	87° 50' 55" W
DSN002	Luxapallila Creek	33° 59' 41" N	87° 50' 55" W
		° ' "	° ' "
		° ' "	° ' "
		° ' "	° ' "
		° ' "	° ' "

SECTION 2. IMPROVEMENTS (40 CFR 122.21(g)(6))

Improvements

2.1 Are you presently required by any federal, state, or local authority to meet an implementation schedule for constructing, upgrading, or operating wastewater treatment equipment or practices or any other environmental programs that could affect the discharges described in this application?

☐ Yes ☑ No ➔ SKIP to Section 3.

2.2 Briefly identify each applicable project in the table below.

Brief Identification and Description of Project	Affected Outfalls (list outfall numbers)	Source(s) of Discharge	Final Compliance Dates	
			Required	Projected

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2.3 Have you attached sheets describing any additional water pollution control programs (or other environmental projects that may affect your discharges) that you now have underway or planned? (Optional Item)

☐ Yes ☐ No

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
ALG160037		3M Guin - Landfill	

SECTION 5. NON STORMWATER DISCHARGES (40 CFR 122.26(c)(1)(i)(C))

Non-Stormwater Discharges

5.1 *I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of non-stormwater discharges. Moreover, I certify that the outfalls identified as having non-stormwater discharges are described in either an accompanying NPDES Form 2C, 2D, or 2E application.*

Name (print or type first and last name)	Official title
Tevor Bragwell	Plant Director
Signature	Date signed
	3-8-2024

5.2 Provide the testing information requested in the table below.

Outfall Number	Description of Testing Method Used	Date(s) of Testing	Onsite Drainage Points Directly Observed During Test
01	The facility conducts routine visual inspections.	03/08/2024	DSN001
02	The facility conducts routine visual inspections.	03/08/2024	DSN002

SECTION 6. SIGNIFICANT LEAKS OR SPILLS (40 CFR 122.26(c)(1)(i)(D))

Significant Leaks or Spills

6.1 Describe any significant leaks or spills of toxic or hazardous pollutants in the last three years.

None

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SECTION 7. DISCHARGE INFORMATION (40 CFR 122.26(c)(1)(i)(E))

Discharge Information

See the instructions to determine the pollutants and parameters you are required to monitor and, in turn, the tables you must complete. Not all applicants need to complete each table.

7.1 Is this a new source or new discharge?

☐ Yes ➔ See instructions regarding submission of *estimated* data. ☑ No ➔ See instructions regarding submission of *actual* data.

Tables A, B, C, and D

7.2 Have you completed Table A for each outfall?

☑ Yes ☐ No

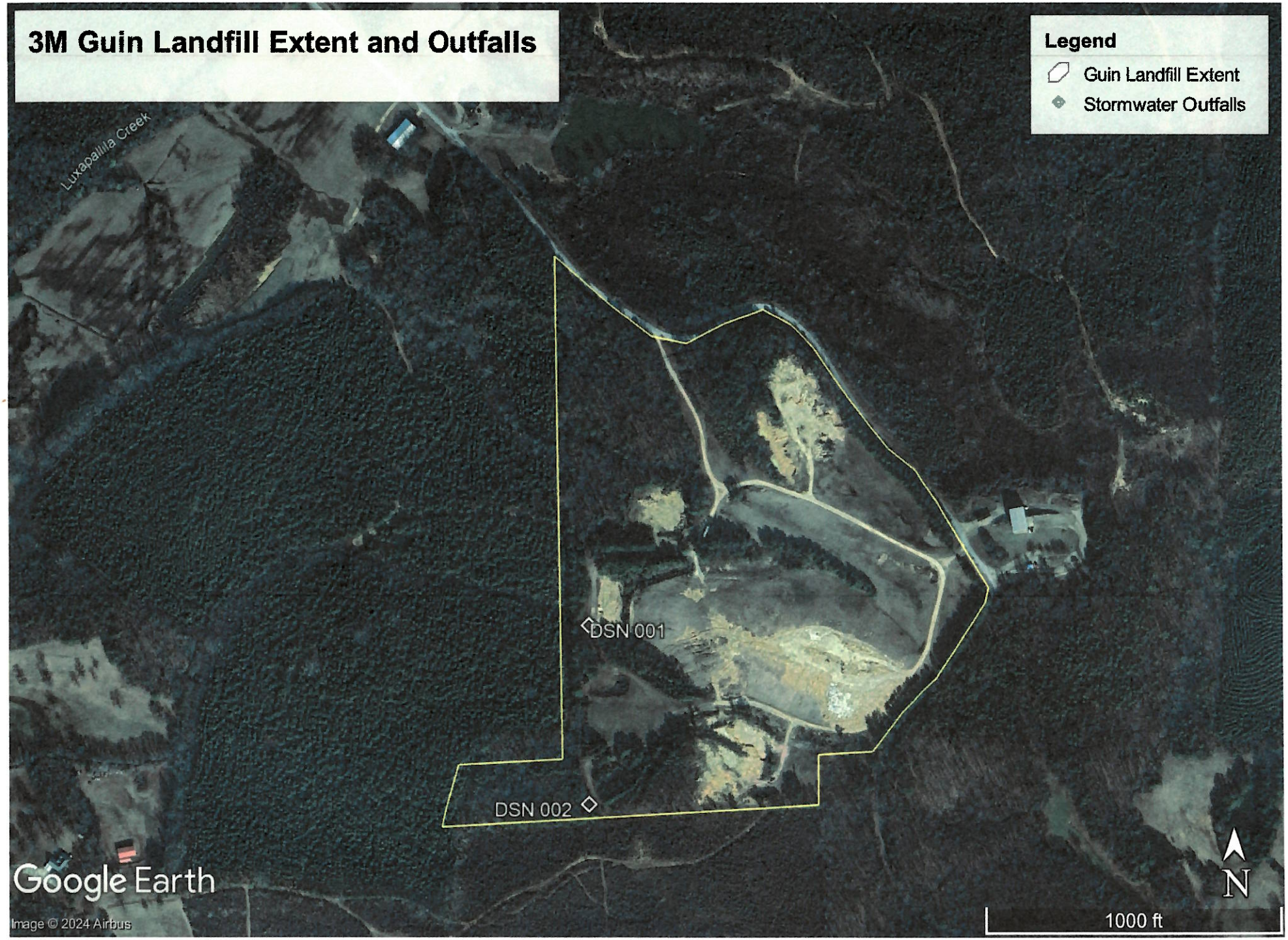
3M Guin Landfill Extent and Outfalls
Legend
Guin Landfill Extent
Stormwater Outfalls
Luxapallila Creek
DSN 001
DSN 002
Google Earth
Image © 2024 Airbus
N
1000 ft

Table 3-2

Potential Sources of Stormwater Contamination
3M Guin Landfill Facility

Potential Area of Concern	Potential Problem	Potential Pollutant	Method of Control
Uncovered Solid Waste Area (Working Face)	Rainfall could come into contact with solid waste and could drain into the stormwater system without proper control	Particulates	Landfill designed so that stormwater contacting waste goes to leachate collection; sufficient cover, berms, etc. to prevent runoff of stormwater that contacted waste
Grassy Area	Chemicals that have been applied to the grass cover could come into contact with rainfall and enter the stormwater drainage system	Fertilizers	Applications are planned around storm events so that runoff is not expected
Bare Area	Rainfall and runoff may cause erosion to occur	Sediment	Mat, seed, berms, silt fencing, and other erosion control methods

3M Guin Landfill

County Road 83
Guin, AL 35563

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SEP 30 2021

INDUSTRIAL SECTION

October 1, 2021

Sent via email: tpinson@adem.alabama.gov
Sent certified mail:

Alabama Department of Environmental Management
Industrial/Municipal Branch
PO Box 301463
Montgomery, AL 36130-1463

Subject: National Pollutant Discharge Elimination System Permit Application – 3M Guin Landfill

Mr. Pinson:

3M Company is submitting the enclosed National Pollutant Discharge Elimination System (NPDES) Permit application for the 3M Guin Landfill located on County Road 83, Guin, AL 35563. The application includes Alabama Department of Environmental Management (ADEM) Form 187 as well as United States Environmental Protection Agency (USEPA) Form 1 and Form 2F.

Stormwater was sampled for the constituents required to complete USEPA Form 2F as well as a large suite of additional constituents (PCBs, Metals, inorganics, nutrients, VOCs, SVOCs, PFAS, etc.) to characterize stormwater discharges from the site. The laboratory reports are attached to the end of the application package.

Also included with the application, is a letter from the 3M United States and Canada Plant Operations Vice President delegating the 3M Guin Plant Manager the authority to certify and sign permit applications.

If you have any questions or comments, please contact me at (651) 737-3604 or by email at cmathison@mmm.com.

Sincerely,

Carie Mathison

Carie Mathison
3M Corporate EHS

Cc: Todd Bullard, 3M Guin Plant Director
Jonathan Frederick, 3M Guin EHS Supervisor
Blaine Pyron, 3M Guin EHS Engineer

3M USAC Plant Operations

3M Center, Building 225-4S-25
St. Paul, MN 55144-1000
1-651-733-7481

From: Marilyn H Schullo, Vice President, US and Canada Plant Operations

To: Todd Bullard, Plant Manager, 3M Guin

Dan Carlson, Director, US and Canada Plant Operations TEBG

Re: 3M Company Delegations Under Applicable Programs

Pursuant to the federal and state regulations listed below, I hereby delegate or designate, as applicable, the following responsibilities to the Plant Manager of 3M's Guin, Alabama facility:

Program	Delegated or Designated Title	Authority to Delegate or Designate	Delegated or Designated Action
Clean Air Act, Title V and State Air Permits	Duly Authorized Representative	40 CFR §§ 70.2, 70.5; Ala. Admin. Code 335-3-16-0.1(y)(1), 16-.04(8)(i)(1), (9); 335-3-14-.04(23)(n)(1)(vii), (2)(iv), 14-.05(23)(n)(1)(vii), (2)(iv)	Certification of any permit application, report, form or compliance certification submitted pursuant to 40 CFR Part 70 or Alabama Administrative Code Chs. 335-3-14 and -16
Alabama General National Pollutant Discharge Elimination System (NPDES) Permit ALG200000	Responsible Corporate Officer (federal); Responsible Official (state)	40 CFR § 122.22 (a), (b), (d); Ala. Admin. Code 335-6-6-.09(1), (2)	Execution of NPDES general permit applications, all reports required by NPDES general permits, and other requested information
Emergency Planning and Community Right-to-Know Act (EPCRA), Tier 1 and 2 Reports	Officially Designated Representative	40 CFR §§ 370.41(a) & 370.42(a)	Certification of the Tier 1 or Tier 2 report
EPCRA, Toxic Release Inventory	Senior Management Official	40 CFR §§ 372.85(b)(2), 372.3	Execution and certification of TRI forms

(TRI) Form R, Form R Schedule 1			
Aboveground Storage Tanks	Authorized Representative	ADEM Notification for Aboveground Storage Tanks (AST Notification)	Certification of AST Notification
Resource Conservation and Recovery Act, Hazardous Waste Program	Authorized Representative	40 CFR § 262.18(b); Ala. Admin. Code 335-14-3-.01(8)	Execution and certification of EPA ID number applications and regulated waste activity reports, e.g., ADEM Form 8700-12

If the Guin Plant Manager is not available to undertake one of the above-listed actions, I hereby delegate or designate, as appropriate, authority to complete that action to the Plant Operations Leader overseeing the Guin facility.

Please notify me or Associate General Counsel Bill Hefner if you have any questions about the above delegated or designated actions or if you have questions about your authorization to take any other document execution or certification action not included in the above list.

CC Bill Hefner, Associate General Counsel, EHS and PS
Chris Nelson, Environmental Compliance Manager-US

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT (ADEM)
NPDES INDIVIDUAL PERMIT APPLICATION
SUPPLEMENTARY INFORMATION FOR INDUSTRIAL FACILITIES

Instructions: This form should be used to submit the required supplementary information for an application for an NPDES individual permit for industrial facilities. The completed application should be submitted to ADEM in duplicate. If insufficient space is available to address any item, please continue on an attached sheet of paper. Please mark "N/A" in the appropriate box when an item is not applicable to the applicant. Please type or print legibly in blue or black ink. Mail the completed application to:

ADEM-Water Division
Industrial Section
P O Box 301463
Montgomery, AL 36130-1463

PURPOSE OF THIS APPLICATION

- ☐ Initial Permit Application for New Facility*
- ☐ Modification of Existing Permit
- ☐ Revocation & Reissuance of Existing Permit
- ■ Initial Permit Application for Existing Facility*
- ☐ Reissuance of Existing Permit

* *An application for participation in the ADEM's Electronic Environmental (E2) Reporting must be submitted to allow permittee to electronically submit reports as required.*

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SECTION A – GENERAL INFORMATION

1. Facility Name: 3M Guin - Landfill
2. NPDES Permit Number: AL_____ (not applicable if initial permit application)
3. SID Permit Number (if applicable): IU_____
4. NPDES General Permit Number (if applicable): ALG160037
5. Facility Location (Front Gate): Latitude: 33.998889 Longitude: -87.847778
7. Responsible Official (as described on the last page of this application):

   Name: Tevor Bragwell Title: Plant Director

   Address: 6675 US Highway 43

   City: Guin State: AL Zip: 35563

   Phone Number: (256) 280-6478 Email Address: tpbragwell@mmm.com

8. Designated Discharge Monitoring Report (DMR) Contact:

   Name: Blaine Pyron Title: EHS Engineer

   Phone Number: (205) 468-8442 Email Address: brpyron@mmm.com

9. Type of Business Entity:

   ☒ Corporation ☐ General Partnership ☐ Limited Partnership ☐ Limited Liability Company ☐ Sole Proprietorship
   ☐ Other (Please Specify)_____

10. Complete this section if the Applicant's business entity is a Corporation

    a) Location of Incorporation:

    Address: 3M Center

    City: St. Paul County: Ramsey State: MN Zip: 55144

    b) Parent Corporation of Applicant:

    Name: N/A

    Address:_____

    City:_____ State:_____ Zip:_____

c) Subsidiary Corporation(s) of Applicant:

Name: N/A

Address: _____

City: _____ State: _____ Zip: _____

d) Corporate Officers:

Name: For a list of corporate officers, please see: https://investors.3m.com/governance/corporate-officers/default.aspx

Address: _____

City: _____ State: _____ Zip: _____

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

e) Agent designated by the corporation for purposes of service:

Name: N/A

Address: _____

City: _____ State: _____ Zip: _____

11. If the Applicant's business entity is a Partnership, please list the general partners.

Name: N/A _____ Name: _____

Address: _____ Address: _____

City: _____ State: _____ Zip: _____ City: _____ State: _____ Zip: _____

12. If the Applicant's business entity is a Proprietorship, please enter the proprietor's information.

Name: N/A

Address: _____

City: _____ State: _____ Zip: _____

15. Identify all Administrative Complaints, Notices of Violation, Directives, Administrative Orders, or Litigation concerning water pollution, if any, against the Applicant, its parent corporation or subsidiary corporations within the State of Alabama within the past five years (attach additional sheets if necessary):

Need information from WIMS - Carie to provide

Facility Name	Permit Number	Type of Action	Date of Action
3M Decatur	AL0000205	Consent Order	July 24, 2020

SECTION B – BUSINESS ACTIVITY

If your facility conducts or will be conducting any of the processes listed below (regardless of whether they generate wastewater, waste sludge, or hazardous waste), place a check beside the category of business activity (check all that apply):

Industrial Categories

- ☐ Aluminum Forming
- ☐ Asbestos Manufacturing
- ☐ Battery Manufacturing
- ☐ Can Making
- ☐ Canned and Preserved Fruit and Vegetables
- ☐ Canned and Preserved Seafood
- ☐ Cement Manufacturing
- ☐ Centralized Waste Treatment
- ☐ Carbon Black
- ☐ Coal Mining
- ☐ Coil Coating
- ☐ Copper Forming
- ☐ Electric and Electronic Components Manufacturing
- ☐ Electroplating
- ☐ Explosives Manufacturing
- ☐ Feedlots
- ☐ Ferroalloy Manufacturing
- ☐ Fertilizer Manufacturing
- ☐ Foundries (Metal Molding and Casting)
- ☐ Glass Manufacturing
- ☐ Grain Mills
- ☐ Gum and Wood Chemicals Manufacturing
- ☐ Inorganic Chemicals
- ☐ Iron and Steel
- ☐ Leather Tanning and Finishing
- ☐ Metal Finishing
- ☐ Meat Products
- ☐ Metal Molding and Casting
- ☐ Metal Products
- ☐ Nonferrous Metals Forming
- ☐ Nonferrous Metals Manufacturing
- ☐ Oil and Gas Extraction
- ☐ Organic Chemicals Manufacturing
- ☐ Paint and Ink Formulating
- ☐ Paving and Roofing Manufacturing
- ☐ Pesticides Manufacturing
- ☐ Petroleum Refining
- ☐ Phosphate Manufacturing
- ☐ Photographic
- ☐ Pharmaceutical
- ☐ Plastic & Synthetic Materials
- ☐ Plastics Processing Manufacturing
- ☐ Porcelain Enamel
- ☐ Pulp, Paper, and Fiberboard Manufacturing
- ☐ Rubber
- ☐ Soap and Detergent Manufacturing
- ☐ Steam and Electric
- ☐ Sugar Processing
- ☐ Textile Mills
- ☐ Timber Products
- ☐ Transportation Equipment Cleaning
- ☐ Waste Combustion
- ☐ Other (specify)_____

A facility with processes inclusive in these business areas may be covered by Environmental Protection (EPA) categorical standards. These facilities are termed "categorical users".

SECTION C – WASTEWATER DISCHARGE INFORMATION

1. Do you share an outfall with another facility? ☐ Yes ☒ No (If no, continue to C.2)

   For each shared outfall, provide the following:

Applicant's Outfall No.	Name of Other Permittee/Facility	NPDES Permit No.	Where is sample collected by Applicant?

2. Do you have, or plan to have, automatic sampling equipment or continuous wastewater flow metering equipment at this facility?

Current:	Flow Metering	☐ Yes	☐ No	☒ N/A
	Sampling Equipment	☐ Yes	☐ No	☒ N/A
Planned:	Flow Metering	☐ Yes	☐ No	☒ N/A
	Sampling Equipment	☐ Yes	☐ No	☒ N/A

If so, please attach a schematic diagram of the sewer system indicating the present or future location of this equipment and describe the equipment below:

3. Are any process changes or expansions planned during the next three years that could alter wastewater volumes or characteristics?

☐ Yes ☒ No (If no, continue to C.4)

Briefly describe these changes and their anticipated effects on the wastewater volume and characteristics:

4. List the trade name and chemical composition of all biocides and corrosion inhibitors used:

Trade Name	Chemical Composition
N/A	

For each biocide and/or corrosion inhibitor used, please include the following information:

(1) 96-hour median tolerance limit data for organisms representative of the biota of the waterway into which the discharge will ultimately reach,
(2) quantities to be used,
(3) frequencies of use,
(4) proposed discharge concentrations, and
(5) EPA registration number, if applicable

SECTION D – WATER SUPPLY N/A: The 3M Guin - Landfill does not use water

Water Sources (check as many as are applicable):

☐ Private Well ☐ Surface Water

☐ Municipal Water Utility (Specify City): ☐ Other (Specify): _____

IF MORE THAN ONE WELL OR SURFACE INTAKE, PROVIDE DATA FOR EACH ON AN ATTACHMENT

City:_____MGD* Well:_____MGD* Well Depth:_____Ft. Latitude:_____ Longitude:_____

Surface Intake Volume:_____MGD* Intake Elevation in Relation to Bottom:_____Ft.

Intake Elevation:_____Ft. Latitude:_____ Longitude:_____

Name of Surface Water Source:_____

*** MGD – Million Gallons per Day**

Cooling Water Intake Structure Information

Complete D.1 and D.2 if your water supply is provided by an outside source and not by an onsite water intake structure? (e.g., another industry, municipality, etc...)

N/A: The 3M Guin - Landfill does not use water

1. Does the provider of your source water operate a surface water intake? ☐ Yes ☐ No
   (If yes, continue, if no, go to Section E.)

   a) Name of Provider:_____ b) Location of Provider:_____

   c) Latitude:_____ Longitude:_____

2. Is the provider a public water system (defined as a system which provides water to the public for human consumption or which provides only treated water, not raw water)? ☐ Yes ☐ No (If yes, go to Section E, if no, continue.)

Only to be completed if you have a cooling water intake structure or the provider of your water supply uses an intake structure and does not treat the raw water.

3. Is any water withdrawn from the source water used for cooling? ☐ Yes ☐ No
4. Using the average monthly measurements over any 12-month period, approximately what percentage of water withdrawn is used exclusively for cooling purposes? _____%
5. Does the cooling water consist of treated effluent that would otherwise be discharged? ☐ Yes ☐ No
   (If yes, go to Section E, if no, complete D.6 – D.17)
6. a. Is the cooling water used in a once-through cooling system? ☐ Yes ☐ No

   b. Is the cooling water used in a closed cycle cooling system? ☐ Yes ☐ No
7. When was the intake installed? _____
   (Please provide dates for all major construction/installation of intake components including screens)
8. What is the maximum intake volume? _____
   (maximum pumping capacity in gallons per day)
9. What is the average intake volume? _____
   (average intake pump rate in gallons per day average in any 30-day period)
10. What is the actual intake flow (AIF) as defined in 40 CFR §125.92(a)? _____MGD
11. How is the intake operated? (e.g., continuously, intermittently, batch) _____
12. What is the mesh size of the screen on your intake?_____
13. What is the intake screen flow-through area?_____
14. What is the through-screen design intake flow velocity? _____ft/sec
15. What is the through-screen actual velocity (in ft/sec)? _____ft/sec
16. What is the mechanism for cleaning the screen? (e.g., does it rotate for cleaning) _____
17. Do you have any additional fish detraction technology on your intake? ☐ Yes ☐ No
18. Have there been any studies to determine the impact of the intake on aquatic organisms? ☐ Yes ☐ No (If yes, please provide.)
19. Attach a site map showing the location of the water intake in relation to the facility, shoreline, water depth, etc.

SECTION E – WASTE STORAGE AND DISPOSAL INFORMATION

Provide a description of the location of all sites involved in the storage of solids or liquids that could be accidentally discharged to a water of the state, either directly or indirectly via such avenues as storm water drainage, municipal wastewater systems, etc., which are located at the facility for which the NPDES application is being made. Where possible, the location should be noted on a map and included with this application:

Description of Waste	Description of Storage Location
Please see Attachment 2F-1	

SECTION F – COASTAL ZONE INFORMATION

Is the discharge(s) located within the 10-foot elevation contour and within the limits of Mobile or Baldwin County? ☐ Yes ☒ No

If yes, complete items F.1 – F.12:

		Yes	No
1.	Does the project require new construction?	☐	☐
2.	Will the project be a source of new air emissions?	☐	☐
3.	Does the project involve dredging and/or filling of a wetland area or water way?	☐	☐
	If Yes, has the Corps of Engineers (COE) permit been received?	☐	☐
	COE Project No. _____		
4.	Does the project involve wetlands and/or submersed grassbeds?	☐	☐
5.	Are oyster reefs located near the project site?	☐	☐
	If Yes, include a map showing project and discharge location with respect to oyster reefs		
6.	Does the project involve the site development, construction and operation of an energy facility as defined in ADEM Admin. Code r. 335-8-1-.02(bb)?	☐	☐
7.	Does the project involve mitigation of shoreline or coastal area erosion?	☐	☐
8.	Does the project involve construction on beaches or dune areas?	☐	☐
9.	Will the project interfere with public access to coastal waters?	☐	☐
10.	Does the project lie within the 100-year floodplain?	☐	☐
11.	Does the project involve the registration, sale, use, or application of pesticides?	☐	☐
12.	Does the project propose or require construction of a new well or to alter an existing groundwater well to pump more than 50 gallons per day (GPD)?	☐	☐
	If yes, has the applicable permit for groundwater recovery or for groundwater well installation been obtained?	☐	☐

SECTION G – ANTI-DEGRADATION EVALUATION

In accordance with 40 CFR §131.12 and the ADEM Admin. Code r. 335-6-10-.04 for anti-degradation, the following information must be provided, if applicable. It is the applicant's responsibility to demonstrate the social and economic importance of the proposed activity. If further information is required to make this demonstration, attach additional sheets to the application.

1. Is this a new or increased discharge that began after April 3, 1991? ☐ Yes ☒ No
   If yes, complete G.2 below. If no, go to Section H.

2. Has an Anti-Degradation Analysis been previously conducted and submitted to the Department for the new or increased discharge referenced in G.1? ☐ Yes ☐ No

   If yes, do not complete this section. If no, and the discharge is to a Tier II waterbody as defined in ADEM Admin. Code r. 335-6-10-.12(4), complete G.2.A – G.2.F below and ADEM Forms 311 and 313 (attached). ADEM Form 313 must be provided for each alternative considered technically viable.

Information required for new or increased discharges to high quality waters:

A. What environmental or public health problem will the discharger be correcting?

B. How much will the discharger be increasing employment (at its existing facility or as the result of locating a new facility)?

C. How much reduction in employment will the discharger be avoiding?

D. How much additional state or local taxes will the discharger be paying?

E. What public service to the community will the discharger be providing?

F. What economic or social benefit will the discharger be providing to the community?

SECTION H – EPA Application Forms

All Applicants must submit EPA permit application forms. More than one application form may be required from a facility depending on the number and types of discharges or outfalls found. The EPA application forms are found on the Department's website at http://www.adem.alabama.gov/programs/water/waterforms.cnt . The EPA application forms must be submitted in duplicate as follows:

1. All applicants must submit Form 1.
2. Applicants for existing industrial facilities (including manufacturing facilities, commercial facilities, mining activities, and silvicultural activities) which discharge process wastewater must submit Form 2C.
3. Applicants for new industrial facilities which propose to discharge process wastewater must submit Form 2D.
4. Applicants for new and existing industrial facilities which discharge only non-process wastewater (i.e., non-contact cooling water and/or sanitary wastewater) must submit Form 2E.
5. Applicants for new and existing facilities whose discharge is composed entirely of storm water associated with industrial activity must submit Form 2F, unless exempted by § 122.26(c)(1)(ii). If the discharge is composed of storm water and non-storm water, the applicant must also submit Forms 2C, 2D, and/or 2E, as appropriate (in addition to Form 2F).

SECTION I – ENGINEERING REPORT/BMP PLAN REQUIREMENTS

See ADEM 335-6-6-.08(i) & (j)

SECTION J– RECEIVING WATERS

Outfall No.	Receiving Water(s)	303(d) Segment?		Included in TMDL?*	
DSN001	Luxapallila Creek	☐ Yes	☒ No	☐ Yes	☒ No
DSN002	Luxapallila Creek	☐ Yes	☒ No	☐ Yes	☒ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No
		☐ Yes	☐ No	☐ Yes	☐ No

*If a TMDL Compliance Schedule is requested, the following should be attached as supporting documentation:

(1) Justification for the requested Compliance Schedule (e.g. time for design and installation of control equipment, etc.);

(2) Monitoring results for the pollutant(s) of concern which have not previously been submitted to the Department (sample collection dates, analytical results (mass and concentration), methods utilized, MDL/ML, etc. should be submitted as available);

(3) Requested interim limitations, if applicable;

(4) Date of final compliance with the TMDL limitations; and,

(5) Any other additional information available to support requested compliance schedule.

SECTION K – APPLICATION CERTIFICATION

The information contained in this form must be certified by a responsible official as defined in ADEM Administrative Code r. 335-6-6-.09 "signatories to permit applications and reports" (see below).

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Signature of Responsible Official: Todd Bullard Date Signed: 9/29/21

Name: Todd T. Bullard Title: Plant Manager

If the Responsible Official signing this application is not identified in Section A.7, provide the following information:

Mailing Address: _____

City: _____ State: _____ Zip: _____

Phone Number: _____ Email Address: _____

335-6-6-.09 SIGNATORIES TO PERMIT APPLICATIONS AND REPORTS.

(1) The application for an NPDES permit shall be signed by a responsible official, as indicated below:

(a) In the case of a corporation, by a principal executive officer of at least the level of vice president, or a manager assigned or delegated in accordance with corporate procedures, with such delegation submitted in writing if required by the Department, who is responsible for manufacturing, production, or operating facilities and is authorized to make management decisions which govern the operation of the regulated facility;

(b) In the case of a partnership, by a general partner;

(c) In the case of a sole proprietorship, by the proprietor; or

(d) In the case of a municipal, state, federal, or other public entity, by either a principal executive officer, or ranking elected official.

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
ALG160037		3M Guin - Landfill	

Form 1 NPDES

U.S. Environmental Protection Agency
Application for NPDES Permit to Discharge Wastewater

GENERAL INFORMATION

SECTION 1. ACTIVITIES REQUIRING AN NPDES PERMIT (40 CFR 122.21(f) and (f)(1))

Activities Requiring an NPDES Permit

1.1 Applicants *Not Required* to Submit Form 1

1.1.1	Is the facility a new or existing **publicly owned treatment works?** If yes, STOP. Do NOT complete Form 1. Complete Form 2A. ☑ No	1.1.2	Is the facility a new or existing **treatment works treating domestic sewage?** If yes, STOP. Do NOT complete Form 1. Complete Form 2S. ☑ No

1.2 Applicants *Required* to Submit Form 1

1.2.1	Is the facility a **concentrated animal feeding operation** or a **concentrated aquatic animal production facility?** ☐ Yes → Complete Form 1 ***and*** Form 2B. ☑ No	1.2.2	Is the facility an **existing** manufacturing, commercial, mining, or silvicultural **facility** that **is currently discharging process wastewater?** ☐ Yes → Complete Form 1 ***and*** Form 2C. ☑ No
1.2.3	Is the facility a **new** manufacturing, commercial, mining, or silvicultural **facility** that has **not yet commenced to discharge?** ☐ Yes → Complete Form 1 ***and*** Form 2D. ☑ No	1.2.4	Is the facility a **new or existing** manufacturing, commercial, mining, or silvicultural **facility** that **discharges only nonprocess wastewater?** ☐ Yes → Complete Form 1 ***and*** Form 2E. ☑ No
1.2.5	Is the facility a **new or existing facility** whose discharge is composed entirely of **stormwater associated with industrial activity** or whose discharge is composed of **both stormwater and non-stormwater?** ☑ Yes → Complete Form 1 ***and*** Form 2F unless exempted by 40 CFR 122.26(b)(14)(x) or (b)(15). ☐ No		

SECTION 2. NAME, MAILING ADDRESS, AND LOCATION (40 CFR 122.21(f)(2))

Name, Mailing Address, and Location

2.1 Facility Name

3M Guin - Landfill

2.2 EPA Identification Number

ALG160037

2.3 Facility Contact

Name (first and last)	Title	Phone number
Blaine Pyron	EHS Engineer	(205) 468-8442

Email address
brpyron@mmm.com

2.4 Facility Mailing Address

Street or P.O. box
6675 US Highway 43

City or town	State	ZIP code
Guin	AL	35563

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INDUSTRIAL SECTION

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
ALG160037		3M Guin - Landfill	

Name, Mailing Address, and Location Continued

2.5 Facility Location

Street, route number, or other specific identifier
County Road 83 - approximately 0.65 miles southeast of the intersection of Alabama 253 and County Road 83

County name	County code (if known)	
Marion		

City or town	State	ZIP code
Guin	AL	35563

SECTION 3. SIC AND NAICS CODES (40 CFR 122.21(f)(3))

SIC and NAICS Codes

3.1 SIC Code(s)	Description (optional)
4953	Industrial Landfill

3.2 NAICS Code(s)	Description (optional)
562212	Landfill

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SECTION 4. OPERATOR INFORMATION (40 CFR 122.21(f)(4))

Operator Information

4.1 Name of Operator
3M Company

4.2 Is the name you listed in Item 4.1 also the owner?
☑ Yes ☐ No

4.3 Operator Status
☐ Public—federal ☐ Public—state ☐ Other public (specify)_____
☑ Private ☐ Other (specify) _____

4.4 Phone Number of Operator
(800) 553-9215

Operator Information Continued

4.5 Operator Address
Street or P.O. Box
3M Company

City or town	State	ZIP code
St. Paul	MN	55144

Email address of operator

SECTION 5. INDIAN LAND (40 CFR 122.21(f)(5))

Indian Land

5.1 Is the facility located on Indian Land?
☐ Yes ☑ No

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
ALG160037		3M Guin - Landfill	

SECTION 6. EXISTING ENVIRONMENTAL PERMITS (40 CFR 122.21(f)(6))

Existing Environmental Permits

6.1 **Existing Environmental Permits** (check all that apply and print or type the corresponding permit number for each)

☐ NPDES (discharges to surface water)	☐ RCRA (hazardous wastes)	☐ UIC (underground injection of fluids)
☐ PSD (air emissions)	☐ Nonattainment program (CAA)	☐ NESHAPs (CAA)
☐ Ocean dumping (MPRSA)	☐ Dredge or fill (CWA Section 404)	☑ Other (specify) Solid Waste Disposal (47-06)

SECTION 7. MAP (40 CFR 122.21(f)(7))

Map

7.1 Have you attached a topographic map containing all required information to this application? (See instructions for specific requirements.)

☑ Yes ☐ No ☐ CAFO—Not Applicable (See requirements in Form 2B.)

SECTION 8. NATURE OF BUSINESS (40 CFR 122.21(f)(8))

Nature of Business

8.1 Describe the nature of your business.

Private, industrial landfill.

SECTION 9. COOLING WATER INTAKE STRUCTURES (40 CFR 122.21(f)(9))

Cooling Water Intake Structures

9.1 Does your facility use cooling water?

☐ Yes ☑ No ➔ SKIP to Item 10.1.

9.2 Identify the source of cooling water. (Note that facilities that use a cooling water intake structure as described at 40 CFR 125, Subparts I and J may have additional application requirements at 40 CFR 122.21(r). Consult with your NPDES permitting authority to determine what specific information needs to be submitted and when.)

SECTION 10. VARIANCE REQUESTS (40 CFR 122.21(f)(10))

Variance Requests

10.1 Do you intend to request or renew one or more of the variances authorized at 40 CFR 122.21(m)? (Check all that apply. Consult with your NPDES permitting authority to determine what information needs to be submitted and when.)

☐ Fundamentally different factors (CWA Section 301(n))	☐ Water quality related effluent limitations (CWA Section 302(b)(2))
☐ Non-conventional pollutants (CWA Section 301(c) and (g))	☐ Thermal discharges (CWA Section 316(a))
☑ Not applicable	

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
ALG160037		3M Guin - Landfill	

SECTION 11. CHECKLIST AND CERTIFICATION STATEMENT (40 CFR 122.22(a) and (d))

Checklist and Certification Statement

11.1 In Column 1 below, mark the sections of Form 1 that you have completed and are submitting with your application. For each section, specify in Column 2 any attachments that you are enclosing to alert the permitting authority. Note that not all applicants are required to provide attachments.

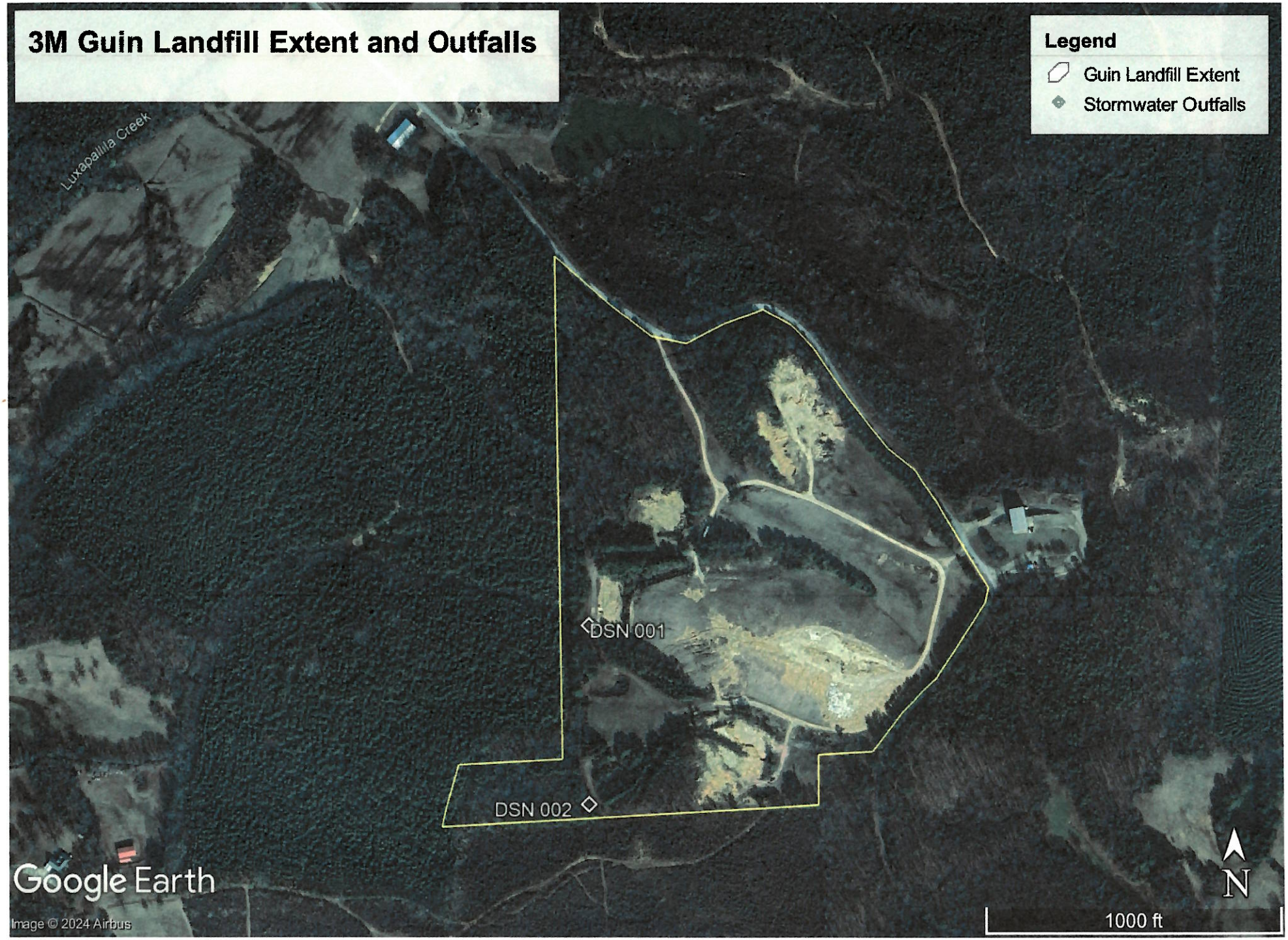
Column 1	Column 2
☑ Section 1: Activities Requiring an NPDES Permit	☐ w/ attachments
☑ Section 2: Name, Mailing Address, and Location	☐ w/ attachments
☑ Section 3: SIC Codes	☐ w/ attachments
☑ Section 4: Operator Information	☐ w/ attachments
☑ Section 5: Indian Land	☐ w/ attachments
☑ Section 6: Existing Environmental Permits	☐ w/ attachments
☑ Section 7: Map	☑ w/ topographic map ☐ w/ additional attachments
☑ Section 8: Nature of Business	☐ w/ attachments
☑ Section 9: Cooling Water Intake Structures	☐ w/ attachments
☑ Section 10: Variance Requests	☐ w/ attachments
☑ Section 11: Checklist and Certification Statement	☐ w/ attachments

11.2 **Certification Statement**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name (print or type first and last name)	Official title
Todd T. Bullard	Plant Manager
Signature	**Date signed**
Todd Bullard	9/29/21

Click to go back to the beginning of Form


3M Guin Landfill Extent and Outfalls
Legend
Guin Landfill Extent
Stormwater Outfalls
Luxapallila Creek
DSN 001
DSN 002
Google Earth
Image © 2024 Airbus
N
1000 ft

USGS
science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

WINFIELD QUADRANGLE
ALABAMA
7.5-MINUTE SERIES

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and 1 000-meter grid: Universal Transverse Mercator, Zone 16S
This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

UTM GRID AND 2017 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24 000

CONTOUR INTERVAL 20 FEET
NORTH AMERICAN VERTICAL DATUM OF 1988

ROAD CLASSIFICATION

WINFIELD, AL
2018

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19
ALG160037		3M Guin - Landfill	OMB No. 2040-0004

Form 2F NPDES | EPA

U.S Environmental Protection Agency
Application for NPDES Permit to Discharge Wastewater

STORMWATER DISCHARGES ASSOCIATED WITH INDUSTRIAL ACTIVITY

SECTION 1. OUTFALL LOCATION (40 CFR 122.21(g)(1))

Outfall Location

1.1 Provide information on each of the facility's outfalls in the table below

Outfall Number	Receiving Water Name	Latitude	Longitude
DSN001	Luxapallila Creek	33° 59' 47" N	87° 50' 55" W
DSN002	Luxapallila Creek	33° 59' 41" N	87° 50' 55" W
		° ' "	° ' "
		° ' "	° ' "
		° ' "	° ' "
		° ' "	° ' "

SECTION 2. IMPROVEMENTS (40 CFR 122.21(g)(6))

Improvements

2.1 Are you presently required by any federal, state, or local authority to meet an implementation schedule for constructing, upgrading, or operating wastewater treatment equipment or practices or any other environmental programs that could affect the discharges described in this application?

☐ Yes ☑ No ➔ SKIP to Section 3.

2.2 Briefly identify each applicable project in the table below.

Brief Identification and Description of Project	Affected Outfalls (list outfall numbers)	Source(s) of Discharge	Final Compliance Dates	
			Required	Projected

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2.3 Have you attached sheets describing any additional water pollution control programs (or other environmental projects that may affect your discharges) that you now have underway or planned? (Optional Item)

☐ Yes ☐ No

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
ALG160037		3M Guin - Landfill	

SECTION 3. SITE DRAINAGE MAP (40 CFR 122.26(c)(1)(i)(A))

Site Drainage Map

3.1 Have you attached a site drainage map containing all required information to this application? (See instructions for specific guidance.)

☑ Yes ☐ No

Please see Attachment to Form 1

SECTION 4. POLLUTANT SOURCES (40 CFR 122.26(c)(1)(i)(B))

Pollutant Sources

4.1 Provide information on the facility's pollutant sources in the table below.

Outfall Number	Impervious Surface Area (within a mile radius of the facility)		Total Surface Area Drained (within a mile radius of the facility)	
DSN001	0	*specify units* acres	14.2	*specify units* acres
DSN002	0	*specify units* acres	6.52	*specify units* acres
		specify units		*specify units*
		specify units		*specify units*
		specify units		*specify units*
		specify units		*specify units*

4.2 Provide a narrative description of the facility's significant material in the space below. (See instructions for content requirements.)

Please see Attachment 2F-1

4.3 Provide the location and a description of existing structural and non-structural control measures to reduce pollutants in stormwater runoff. (See instructions for specific guidance.)

Stormwater Treatment		
Outfall Number	Control Measures and Treatment	Codes from Exhibit 2F–1 (list)
01	Sedimentation pond	1-U
02	Rip rap-stabilized swale	NA

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
ALG160037		3M Guin - Landfill	

SECTION 5. NON STORMWATER DISCHARGES (40 CFR 122.26(c)(1)(i)(C))

Non-Stormwater Discharges

5.1 *I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of non-stormwater discharges. Moreover, I certify that the outfalls identified as having non-stormwater discharges are described in either an accompanying NPDES Form 2C, 2D, or 2E application.*

Name (print or type first and last name)	Official title
Tevor Bragwell	Plant Director
Signature	Date signed
	3-8-2024

5.2 Provide the testing information requested in the table below.

Outfall Number	Description of Testing Method Used	Date(s) of Testing	Onsite Drainage Points Directly Observed During Test
01	The facility conducts routine visual inspections.	03/08/2024	DSN001
02	The facility conducts routine visual inspections.	03/08/2024	DSN002

SECTION 6. SIGNIFICANT LEAKS OR SPILLS (40 CFR 122.26(c)(1)(i)(D))

Significant Leaks or Spills

6.1 Describe any significant leaks or spills of toxic or hazardous pollutants in the last three years.

None

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SECTION 7. DISCHARGE INFORMATION (40 CFR 122.26(c)(1)(i)(E))

Discharge Information

See the instructions to determine the pollutants and parameters you are required to monitor and, in turn, the tables you must complete. Not all applicants need to complete each table.

7.1 Is this a new source or new discharge?

☐ Yes ➔ See instructions regarding submission of *estimated* data. ☑ No ➔ See instructions regarding submission of *actual* data.

Tables A, B, C, and D

7.2 Have you completed Table A for each outfall?

☑ Yes ☐ No

Discharge Information Continued

7.3	Is the facility subject to an effluent limitation guideline (ELG) or effluent limitations in an NPDES permit for its process wastewater? ☐ Yes ☑ No ➔ SKIP to Item 7.5.
7.4	Have you completed Table B by providing quantitative data for those pollutants that are (1) limited either directly or indirectly in an ELG and/or (2) subject to effluent limitations in an NPDES permit for the facility's process wastewater? ☐ Yes ☐ No
7.5	Do you know or have reason to believe any pollutants in Exhibit 2F–2 are present in the discharge? ☐ Yes ☑ No ➔ SKIP to Item 7.7.
7.6	Have you listed all pollutants in Exhibit 2F–2 that you know or have reason to believe are present in the discharge and provided quantitative data or an explanation for those pollutants in Table C? ☐ Yes ☐ No
7.7	Do you qualify for a small business exemption under the criteria specified in the Instructions? ☐ Yes ➔ SKIP to Item 7.18. ☑ No
7.8	Do you know or have reason to believe any pollutants in Exhibit 2F–3 are present in the discharge? ☑ Yes ☐ No ➔ SKIP to Item 7.10.
7.9	Have you listed all pollutants in Exhibit 2F–3 that you know or have reason to believe are present in the discharge in Table C? ☑ Yes ☐ No
7.10	Do you expect any of the pollutants in Exhibit 2F–3 to be discharged in concentrations of 10 ppb or greater? ☑ Yes ☐ No ➔ SKIP to Item 7.12.
7.11	Have you provided quantitative data in Table C for those pollutants in Exhibit 2F–3 that you expect to be discharged in concentrations of 10 ppb or greater? ☑ Yes ☐ No
7.12	Do you expect acrolein, acrylonitrile, 2,4-dinitrophenol, or 2-methyl-4,6-dinitrophenol to be discharged in concentrations of 100 ppb or greater? ☐ Yes ☑ No ➔ SKIP to Item 7.14.
7.13	Have you provided quantitative data in Table C for the pollutants identified in Item 7.12 that you expect to be discharged in concentrations of 100 ppb or greater? ☐ Yes ☐ No
7.14	Have you provided quantitative data or an explanation in Table C for pollutants you expect to be present in the discharge at concentrations less than 10 ppb (or less than 100 ppb for the pollutants identified in Item 7.12)? ☐ Yes ☑ No
7.15	Do you know or have reason to believe any pollutants in Exhibit 2F–4 are present in the discharge? ☐ Yes ☑ No ➔ SKIP to Item 7.17.
7.16	Have you listed pollutants in Exhibit 2F–4 that you know or believe to be present in the discharge and provided an explanation in Table C? ☐ Yes ☐ No
7.17	Have you provided information for the storm event(s) sampled in Table D? ☑ Yes ☐ No

Discharge Information Continued

Used or Manufactured Toxics

7.18 Is any pollutant listed on Exhibits 2F–2 through 2F–4 a substance or a component of a substance used or manufactured as an intermediate or final product or byproduct?

☐ Yes ☑ No ➔ SKIP to Section 8.

7.19 List the pollutants below, including TCDD if applicable.

1.	4.	7.
2.	5.	8.
3.	6.	9.

SECTION 8. BIOLOGICAL TOXICITY TESTING DATA (40 CFR 122.21(g)(11))

Biological Toxicity Testing Data

8.1 Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last three years?

☐ Yes ☑ No ➔ SKIP to Section 9.

8.2 Identify the tests and their purposes below.

Test(s)	Purpose of Test(s)	Submitted to NPDES Permitting Authority?	Date Submitted
		☐ Yes ☐ No	
		☐ Yes ☐ No	
		☐ Yes ☐ No	

SECTION 9. CONTRACT ANALYSIS INFORMATION (40 CFR 122.21(g)(12))

Contract Analysis Information

9.1 Were any of the analyses reported in Section 7 (on Tables A through C) performed by a contract laboratory or consulting firm?

☑ Yes ☐ No ➔ SKIP to Section 10.

9.2 Provide information for each contract laboratory or consulting firm below.

	Laboratory Number 1	Laboratory Number 2	Laboratory Number 3
Name of laboratory/firm	Pace Analytical Services - (1) Minneapolis (2) Mt. Juliet (3) Duluth	Southern Environmental Testing (Enersolv)	
Laboratory address	Minneapolis: 1700 Elm Street SE, Minneapolis, MN 55414 Mt. Juliet: 12065 Lebanon Rd., Mt. Juliet, TN 37122 Duluth: 4730 Oneota St., Duluth, MN 55807	2919 Fairgrounds Road SW Decatur, AL 35603	
Phone number	(612) 607-1700	(256) 280-2567	
Pollutant(s) analyzed	See attached laboratory reports	See attached laboratory reports	

EPA Identification Number	NPDES Permit Number	Facility Name	Form Approved 03/05/19 OMB No. 2040-0004
ALG160037		3M Guin - Landfill	

SECTION 10. CHECKLIST AND CERTIFICATION STATEMENT (40 CFR 122.22(a) and (d))

Checklist and Certification Statement

10.1 In Column 1 below, mark the sections of Form 2F that you have completed and are submitting with your application. For each section, specify in Column 2 any attachments that you are enclosing to alert the permitting authority. Note that not all applicants are required to complete all sections or provide attachments.

Column 1	Column 2
☑ Section 1	☐ w/ attachments (e.g., responses for additional outfalls)
☑ Section 2	☐ w/ attachments
☑ Section 3	☑ w/ site drainage map
☑ Section 4	☑ w/ attachments
☑ Section 5	☐ w/ attachments
☑ Section 6	☐ w/ attachments
☑ Section 7	☑ Table A ☐ w/ small business exemption request ☐ Table B ☑ w/ analytical results as an attachment ☑ Table C ☑ Table D
☑ Section 8	☐ w/attachments
☑ Section 9	☐ w/attachments (e.g., responses for additional contact laboratories or firms)
☑ Section 10	☐

10.2 **Certification Statement**

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name (print or type first and last name)	Official title
Todd T. Bullard	Plant Manager
Signature: Todd Bullard	Date signed: 9/29/21

EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
ALG160037		3M Guin - Landfill	

Form Approved 03/05/19
OMB No. 2040-0004

TABLE A. CONVENTIONAL AND NON CONVENTIONAL PARAMETERS (40 CFR 122.26(c)(1)(i)(E)(3))[1]

You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details and requirements.

	Pollutant or Parameter	Maximum Daily Discharge (specify units)		Average Daily Discharge (specify units)		Number of Storm Events Sampled	Source of Information (new source/new dischargers only; use codes in instructions)
		Grab Sample Taken During First 30 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-Weighted Composite		
1.	Oil and grease	Please see Attachment 2F-2					
2.	Biochemical oxygen demand (BOD_5)						
3.	Chemical oxygen demand (COD)						
4.	Total suspended solids (TSS)						
5.	Total phosphorus						
6.	Total Kjeldahl nitrogen (TKN)						
7.	Total nitrogen (as N)						
8.	pH (minimum)						
	pH (maximum)						

[1] Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

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EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
ALG160037		3M Guin - Landfill	

Form Approved 03/05/19
OMB No. 2040-0004

TABLE B. CERTAIN CONVENTIONAL AND NON CONVENTIONAL POLLUTANTS (40 CFR 122.26(c)(1)(i)(E)(4) and 40 CFR 122.21(g)(7)(vi)(A))[1]

List each pollutant that is limited in an effluent limitation guideline (ELG) that the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number (If available)	Maximum Daily Discharge (specify units)		Average Daily Discharge (specify units)		Number of Storm Events Sampled	Source of Information (new source/new dischargers only; use codes in instructions)
	Grab Sample Taken During First 30 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-Weighted Composite		
NA						

[1] Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

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EPA Identification Number	NPDES Permit Number	Facility Name	Outfall Number
ALG160037		3M Guin - Landfill	

Form Approved 03/05/19
OMB No. 2040-0004

TABLE C. TOXIC POLLUTANTS, CERTAIN HAZARDOUS SUBSTANCES, AND ASBESTOS (40 CFR 122.26(c)(1)(i)(E)(4) and 40 CFR 122.21(g)(7)(vi)(B) and (vii))[1]

List each pollutant shown in Exhibits 2F–2, 2F–3, and 2F–4 that you know or have reason to believe is present. Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number (if available)	Maximum Daily Discharge (specify units)		Average Daily Discharge (specify units)		Number of Storm Events Sampled	Source of Information (new sources/new dischargers only; use codes in instructions)
	Grab Sample Taken During First 30 Minutes	Flow-Weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-Weighted Composite		
Please see Attachement 2F-2						

[1] Sampling shall be conducted according to sufficiently sensitive test procedures (i.e., methods) approved under 40 CFR 136 for the analysis of pollutants or pollutant parameters or required under 40 CFR chapter I, subchapter N or O. See instructions and 40 CFR 122.21(e)(3).

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EPA Identification Number	NPDES Permit Number	Facility name	Outfall Number
ALG160037		3M Guin - Landfill	

Form Approved 03/05/19
OMB No. 2040-0004

TABLE D. STORM EVENT INFORMATION (40 CFR 122.26(c)(1)(i)(E)(6))

Provide data for the storm event(s) that resulted in the maximum daily discharges for the flow-weighted composite sample.

Date of Storm Event	Duration of Storm Event (in hours)	Total Rainfall During Storm Event (in inches)	Number of Hours Between Beginning of Storm Measured and End of Previous Measurable Rain Event	Maximum Flow Rate During Rain Event (in gpm or specify units)	Total Flow from Rain Event (in gallons or specify units)
05/09/2021	1.4 hours	0.88 inches	119 hours	001-1: 60; 001-2: 70gpm	001-1: 4,980; 002-2: 5,810gal

Provide a description of the method of flow measurement or estimate.

Site began recording rainfall amounts when the storm began at 16:05 and stopped recording rainfall when the storm ended at 18:41.

Click to go back to the beginning of Form

Attachment 2F-1

SECTION 3

MATERIALS HANDLING PROCEDURES

SIGNIFICANT MATERIALS INVENTORY

Significant materials that are used by the facility that have a potential to be present in stormwater runoff are listed in Table 3-1. This table includes information concerning material type, storage information, quantities used and location. Figure 3-1 shows materials handling and storage locations at the facility which represent potential areas of pollutant contact with stormwater.

POTENTIAL AREAS FOR STORMWATER CONTAMINATION

Materials handling and management practices at the facility were evaluated for potential contamination of stormwater. This potential exists whenever there is a possibility of material exposure outdoors. Contamination potential typically occurs in one of six categories:

1. Materials Transfer Operations
2. Materials Storage
3. Materials Disposal Operations
4. Chemical Application Areas
5. Potential Erosion Areas
6. Non-stormwater Discharges

The possibilities for stormwater contamination from the activities under each of the above categories are described in detail below. Some of the possibilities for stormwater contamination listed below are generic and for informational use only. Some may not apply to the Guin Landfill facility. **Materials handling and management practices specific to the Guin Landfill facility are described in the next section beginning on Page 3-4.**

Materials Transfer Operations

Whenever materials are transferred or relocated there is a potential for loss or spillage. Liquid materials received in bulk are likely sources of small volume spills. Over time, the quantity of spilled material can accumulate and become a significant source for stormwater contamination. Similarly, dry materials that are received in bulk are also subject to dispersion or spilling. In short, unless these operations are in completely enclosed areas with proper drainage, there is a potential for stormwater contamination wherever significant materials are transported or transferred in bulk.

When materials are received or transferred in containers there is also a potential for stormwater contamination. Accidents in transfer operations, forklift movement, improper container closure and other situations create a potential for spillage and subsequent stormwater contamination. Unless transfer locations are drained separately from the stormwater system, any spill in these areas will be a likely source of stormwater contamination.

3M Guin Landfill
Figure 3-1

Table 3-1

Significant Materials Inventory*
3M Guin Landfill Facility

Material Name	Composition	Physical State	Location
Baled Materials	Office trash Scrap rubber Polyethylene and Polyester sheets	Solid	Active Work Area
Rolls of Paper	Jumbo rolls of Reflective Sheeting, rubber and paper	Solid	Active Work Area
Loose Scrap	Broken Pallets, Sweeping Material, Beads, Scrap Glass	Solid	Active Work Area

*Active Work Area Location may change as fill operations progress.

Materials Storage

Materials storage locations are frequently sources of stormwater contamination. Uncovered or inadequately covered materials are directly exposed to stormwater and, depending on their composition, may be a significant source of contamination. Similarly, if materials storage locations are overstocked or improperly used, there is a potential for stormwater contamination either because materials are no longer in a properly enclosed area or because spillage due to improper handling and stacking of materials in an overcrowded space. Bulk material storage areas and drum storage of liquids are susceptible to accidental spill or loss of materials if proper vehicle prohibiting measures are not in place around the storage area. Finally, materials storage areas may require spill containment provisions. In addition to dikes or berms around liquid petroleum storage containment areas, the facility should have a written spill prevention control and countermeasure (SPCC) plan that designates clear and specific actions in case of a spill to prevent spills from becoming sources of stormwater contamination.

Materials Disposal Operations

As with materials storage, materials disposal operations and locations pose a potential threat for stormwater contamination. Dumpsters and compactor areas should be clean. Storage units should be intact without obvious damage or leachate, and units should be covered. Liquid waste materials should be properly stored and managed, preferably in a diked or bermed area and under a roof. Wash water from vehicle/equipment washing and building cleaning operations should be disposed of properly and not allowed to run into stormwater conveyances.

Chemical Application Areas

Application of chemicals to outdoors locations may create a source of stormwater contamination. Chemicals which might be applied outdoors typically include fertilizers, pesticides, and herbicides. These materials are typically applied to lawn areas, near electrical substations, along railroad tracks and building perimeters. As with all compounds used outdoors, the possibility of a spill, or of improper materials disposal, can create further sources of stormwater contamination.

Potential Erosion Areas

Stormwater erosion has the potential not only to damage the site and facilities, but also to be a significant source of stormwater contamination. If any areas of the site are eroded, it is likely they will continue to erode and to provide a source of stormwater contamination until the area is repaired. Damaged swales, or other stormwater conveyances may soon become sites of erosion damage. Areas which are subject to uncontrolled runoff may become eroded if proper controls are not implemented. An inventory of all such sites of existing erosion, damaged conveyances, and uncontrolled runoff should be performed on site and a determination made of the appropriate counter measures.

Non-Stormwater Discharges

Discharges of non-stormwater into storm drainage systems can present a significant source of stormwater contamination. Examples of non-stormwater discharges include process water, non-contact cooling water, vehicle wash water, and sanitary wastes. Internal building drain connections are one of the most common ways of discharging non-stormwater
into the storm drainage system. All drains within the facility and under roof should be examined on site plans or physically inspected to determine their connections. If an internal drain connects to the storm drainage

system, any materials that are spilled indoors and reach the drain will be conveyed directly to surface waters. Many operations also have sumps in loading areas or within buildings that are equipped with pumps which are operated in case of a spill or rainwater in the area. If these sumps are pumped directly to the ground or to the stormwater conveyance system, spills are in effect transported directly to surface waters. Non-stormwater discharges can also occur when materials or vehicles are cleaned and the wash water is allowed to discharge to the ground or through the storm sewer system.

Potential sources of stormwater contamination identified at the Guin Landfill facility are provided in Table 3-2.

MATERIALS HANDLING AND MANAGEMENT PRACTICES

Materials handling and management practices *specific* to the 3M Guin Landfill facility are described below.

Materials Transfer Operations

Materials disposed of at the landfill are received at the two gates shown in Figure 3-1. The usage of each gate depends on weather conditions and which disposal area is to be used. Once the trucks arrive at the disposal area, appropriate equipment is used to unload the trucks. Dump trucks and flat bed trucks are used to collect and transfer the waste material.

Materials Storage

3M uses a private contractor to operate the landfill who provides all the equipment and vehicles required. All of the fueling, washing, and maintenance of the equipment and vehicles are performed at the contractor's facility. No materials (oil, grease, gas, etc.) are stored on-site.

Materials Disposal Operations

Waste material disposed of at this facility is placed in the active working area. As the active area progresses, the previous fill areas are covered with soil. The surrounding areas are clean and well kept.

Chemical Application Areas

Pesticides and herbicides are not used in the landfill. 3M wants vegetation to grow on the soil cover in order to minimize soil loss until the next lift of waste is placed. 3M uses fertilizers as needed to facilitate adequate vegetation.

Potential Erosion Areas

Erosion causes a continuous potential for stormwater contamination at the landfill. Best Management Practices are implemented to reduce this erosion such as silt fence, grass, erosion matting, mulch, rip rap, etc. Each area of erosion will be evaluated and repaired as needed.

Non-Stormwater Discharges

The facility is managed to prevent non-stormwater discharges from taking place. The facility does not wash any vehicles on the premises or clean any equipment at the facility.

HISTORIC SPILL AND LEAK RECORD

Since October 1, 1989, there have been no significant or notable spills or leaks of potentially contaminating material. The facility's spill record from October 1, 1989 through the present date is displayed in Table 3-3.

Table 3-2

Potential Sources of Stormwater Contamination
3M Guin Landfill Facility

Potential Area of Concern	Potential Problem	Potential Pollutant	Method of Control
Uncovered Solid Waste Area (Working Face)	Rainfall could come into contact with solid waste and could drain into the stormwater system without proper control	Particulates	Landfill designed so that stormwater contacting waste goes to leachate collection; sufficient cover, berms, etc. to prevent runoff of stormwater that contacted waste
Grassy Area	Chemicals that have been applied to the grass cover could come into contact with rainfall and enter the stormwater drainage system	Fertilizers	Applications are planned around storm events so that runoff is not expected
Bare Area	Rainfall and runoff may cause erosion to occur	Sediment	Mat, seed, berms, silt fencing, and other erosion control methods

TABLE 3-3

HISTORIC SPILL AND LEAK RECORD

3M GUIN LANDFILL FACILITY

Date	Material(s) Spilled/Leaked	Volume Spilled/Leaked	Location of Spill/Leak	Cleanup and Countermeasures
No spills or leaks have occurred since October 1, 1989.				

Attachment 2F-2

Attachment 2F-2: Discharge Information
DSN 001

ADEM ID # ALG160037

	Pollutant	Believed Present	Max Values		Avg Values		No. Storm Events Sampled	Units
			Initial Grab	Flow-Weighted Composite	Initial Grab	Flow-Weighted Composite		
Table A	**Required Parameters**							
	Oil and Grease	NA	<5.3	No Sample	<5.3	No sample	1	mg/L
	BOD_5	NA	7.56	No Sample	7.56	No sample	1	mg/L
	COD	NA	79.9	No Sample	79.9	No sample	1	mg/L
	TSS	NA	200	No Sample	200	No sample	1	mg/L
	Total Phosphorus	NA	3	No Sample	3	No sample	1	mg/L
	Total Nitrogen	NA	<1.76	No Sample	<1.76	No sample	1	mg/L
	TKN	NA	<1.5	No Sample	<1.5	No sample	1	mg/L
	pH	NA	7.7	No Sample	7.7	No sample	1	SU
Table C	**Pollutants known or believed to be present (and listed in Tables 2F-2, 2F-3, and 2F-4)**							
	Table 2F-2							
	Aluminum, Total							
	Barium, Total							
	Boron, Total							
	Bromide							
	Chlorine, Total Residual							
	Cobalt Total							
	Color							
	Fecal Coliform							
	Fluoride							
	Iron, Total							
	Magnesium, Total							
	Manganese, Total							
	Molybdenum, Total							
	Nitrate-Nitrite							
	Nitrogen, Total Organic							
	Oil and Grease							
	Phosphorus, Total							
	Radioactivity							
	Sulfate							
	Sulfide							
	Sulfite							
	Surfactants							
	Tin, Total							
	Titanium, Total							
	Table 2F-3							
	1,1,1-Trichloroethane							
	1,1,2,2,-Tetrachloroethane							
	1,1,2-Trichloroethane							
	1,1-Dichloroethane							
	1,1-Dichloroethylene							
	1,2,4-Trichlorobenzene							
	1,2-Dichlorobenzene							
	1,2-Dichloroethane							
	1,2-Dichloropropane							
	1,2-Diphenylhydrazine (as Azobenzene)							
	1,2-Trans-Dichloroethylene							
	1,3-Dichlorobenzene							
	1,3-Dichloropropylene							
	1,4-Dichlorobenzene							
	2,4,6-Trichlorophenol							
	2,4-Dichlorophenol							
	2,4-Dimethylphenol							
	2,4-Dinitrophenol							
	2,4-Dinitrotoluene							
	2,6-Dinitrotoluene							
	2-Chloroethylvinyl Ether							
	2-Chloronaphthalene							
	2-Chlorophenol							
	2-methyl-4,6 dinitrophenol							
	2-Nitrophenol							
	3,3'-Dichlorobenzidine							
	3,4-Benzofluoranthene							
	4,4'-DDD							
	4,4'-DDE							
	4,4'-DDT							
	4,6-Dinitro-O-Cresol							
	4-Bromophenyl Phenyl Ether							
	4-Chlorophenyl Phenyl Ether							
	4-Nitrophenol							
	Acenaphthene							
	Acenaphthylene							
	Acrolein							
	Acrylonitrile							
	Aldrin							
	Alpha-BHC							
	Alpha-Endosulfan							
	Anthracene							
	Antimony, Total							
	Arsenic, Total							
	Benzene							
	Benzidine							
	Benzo(a)anthracene							
	Benzo(a)pyrene							
	Benzo(ghi)perylene							
	Benzo(k)fluoranthene							
	Beryllium, Total							
	Beta-BHC							

Averages not calculated if only one result is reported

Pollutant	Believed Present	Max Values		Avg Values		No. Storm Events Sampled	Units
		Initial Grab	Flow-Weighted Composite	Initial Grab	Flow-Weighted Composite		
Beta-Endosulfan Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-chloroisopropyl)ether Bis(2-ethylyhexyl)phthalate Bromoform							
Butylbenzyl Phthalate Cadmium, Total Carbon Tetrachloride							
Chlordane Chlorobenzene Chlorodibromomethane							
Chloroethane Chloroform Chromium, Total	X	25.3	No sample	25.30	No sample	1	µg/L
Chrysene Copper, Total Cyanide, Total Delta-BHC Dibenzo(a,h)anthracene Dichlorobromomethane Dieldrin Diethyl Phthalate							
Dimethyl Phthalate Di-N-Butyl Phthalate Di-N-Octylphthalate							
Endosulfan Sulfate Endrin Endrin Aldehyde							
Ethylbenzene Fluorene Fluroranthene							
Gamma-BHC Heptachlor Heptachlor Epoxide Hexachlorobenzene Hexachlorobutadiene Hexachloroethane Isophorone Lead, Total	X	11.2	No sample	11.20	No sample	1	µg/L
Indeno(1,2,3-cd)pyrene Mercury, Total Methyl Bromide (Bromomethane)							
Methyl Chloride Methylene Chloride Napthalene							
Nickel, Total Nitrobenzene N-Nitrosodimethylamine							
N-Nitrosodi-N-Propylamine N-Nitrosodiphenylamine PCB-1016 PCB-1221 PCB-1232 PCB-1242 PCB-1248 PCB-1254							
PCB-1260 p-Chloro-M-Cresol (4-Chloro-3-methylphenol) Pentachlorophenol							
Phenanthrene Phenol Phenols, Total							
Pyrene Selenium, Total Silver, Total							
Tetrachloroethylene Thallium, Total Toluene Toxaphene Trichloroethylene							
Vinyl Chloride Zinc, Total							
Table 2F-4							
2,2-Dichloropropionic acid 2,4,5-T (2,4,5-Trichlorophenoxyacetic acid) 2,4,5-TP [2-(2,4,5-Trichlorophenoxy) propanoic acid]							
2,4-D (2,4-Dichlorophenoxyacetic acid) Acetaldehyde Allyl alcohol Allyl chloride Amyl acetate Aniline							
Asbestos Benzonitrile Benzyl chloride Butyl acetate Butylamine							
Captan							

Averages not calculated if only one result is reported

Pollutant	Believed Present	Max Values		Avg Values		No. Storm Events Sampled	Units
		Initial Grab	Flow-Weighted Composite	Initial Grab	Flow-Weighted Composite		
Carbaryl Carbofuran Carbon disulfide Chlorpyrifos Coumaphos Cresol							
Crotonaldehyde Cyclohexane Diazinon							
Dicamba Dichlobenil Dichlone							
Dichlorvos Diethyl amine Dimethyl amine							
Dinitrobenzene Diquat Disulfoton Diuron Epichlorohydrin Ethion Ethylene diamine Ethylene dibromide							
Formaldehyde Furfural Guthion							
Isoprene Isopropanolamine Kelthane							
Kepone Malathion Mercaptodimethur							
Methoxychlor Methyl mercaptan Methyl methacrylate Methyl parathion Mevinphos Mexacarbate Monoethyl amine Monomethyl amine							
Naled Napthenic acid Nitrotoluene							
Parathion Phenolsulfonate Phosgene							
Propargite Propylene oxide Pyrethrins							
Quinoline Resorcinol Stronthium Strychnine Styrene TDE (Tetrachlorodiphenyl ethane) Trichlorofan Triethylamine							
Trimethylamine Uranium Vanadium							
Vinyl acetate Xylene Xylenol							
Zirconium							

Averages not calculated if only one result is reported

Attachment 2F-2: Discharge Information
DSN 002

ADEM ID # ALG160037

Pollutant	Believed Present	Max Values		Avg Values		No. Storm Events Sampled	Units
		Initial Grab	Flow-Weighted Composite	Initial Grab	Flow-Weighted Composite		
Table A Required Parameters							
Oil and Grease	NA	<5.1	No sample	<5.3	No sample	1	mg/L
BOD_5	NA	4.7	No sample	4.7	No sample	1	mg/L
COD	NA	97.3	No sample	97.3	No sample	1	mg/L
TSS	NA	<200	No sample	<200	No sample	1	mg/L
Total Phosphorus	NA	0.8	No sample	0.8	No sample	1	mg/L
Total Nitrogen	NA	<1.76	No sample	<1.76	No sample	1	mg/L
TKN	NA	<1.5	No sample	<1.5	No sample	1	mg/L
pH	NA	7.3	No sample	7.3	No sample	1	SU
Table C Pollutants known or believed to be present (and listed in Tables 2F-2, 2F-3, and 2F-4)							
Table 2F-2							
Aluminum, Total							
Barium, Total							
Boron, Total							
Bromide							
Chlorine, Total Residual							
Cobalt Total							
Color							
Fecal Coliform							
Fluoride							
Iron, Total							
Magnesium, Total							
Manganese, Total							
Molybdenum, Total							
Nitrate-Nitrite							
Nitrogen, Total Organic							
Oil and Grease							
Phosphorus, Total							
Radioactivity							
Sulfate							
Sulfide							
Sulfite							
Surfactants							
Tin, Total							
Titanium, Total							
Table 2F-3							
1,1,1-Trichloroethane							
1,1,2,2,-Tetrachloroethane							
1,1,2-Trichloroethane							
1,1-Dichloroethane							
1,1-Dichloroethylene							
1,2,4-Trichlorobenzene							
1,2-Dichlorobenzene							
1,2-Dichloroethane							
1,2-Dichloropropane							
1,2-Diphenylhydrazine (as Azobenzene)							
1,2-Trans-Dichloroethylene							
1,3-Dichlorobenzene							
1,3-Dichloropropylene							
1,4-Dichlorobenzene							
2,4,6-Trichlorophenol							
2,4-Dichlorophenol							
2,4-Dimethylphenol							
2,4-Dinitrophenol							
2,4-Dinitrotoluene							
2,6-Dinitrotoluene							
2-Chloroethylvinyl Ether							
2-Chloronaphthalene							
2-Chlorophenol							
2-methyl-4,6 dinitrophenol							
2-Nitrophenol							
3,3'-Dichlorobenzidine							
3,4-Benzofluoranthene							
4,4'-DDD							
4,4'-DDE							
4,4'-DDT							
4,6-Dinitro-O-Cresol							
4-Bromophenyl Phenyl Ether							
4-Chlorophenyl Phenyl Ether							
4-Nitrophenol							
Acenaphthene							
Acenaphthylene							
Acrolein							
Acrylonitrile							
Aldrin							
Alpha-BHC							
Alpha-Endosulfan							
Anthracene							
Antimony, Total							
Arsenic, Total							
Benzene							
Benzidine							
Benzo(a)anthracene							
Benzo(a)pyrene							
Benzo(ghi)perylene							
Benzo(k)fluoranthene							
Beryllium, Total							
Beta-BHC							
Beta-Endosulfan							
Bis(2-chloroethoxy)methane							
Bis(2-chloroethyl)ether							
Bis(2-chloroisopropyl)ether							
Bis(2-ethylyhexyl)phthalate							

Averages not calculated if only one result is reported

Attachment 2F-2: Discharge Information
DSN 002

ADEM ID # ALG160037

Pollutant	Believed Present	Max Values		Avg Values		No. Storm Events Sampled	Units
		Initial Grab	Flow-Weighted Composite	Initial Grab	Flow-Weighted Composite		
Bromoform							
Butylbenzyl Phthalate							
Cadmium, Total							
Carbon Tetrachloride							
Chlordane							
Chlorobenzene							
Chlorodibromomethane							
Chloroethane							
Chloroform							
Chromium, Total	X	50.9	No sample	50.90	No sample	1	µg/L
Chrysene							
Copper, Total							
Cyanide, Total							
Delta-BHC							
Dibenzo(a,h)anthracene							
Dichlorobromomethane							
Dieldrin							
Diethyl Phthalate							
Dimethyl Phthalate							
Di-N-Butyl Phthalate							
Di-N-Octylphthalate							
Endosulfan Sulfate							
Endrin							
Endrin Aldehyde							
Ethylbenzene							
Fluorene							
Fluroranthene							
Gamma-BHC							
Heptachlor							
Heptachlor Epoxide							
Hexachlorobenzene							
Hexachlorobutadiene							
Hexachloroethane							
Isophorone							
Lead, Total	X	24	No sample	24.00	No sample	1	µg/L
Indeno(1,2,3-cd)pyrene							
Mercury, Total							
Methyl Bromide (Bromomethane)							
Methyl Chloride							
Methylene Chloride							
Napthalene							
Nickel, Total							
Nitrobenzene							
N-Nitrosodimethylamine							
N-Nitrosodi-N-Propylamine							
N-Nitrosodiphenylamine							
PCB-1016							
PCB-1221							
PCB-1232							
PCB-1242							
PCB-1248							
PCB-1254							
PCB-1260							
p-Chloro-M-Cresol (4-Chloro-3-methylphenol)							
Pentachlorophenol							
Phenanthrene							
Phenol							
Phenols, Total							
Pyrene							
Selenium, Total							
Silver, Total							
Tetrachloroethylene							
Thallium, Total							
Toluene							
Toxaphene							
Trichloroethylene							
Vinyl Chloride							
Zinc, Total							
Table 2F-4							
2,2-Dichloropropionic acid							
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)							
2,4,5-TP [2-(2,4,5-Trichlorophenoxy) propanoic acid]							
2,4-D (2,4-Dichlorophenoxyacetic acid)							
Acetaldehyde							
Allyl alcohol							
Allyl chloride							
Amyl acetate							
Aniline							
Asbestos							
Benzonitrile							
Benzyl chloride							
Butyl acetate							
Butylamine							
Captan							
Carbaryl							
Carbofuran							
Carbon disulfide							
Chlorpyrifos							
Cournaphos							
Cresol							
Crotonaldehyde							
Cyclohexane							
Diazinon							
Dicamba							

Averages not calculated if only one result is reported

Attachment 2F-2: Discharge Information
DSN 002

Pollutant	Believed Present	Max Values		Avg Values		No. Storm Events Sampled	Units
		Initial Grab	Flow-Weighted Composite	Initial Grab	Flow-Weighted Composite		
Dichlobenil Dichlone Dichlorvos							
Diethyl amine Dimethyl amine Dinitrobenzene Diquat							
Disulfoton Diuron Epichlorohydrin Ethion							
Ethylene diamine Ethylene dibromide Formaldehyde							
Furfural							
Guthion Isoprene Isopropanolamine							
Kelthane Kepone Malathion Mercaptodimethur							
Methoxychlor Methyl mercaptan Methyl methacrylate							
Methyl parathion							
Mevinphos Mexacarbate Monoethyl amine							
Monomethyl amine Naled Napthenic acid Nitrotoluene							
Parathion Phenolsulfonate Phosgene Propargite							
Propylene oxide Pyrethrins Quinoline							
Resorcinol Stronthium Strychnine Styrene							
TDE (Tetrachlorodiphenyl ethane) Trichlorofan Triethylamine Trimethylamine							
Uranium Vanadium Vinyl acetate Xylene Xylenol Zirconium							

Averages not calculated if only one result is reported

Pace Analytical Services, LLC
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July 22, 2021

Carie Mathison
3M Environmental
3M Center, B224-5W-03
Saint Paul, MN 55144

RE: Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Dear Carie Mathison:

Enclosed are the analytical results for sample(s) received by the laboratory on May 11, 2021. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace National - Mt. Juliet
- Pace Analytical Services - Duluth, MN
- Pace Analytical Services - Minneapolis

This report was revised on July 14, 2021, to include results for copper by method 200.8 on Pace sample 10559524001 and to update the list of reported PFAS compounds for all samples.

This report was further revised on July, 22, 2021, to include the correct PFAS report.

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

Sincerely,

Martha Hansen
martha.hansen@pacelabs.com
(612)607-6451
Project Manager

Enclosures

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Pace Analytical Services, LLC - Minneapolis MN
1700 Elm Street SE, Minneapolis, MN 55414
A2LA Certification #: 2926.01*
1800 Elm Street SE, Minneapolis, MN 55414--Satellite Air Lab
Alabama Certification #: 40770
Alaska Contaminated Sites Certification #: 17-009*
Alaska DW Certification #: MN00064
Arizona Certification #: AZ0014*
Arkansas DW Certification #: MN00064
Arkansas WW Certification #: 88-0680
California Certification #: 2929
Colorado Certification #: MN00064
Connecticut Certification #: PH-0256
EPA Region 8 Tribal Water Systems+Wyoming DW Certification #: via MN 027-053-137
Florida Certification #: E87605*
Georgia Certification #: 959
Hawaii Certification #: MN00064
Idaho Certification #: MN00064
Illinois Certification #: 200011
Indiana Certification #: C-MN-01
Iowa Certification #: 368
Kansas Certification #: E-10167
Kentucky DW Certification #: 90062
Kentucky WW Certification #: 90062
Louisiana DEQ Certification #: AI-03086*
Louisiana DW Certification #: MN00064
Maine Certification #: MN00064*
Maryland Certification #: 322
Michigan Certification #: 9909
Minnesota Certification #: 027-053-137*
Minnesota Dept of Ag Approval: via MN 027-053-137
Minnesota Petrofund Registration #: 1240*
Mississippi Certification #: MN00064
Missouri Certification #: 10100
Montana Certification #: CERT0092
Nebraska Certification #: NE-OS-18-06
Nevada Certification #: MN00064
New Hampshire Certification #: 2081*
New Jersey Certification #: MN002
New York Certification #: 11647*
North Carolina DW Certification #: 27700
North Carolina WW Certification #: 530
North Dakota Certification #: R-036
Ohio DW Certification #: 41244
Ohio VAP Certification (1700) #: CL101
Ohio VAP Certification (1800) #: CL110*
Oklahoma Certification #: 9507*
Oregon Primary Certification #: MN300001
Oregon Secondary Certification #: MN200001*
Pennsylvania Certification #: 68-00563*
Puerto Rico Certification #: MN00064
South Carolina Certification #:74003001
Tennessee Certification #: TN02818
Texas Certification #: T104704192*
Utah Certification #: MN00064*
Vermont Certification #: VT-027053137
Virginia Certification #: 460163*
Washington Certification #: C486*
West Virginia DEP Certification #: 382
West Virginia DW Certification #: 9952 C
Wisconsin Certification #: 999407970
Wyoming UST Certification #: via A2LA 2926.01
USDA Permit #: P330-19-00208
*Please Note: Applicable air certifications are denoted with an asterisk (*).

Pace Analytical Services National
12065 Lebanon Road, Mt. Juliet, TN 37122
Alabama Certification #: 40660
Alaska Certification 17-026
Arizona Certification #: AZ0612
Arkansas Certification #: 88-0469
California Certification #: 2932
Canada Certification #: 1461.01
Colorado Certification #: TN00003
Connecticut Certification #: PH-0197
DOD Certification: #1461.01
EPA# TN00003
Florida Certification #: E87487
Georgia DW Certification #: 923
Georgia Certification: NELAP
Idaho Certification #: TN00003
Illinois Certification #: 200008
Indiana Certification #: C-TN-01
Iowa Certification #: 364
Kansas Certification #: E-10277
Kentucky UST Certification #: 16
Kentucky Certification #: 90010
Louisiana Certification #: AI30792
Louisiana DW Certification #: LA180010
Maine Certification #: TN0002
Maryland Certification #: 324
Massachusetts Certification #: M-TN003
Michigan Certification #: 9958
Minnesota Certification #: 047-999-395
Mississippi Certification #: TN00003
Missouri Certification #: 340
Montana Certification #: CERT0086
Nebraska Certification #: NE-OS-15-05

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

CERTIFICATIONS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Pace Analytical Services National

Nevada Certification #: TN-03-2002-34
New Hampshire Certification #: 2975
New Jersey Certification #: TN002
New Mexico DW Certification
New York Certification #: 11742
North Carolina Aquatic Toxicity Certification #: 41
North Carolina Drinking Water Certification #: 21704
North Carolina Environmental Certificate #: 375
North Dakota Certification #: R-140
Ohio VAP Certification #: CL0069
Oklahoma Certification #: 9915
Oregon Certification #: TN200002
Pennsylvania Certification #: 68-02979
Rhode Island Certification #: LAO00356
South Carolina Certification #: 84004
South Dakota Certification
Tennessee DW/Chem/Micro Certification #: 2006
Texas Mold Certification #: LAB0152
Texas Certification #: T 104704245-17-14
USDA Soil Permit #: P330-15-00234
Utah Certification #: TN00003
Virginia Certification #: VT2006
Vermont Dept. of Health: ID# VT-2006
Virginia Certification #: 460132
Washington Certification #: C847
West Virginia Certification #: 233
Wisconsin Certification #: 998093910
Wyoming UST Certification #: via A2LA 2926.01
A2LA-ISO 17025 Certification #: 1461.01
A2LA-ISO 17025 Certification #: 1461.02
AIHA-LAP/LLC EMLAP Certification #:100789

Pace Analytical Services, LLC - Duluth MN

4730 Oneota Street, Duluth, MN 55807
Minnesota Certification #: 027-137-152
Minnesota Dept of Ag Approval: via Minnesota 027-137-152
Minnesota Petrofund Registration #: 1240
Montana Certification #: CERT0102
Nevada Certification #: MN00037
North Dakota Certification #: R-105
Wisconsin Certification #: 999446800
Wisconsin Dept of Ag Certification: 480341

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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SAMPLE SUMMARY

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Lab ID	Sample ID	Matrix	Date Collected	Date Received
10559524001	E21-0193-001	Water	05/09/21 17:20	05/11/21 10:20
10559524002	E21-0193-001 PFAS Field Blank	Water	05/09/21 17:20	05/11/21 10:20
10559524003	E21-0193-002	Water	05/09/21 17:38	05/11/21 10:20
10559524004	E21-0193-002 PFAS Field Blank	Water	05/09/21 17:38	05/11/21 10:20

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SAMPLE ANALYTE COUNT

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
10559524001	E21-0193-001	EPA 351.2	AP2	1	PASI-DU
		SM 5310C-2011	AK3	1	PASI-DU
		EPA 608.3	AMM	10	PAN
		EPA 200.8	RJS	4	PASI-M
		EPA 625.1	MS4	71	PASI-M
		EPA 624.1	LPM	71	PASI-M
		EPA 1664B OG	EPT	1	PASI-M
		SM 2540C	SH4	1	PASI-M
		EPA 350.1	JFP	1	PASI-M
		SM 5220D	EPT	1	PASI-M
10559524003	E21-0193-002	EPA 351.2	AP2	1	PASI-DU
		SM 5310C-2011	AK3	1	PASI-DU
		EPA 608.3	AMM	10	PAN
		EPA 200.8	RJS	3	PASI-M
		EPA 625.1	MS4	71	PASI-M
		EPA 624.1	LPM	71	PASI-M
		EPA 1664B OG	EPT	1	PASI-M
		SM 2540C	SH4	1	PASI-M
		EPA 350.1	JFP	1	PASI-M
		SM 5220D	EPT	1	PASI-M

PAN = Pace National - Mt. Juliet
PASI-DU = Pace Analytical Services - Duluth, MN
PASI-M = Pace Analytical Services - Minneapolis

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: EPA 351.2
Description: 351.2 TKN Water DU
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for EPA 351.2 by Pace Analytical Services Duluth, MN. 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 351.2 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:

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **SM 5310C-2011**
Description: 5310C Total Org Carbon DU
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for SM 5310C-2011 by Pace Analytical Services Duluth, MN. 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:

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 608.3**
Description: PCBs(GC) EPA-608.3
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for EPA 608.3 by Pace National Mt. Juliet. 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.

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:

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: EPA 200.8
Description: 200.8 MET ICPMS
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for EPA 200.8 by Pace Analytical Services Minneapolis. 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 200.8 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.

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: 741405

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- E21-0193-001 (Lab ID: 10559524001)
  - Cadmium
- E21-0193-002 (Lab ID: 10559524003)
  - Cadmium

Pace Analytical Services, LLC
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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: EPA 625.1
Description: 625.1 RV MSSV
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for EPA 625.1 by Pace Analytical Services Minneapolis. 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 625.1 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.

QC Batch: 742117

A matrix spike/matrix spike duplicate was not performed due to insufficient sample volume.

Additional Comments:

Analyte Comments:

QC Batch: 742117

1M: Surrogate recovery outside laboratory control limits due to an emulsion forming during extraction.

- E21-0193-001 (Lab ID: 10559524001)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorobiphenyl (S)
  - 2-Fluorophenol (S)

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 625.1**
Description: 625.1 RV MSSV
Client: 3M Environmental
Date: July 22, 2021

Analyte Comments:

QC Batch: 742117

1M: Surrogate recovery outside laboratory control limits due to an emulsion forming during extraction.

- E21-0193-001 (Lab ID: 10559524001)
  - Nitrobenzene-d5 (S)
  - Phenol-d6 (S)
  - p-Terphenyl-d14 (S)
- E21-0193-002 (Lab ID: 10559524003)
  - 2,4,6-Tribromophenol (S)
  - 2-Fluorobiphenyl (S)
  - Nitrobenzene-d5 (S)
  - p-Terphenyl-d14 (S)

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.

- BLANK (Lab ID: 3957544)
  - 1,2-Dichlorobenzene
  - 1,2-Diphenylhydrazine
  - 1,3-Dichlorobenzene
  - 1,4-Dichlorobenzene
  - 2-Methylphenol(o-Cresol)
  - 2-Methylnaphthalene
  - 2-Nitroaniline
  - 3&4-Methylphenol(m&p Cresol)
  - 3-Nitroaniline
  - 4-Chloroaniline
  - 4-Nitroaniline
  - Carbazole
  - Dibenzofuran
- E21-0193-001 (Lab ID: 10559524001)
  - 1,2-Dichlorobenzene
  - 1,2-Diphenylhydrazine
  - 1,3-Dichlorobenzene
  - 1,4-Dichlorobenzene
  - 2-Methylphenol(o-Cresol)
  - 2-Methylnaphthalene
  - 2-Nitroaniline
  - 3&4-Methylphenol(m&p Cresol)
  - 3-Nitroaniline
  - 4-Chloroaniline
  - 4-Nitroaniline
  - Carbazole
  - Dibenzofuran
- E21-0193-002 (Lab ID: 10559524003)
  - 1,2-Dichlorobenzene
  - 1,2-Diphenylhydrazine
  - 1,3-Dichlorobenzene

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 625.1**
Description: 625.1 RV MSSV
Client: 3M Environmental
Date: July 22, 2021

Analyte Comments:

QC Batch: 742117

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.

- E21-0193-002 (Lab ID: 10559524003)
  - 1,4-Dichlorobenzene
  - 2-Methylphenol(o-Cresol)
  - 2-Methylnaphthalene
  - 2-Nitroaniline
  - 3&4-Methylphenol(m&p Cresol)
  - 3-Nitroaniline
  - 4-Chloroaniline
  - 4-Nitroaniline
  - Carbazole
  - Dibenzofuran
- LCS (Lab ID: 3957545)
  - 1,2-Dichlorobenzene
  - 1,2-Diphenylhydrazine
  - 1,3-Dichlorobenzene
  - 1,4-Dichlorobenzene
  - 2-Methylphenol(o-Cresol)
  - 2-Methylnaphthalene
  - 2-Nitroaniline
  - 3&4-Methylphenol(m&p Cresol)
  - 3-Nitroaniline
  - 4-Chloroaniline
  - 4-Nitroaniline
  - Carbazole
  - Dibenzofuran
- LCSD (Lab ID: 3957546)
  - 1,2-Dichlorobenzene
  - 1,2-Diphenylhydrazine
  - 1,3-Dichlorobenzene
  - 1,4-Dichlorobenzene
  - 2-Methylphenol(o-Cresol)
  - 2-Methylnaphthalene
  - 2-Nitroaniline
  - 3&4-Methylphenol(m&p Cresol)
  - 3-Nitroaniline
  - 4-Chloroaniline
  - 4-Nitroaniline
  - Carbazole
  - Dibenzofuran

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 624.1**
Description: 624.1 MSV
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for EPA 624.1 by Pace Analytical Services Minneapolis. 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:

Analyte Comments:

QC Batch: 743168

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.

- BLANK (Lab ID: 3963153)
  - 1,1-Dichloropropene
  - 1,1,1,2-Tetrachloroethane
  - 1,2-Dibromo-3-chloropropane
  - 1,2-Dibromoethane (EDB)
  - 1,2,4-Trimethylbenzene
  - 1,2,3-Trichlorobenzene
  - 1,2,3-Trichloropropane
  - 1,3-Dichloropropane

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 624.1**
Description: 624.1 MSV
Client: 3M Environmental
Date: July 22, 2021

Analyte Comments:

QC Batch: 743168

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.

- BLANK (Lab ID: 3963153)
  - 1,3,5-Trimethylbenzene
  - 2,2-Dichloropropane
  - 2-Chlorotoluene
  - Allyl chloride
  - 4-Chlorotoluene
  - Bromochloromethane
  - Bromobenzene
  - cis-1,2-Dichloroethene
  - Diethyl ether (Ethyl ether)
  - Dichlorodifluoromethane
  - Dibromomethane
  - Hexachloro-1,3-butadiene
  - Methyl-tert-butyl ether
  - Naphthalene
  - n-Butylbenzene
  - n-Propylbenzene
  - p-Isopropyltoluene
  - sec-Butylbenzene
  - Styrene
  - 1,1,2-Trichlorotrifluoroethane
  - tert-Butylbenzene
- E21-0193-001 (Lab ID: 10559524001)
  - 1,1-Dichloropropene
  - 1,1,1,2-Tetrachloroethane
  - 1,2-Dibromo-3-chloropropane
  - 1,2-Dibromoethane (EDB)
  - 1,2,4-Trimethylbenzene
  - 1,2,3-Trichlorobenzene
  - 1,2,3-Trichloropropane
  - 1,3-Dichloropropane
  - 1,3,5-Trimethylbenzene
  - 2,2-Dichloropropane
  - 2-Chlorotoluene
  - Allyl chloride
  - 4-Chlorotoluene
  - Bromochloromethane
  - Bromobenzene
  - cis-1,2-Dichloroethene
  - Diethyl ether (Ethyl ether)
  - Dichlorodifluoromethane
  - Dibromomethane

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: EPA 624.1
Description: 624.1 MSV
Client: 3M Environmental
Date: July 22, 2021

Analyte Comments:

QC Batch: 743168

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.

- E21-0193-001 (Lab ID: 10559524001)
  - Hexachloro-1,3-butadiene
  - Methyl-tert-butyl ether
  - Naphthalene
  - n-Butylbenzene
  - n-Propylbenzene
  - p-Isopropyltoluene
  - sec-Butylbenzene
  - Styrene
  - 1,1,2-Trichlorotrifluoroethane
  - tert-Butylbenzene
- E21-0193-002 (Lab ID: 10559524003)
  - 1,1-Dichloropropene
  - 1,1,1,2-Tetrachloroethane
  - 1,2-Dibromo-3-chloropropane
  - 1,2-Dibromoethane (EDB)
  - 1,2,4-Trimethylbenzene
  - 1,2,3-Trichlorobenzene
  - 1,2,3-Trichloropropane
  - 1,3-Dichloropropane
  - 1,3,5-Trimethylbenzene
  - 2,2-Dichloropropane
  - 2-Chlorotoluene
  - Allyl chloride
  - 4-Chlorotoluene
  - Bromochloromethane
  - Bromobenzene
  - cis-1,2-Dichloroethene
  - Diethyl ether (Ethyl ether)
  - Dichlorodifluoromethane
  - Dibromomethane
  - Hexachloro-1,3-butadiene
  - Methyl-tert-butyl ether
  - Naphthalene
  - n-Butylbenzene
  - n-Propylbenzene
  - p-Isopropyltoluene
  - sec-Butylbenzene
  - Styrene
  - 1,1,2-Trichlorotrifluoroethane
  - tert-Butylbenzene

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 624.1**
Description: 624.1 MSV
Client: 3M Environmental
Date: July 22, 2021

Analyte Comments:

QC Batch: 743168

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.

- LCS (Lab ID: 3963154)
  - 1,1-Dichloropropene
  - 1,1,1,2-Tetrachloroethane
  - 1,2-Dibromo-3-chloropropane
  - 1,2-Dibromoethane (EDB)
  - 1,2,4-Trimethylbenzene
  - 1,2,3-Trichlorobenzene
  - 1,2,3-Trichloropropane
  - 1,3-Dichloropropane
  - 1,3,5-Trimethylbenzene
  - 2,2-Dichloropropane
  - 2-Chlorotoluene
  - Allyl chloride
  - 4-Chlorotoluene
  - Bromochloromethane
  - Bromobenzene
  - cis-1,2-Dichloroethene
  - Diethyl ether (Ethyl ether)
  - Dichlorodifluoromethane
  - Dibromomethane
  - Hexachloro-1,3-butadiene
  - Methyl-tert-butyl ether
  - Naphthalene
  - n-Butylbenzene
  - n-Propylbenzene
  - p-Isopropyltoluene
  - sec-Butylbenzene
  - Styrene
  - 1,1,2-Trichlorotrifluoroethane
  - tert-Butylbenzene
- MS (Lab ID: 3963155)
  - 1,1-Dichloropropene
  - 1,1,1,2-Tetrachloroethane
  - 1,2-Dibromo-3-chloropropane
  - 1,2-Dibromoethane (EDB)
  - 1,2,4-Trimethylbenzene
  - 1,2,3-Trichlorobenzene
  - 1,2,3-Trichloropropane
  - 1,3-Dichloropropane
  - 1,3,5-Trimethylbenzene
  - 2,2-Dichloropropane
  - 2-Chlorotoluene

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 624.1**
Description: 624.1 MSV
Client: 3M Environmental
Date: July 22, 2021

Analyte Comments:

QC Batch: 743168

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.

- MS (Lab ID: 3963155)
  - Allyl chloride
  - 4-Chlorotoluene
  - Bromochloromethane
  - Bromobenzene
  - cis-1,2-Dichloroethene
  - Diethyl ether (Ethyl ether)
  - Dichlorodifluoromethane
  - Dibromomethane
  - Hexachloro-1,3-butadiene
  - Methyl-tert-butyl ether
  - Naphthalene
  - n-Butylbenzene
  - n-Propylbenzene
  - p-Isopropyltoluene
  - sec-Butylbenzene
  - Styrene
  - 1,1,2-Trichlorotrifluoroethane
  - tert-Butylbenzene
- MSD (Lab ID: 3963156)
  - 1,1-Dichloropropene
  - 1,1,1,2-Tetrachloroethane
  - 1,2-Dibromo-3-chloropropane
  - 1,2-Dibromoethane (EDB)
  - 1,2,4-Trimethylbenzene
  - 1,2,3-Trichlorobenzene
  - 1,2,3-Trichloropropane
  - 1,3-Dichloropropane
  - 1,3,5-Trimethylbenzene
  - 2,2-Dichloropropane
  - 2-Chlorotoluene
  - Allyl chloride
  - 4-Chlorotoluene
  - Bromochloromethane
  - Bromobenzene
  - cis-1,2-Dichloroethene
  - Diethyl ether (Ethyl ether)
  - Dichlorodifluoromethane
  - Dibromomethane
  - Hexachloro-1,3-butadiene
  - Methyl-tert-butyl ether
  - Naphthalene

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 624.1**
Description: 624.1 MSV
Client: 3M Environmental
Date: July 22, 2021

Analyte Comments:

QC Batch: 743168

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.

- MSD (Lab ID: 3963156)
  - n-Butylbenzene
  - n-Propylbenzene
  - p-Isopropyltoluene
  - sec-Butylbenzene
  - Styrene
  - 1,1,2-Trichlorotrifluoroethane
  - tert-Butylbenzene

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 1664B OG**
Description: 1664B HEM, Oil and Grease
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for EPA 1664B OG by Pace Analytical Services Minneapolis. 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.

QC Batch: 743416

D6: The precision between the sample and sample duplicate exceeded laboratory control limits.
- DUP (Lab ID: 3964511)
  - Oil and Grease

Additional Comments:

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **SM 2540C**
Description: 2540C Total Dissolved Solids
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for SM 2540C by Pace Analytical Services Minneapolis. 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: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **EPA 350.1**
Description: 350.1 Ammonia
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for EPA 350.1 by Pace Analytical Services Minneapolis. 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:

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PROJECT NARRATIVE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Method: **SM 5220D**
Description: 5220D COD
Client: 3M Environmental
Date: July 22, 2021

General Information:
2 samples were analyzed for SM 5220D by Pace Analytical Services Minneapolis. 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 SM 5220D 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: 744085

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 10559896001,10560967001

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MSD (Lab ID: 3968668)
  - Chemical Oxygen Demand

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-001 **Lab ID: 10559524001** Collected: 05/09/21 17:20 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 TKN Water DU	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Duluth, MN							
Nitrogen, Kjeldahl, Total	**1.2**	mg/L	0.50	1	05/24/21 10:50	05/25/21 09:30	7727-37-9	
5310C Total Org Carbon DU	Analytical Method: SM 5310C-2011 Pace Analytical Services - Duluth, MN							
Total Organic Carbon	**10.8**	mg/L	1.0	1		05/16/21 20:09	7440-44-0	
PCBs(GC) EPA-608.3	Analytical Method: EPA 608.3 Preparation Method: 3510C Pace National - Mt. Juliet							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 11:54	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 11:54	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 11:54	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 11:54	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 11:54	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 11:54	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 11:54	11096-82-5	
PCB, Total	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 11:54	1336-36-3	
Surrogates								
Decachlorobiphenyl (S)	34.8	%	10.0-144	1	05/18/21 21:50	05/19/21 11:54	2051-24-3	
Tetrachloro-m-xylene (S)	84.2	%	10.0-135	1	05/18/21 21:50	05/19/21 11:54	877-09-8	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Pace Analytical Services - Minneapolis							
Cadmium	ND	ug/L	0.40	5	05/12/21 15:09	05/18/21 12:04	7440-43-9	D3
Chromium	**25.3**	ug/L	2.5	5	05/12/21 15:09	05/18/21 12:04	7440-47-3	
Copper	**10.4**	ug/L	5.0	5	05/12/21 15:09	05/18/21 12:04	7440-50-8	
Lead	**11.2**	ug/L	0.50	5	05/12/21 15:09	05/18/21 12:04	7439-92-1	
625.1 RV MSSV	Analytical Method: EPA 625.1 Preparation Method: EPA 625.1 Pace Analytical Services - Minneapolis							
Acenaphthene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	83-32-9	
Acenaphthylene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	208-96-8	
Anthracene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	120-12-7	
Benzo(a)anthracene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	56-55-3	
Benzo(a)pyrene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	207-08-9	
4-Bromophenylphenyl ether	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	85-68-7	
Carbazole	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	86-74-8	N2
4-Chloro-3-methylphenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	59-50-7	
4-Chloroaniline	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	106-47-8	N2
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	108-60-1	

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ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-001 **Lab ID: 10559524001** Collected: 05/09/21 17:20 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625.1 RV MSSV	Analytical Method: EPA 625.1 Preparation Method: EPA 625.1 Pace Analytical Services - Minneapolis							
2-Chloronaphthalene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	91-58-7	
2-Chlorophenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	7005-72-3	
Chrysene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	53-70-3	
Dibenzofuran	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	132-64-9	N2
1,2-Dichlorobenzene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	95-50-1	N2
1,3-Dichlorobenzene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	541-73-1	N2
1,4-Dichlorobenzene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	106-46-7	N2
3,3'-Dichlorobenzidine	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	120-83-2	
Diethylphthalate	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	105-67-9	
Dimethylphthalate	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	534-52-1	
2,4-Dinitrophenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	606-20-2	
Di-n-octylphthalate	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	117-84-0	
1,2-Diphenylhydrazine	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	122-66-7	N2
bis(2-Ethylhexyl)phthalate	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	117-81-7	
Fluoranthene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	206-44-0	
Fluorene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	87-68-3	
Hexachlorobenzene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	118-74-1	
Hexachloroethane	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	193-39-5	
Isophorone	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	78-59-1	
2-Methylnaphthalene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	91-57-6	N2
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	95-48-7	N2
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35		N2
Naphthalene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	91-20-3	
2-Nitroaniline	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	88-74-4	N2
3-Nitroaniline	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	99-09-2	N2
4-Nitroaniline	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	100-01-6	N2
Nitrobenzene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	98-95-3	
2-Nitrophenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	88-75-5	
4-Nitrophenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	86-30-6	
Pentachlorophenol	ND	ug/L	20.0	1	05/14/21 12:12	05/25/21 13:35	87-86-5	
Phenanthrene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	85-01-8	
Phenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	108-95-2	
Pyrene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	129-00-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-001 **Lab ID: 10559524001** Collected: 05/09/21 17:20 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625.1 RV MSSV	Analytical Method: EPA 625.1 Preparation Method: EPA 625.1							
	Pace Analytical Services - Minneapolis							
1,2,4-Trichlorobenzene	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	120-82-1	
2,4,5-Trichlorophenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	10.0	1	05/14/21 12:12	05/25/21 13:35	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	21	%.	50-125	1	05/14/21 12:12	05/25/21 13:35	4165-60-0	1M
2-Fluorobiphenyl (S)	19	%.	40-125	1	05/14/21 12:12	05/25/21 13:35	321-60-8	1M
p-Terphenyl-d14 (S)	30	%.	56-125	1	05/14/21 12:12	05/25/21 13:35	1718-51-0	1M
Phenol-d6 (S)	11	%.	16-125	1	05/14/21 12:12	05/25/21 13:35	13127-88-3	1M
2-Fluorophenol (S)	14	%.	30-125	1	05/14/21 12:12	05/25/21 13:35	367-12-4	1M
2,4,6-Tribromophenol (S)	19	%.	40-125	1	05/14/21 12:12	05/25/21 13:35	118-79-6	1M
624.1 MSV	Analytical Method: EPA 624.1							
	Pace Analytical Services - Minneapolis							
Acetone	ND	ug/L	20.0	1		05/19/21 14:46	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		05/19/21 14:46	107-05-1	N2
Benzene	ND	ug/L	1.0	1		05/19/21 14:46	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		05/19/21 14:46	108-86-1	N2
Bromochloromethane	ND	ug/L	1.0	1		05/19/21 14:46	74-97-5	N2
Bromodichloromethane	ND	ug/L	1.0	1		05/19/21 14:46	75-27-4	
Bromoform	ND	ug/L	4.0	1		05/19/21 14:46	75-25-2	
Bromomethane	ND	ug/L	4.0	1		05/19/21 14:46	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		05/19/21 14:46	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		05/19/21 14:46	104-51-8	N2
sec-Butylbenzene	ND	ug/L	1.0	1		05/19/21 14:46	135-98-8	N2
tert-Butylbenzene	ND	ug/L	1.0	1		05/19/21 14:46	98-06-6	N2
Carbon tetrachloride	ND	ug/L	1.0	1		05/19/21 14:46	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		05/19/21 14:46	108-90-7	
Chloroethane	ND	ug/L	1.0	1		05/19/21 14:46	75-00-3	
Chloroform	ND	ug/L	1.0	1		05/19/21 14:46	67-66-3	
Chloromethane	ND	ug/L	4.0	1		05/19/21 14:46	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		05/19/21 14:46	95-49-8	N2
4-Chlorotoluene	ND	ug/L	1.0	1		05/19/21 14:46	106-43-4	N2
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		05/19/21 14:46	96-12-8	N2
Dibromochloromethane	ND	ug/L	1.0	1		05/19/21 14:46	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		05/19/21 14:46	106-93-4	N2
Dibromomethane	ND	ug/L	4.0	1		05/19/21 14:46	74-95-3	N2
1,2-Dichlorobenzene	ND	ug/L	1.0	1		05/19/21 14:46	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		05/19/21 14:46	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		05/19/21 14:46	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		05/19/21 14:46	75-71-8	N2
1,1-Dichloroethane	ND	ug/L	1.0	1		05/19/21 14:46	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		05/19/21 14:46	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		05/19/21 14:46	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		05/19/21 14:46	156-59-2	N2
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		05/19/21 14:46	156-60-5	
1,2-Dichloropropane	ND	ug/L	4.0	1		05/19/21 14:46	78-87-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
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ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-001 **Lab ID: 10559524001** Collected: 05/09/21 17:20 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
624.1 MSV	Analytical Method: EPA 624.1 Pace Analytical Services - Minneapolis							
1,3-Dichloropropane	ND	ug/L	1.0	1		05/19/21 14:46	142-28-9	N2
2,2-Dichloropropane	ND	ug/L	4.0	1		05/19/21 14:46	594-20-7	N2
1,1-Dichloropropene	ND	ug/L	1.0	1		05/19/21 14:46	563-58-6	N2
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		05/19/21 14:46	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		05/19/21 14:46	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		05/19/21 14:46	60-29-7	N2
Ethylbenzene	ND	ug/L	1.0	1		05/19/21 14:46	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		05/19/21 14:46	87-68-3	N2
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		05/19/21 14:46	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		05/19/21 14:46	99-87-6	N2
Methylene Chloride	ND	ug/L	4.0	1		05/19/21 14:46	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		05/19/21 14:46	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		05/19/21 14:46	1634-04-4	N2
Naphthalene	ND	ug/L	4.0	1		05/19/21 14:46	91-20-3	N2
n-Propylbenzene	ND	ug/L	1.0	1		05/19/21 14:46	103-65-1	N2
Styrene	ND	ug/L	1.0	1		05/19/21 14:46	100-42-5	N2
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		05/19/21 14:46	630-20-6	N2
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		05/19/21 14:46	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		05/19/21 14:46	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		05/19/21 14:46	109-99-9	
Toluene	ND	ug/L	1.0	1		05/19/21 14:46	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		05/19/21 14:46	87-61-6	N2
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		05/19/21 14:46	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		05/19/21 14:46	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		05/19/21 14:46	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		05/19/21 14:46	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		05/19/21 14:46	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		05/19/21 14:46	96-18-4	N2
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		05/19/21 14:46	76-13-1	N2
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		05/19/21 14:46	95-63-6	N2
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		05/19/21 14:46	108-67-8	N2
Vinyl chloride	ND	ug/L	0.40	1		05/19/21 14:46	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		05/19/21 14:46	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		05/19/21 14:46	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		05/19/21 14:46	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	110	%.	75-126	1		05/19/21 14:46	17060-07-0	
Toluene-d8 (S)	115	%.	75-125	1		05/19/21 14:46	2037-26-5	
4-Bromofluorobenzene (S)	98	%.	75-125	1		05/19/21 14:46	460-00-4	
1664B HEM, Oil and Grease	Analytical Method: EPA 1664B OG Pace Analytical Services - Minneapolis							
Oil and Grease	ND	mg/L	5.3	1		05/20/21 14:11		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
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ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-001 **Lab ID: 10559524001** Collected: 05/09/21 17:20 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Minneapolis							
Total Dissolved Solids	**482**	mg/L	10.0	1		05/14/21 18:45		
350.1 Ammonia	Analytical Method: EPA 350.1 Pace Analytical Services - Minneapolis							
Nitrogen, Ammonia	ND	mg/L	0.10	1		05/24/21 14:35	7664-41-7	
5220D COD	Analytical Method: SM 5220D Preparation Method: SM 5220D Pace Analytical Services - Minneapolis							
Chemical Oxygen Demand	**79.9**	mg/L	50.0	1	05/24/21 09:47	05/24/21 17:12		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-002 **Lab ID: 10559524003** Collected: 05/09/21 17:38 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
351.2 TKN Water DU	Analytical Method: EPA 351.2 Preparation Method: EPA 351.2 Pace Analytical Services - Duluth, MN							
Nitrogen, Kjeldahl, Total	**1.4**	mg/L	0.50	1	05/24/21 10:50	05/25/21 09:33	7727-37-9	
5310C Total Org Carbon DU	Analytical Method: SM 5310C-2011 Pace Analytical Services - Duluth, MN							
Total Organic Carbon	**8.9**	mg/L	1.0	1		05/16/21 20:23	7440-44-0	
PCBs(GC) EPA-608.3	Analytical Method: EPA 608.3 Preparation Method: 3510C Pace National - Mt. Juliet							
PCB-1016 (Aroclor 1016)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 12:02	12674-11-2	
PCB-1221 (Aroclor 1221)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 12:02	11104-28-2	
PCB-1232 (Aroclor 1232)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 12:02	11141-16-5	
PCB-1242 (Aroclor 1242)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 12:02	53469-21-9	
PCB-1248 (Aroclor 1248)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 12:02	12672-29-6	
PCB-1254 (Aroclor 1254)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 12:02	11097-69-1	
PCB-1260 (Aroclor 1260)	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 12:02	11096-82-5	
PCB, Total	ND	ug/L	0.500	1	05/18/21 21:50	05/19/21 12:02	1336-36-3	
Surrogates								
Decachlorobiphenyl (S)	26.4	%	10.0-144	1	05/18/21 21:50	05/19/21 12:02	2051-24-3	
Tetrachloro-m-xylene (S)	95.7	%	10.0-135	1	05/18/21 21:50	05/19/21 12:02	877-09-8	
200.8 MET ICPMS	Analytical Method: EPA 200.8 Preparation Method: EPA 200.8 Pace Analytical Services - Minneapolis							
Cadmium	ND	ug/L	0.40	5	05/12/21 15:09	05/18/21 12:07	7440-43-9	D3
Chromium	**50.9**	ug/L	2.5	5	05/12/21 15:09	05/18/21 12:07	7440-47-3	
Lead	**24.0**	ug/L	0.50	5	05/12/21 15:09	05/18/21 12:07	7439-92-1	
625.1 RV MSSV	Analytical Method: EPA 625.1 Preparation Method: EPA 625.1 Pace Analytical Services - Minneapolis							
Acenaphthene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	83-32-9	
Acenaphthylene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	208-96-8	
Anthracene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	120-12-7	
Benzo(a)anthracene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	56-55-3	
Benzo(a)pyrene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	207-08-9	
4-Bromophenylphenyl ether	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	101-55-3	
Butylbenzylphthalate	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	85-68-7	
Carbazole	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	86-74-8	N2
4-Chloro-3-methylphenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	59-50-7	
4-Chloroaniline	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	106-47-8	N2
bis(2-Chloroethoxy)methane	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	108-60-1	
2-Chloronaphthalene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	91-58-7	

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-002 **Lab ID: 10559524003** Collected: 05/09/21 17:38 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625.1 RV MSSV	Analytical Method: EPA 625.1 Preparation Method: EPA 625.1							
	Pace Analytical Services - Minneapolis							
2-Chlorophenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	7005-72-3	
Chrysene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	53-70-3	
Dibenzofuran	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	132-64-9	N2
1,2-Dichlorobenzene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	95-50-1	N2
1,3-Dichlorobenzene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	541-73-1	N2
1,4-Dichlorobenzene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	106-46-7	N2
3,3'-Dichlorobenzidine	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	91-94-1	
2,4-Dichlorophenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	120-83-2	
Diethylphthalate	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	84-66-2	
2,4-Dimethylphenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	105-67-9	
Dimethylphthalate	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	131-11-3	
Di-n-butylphthalate	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	534-52-1	
2,4-Dinitrophenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	606-20-2	
Di-n-octylphthalate	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	117-84-0	
1,2-Diphenylhydrazine	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	122-66-7	N2
bis(2-Ethylhexyl)phthalate	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	117-81-7	
Fluoranthene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	206-44-0	
Fluorene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	87-68-3	
Hexachlorobenzene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	118-74-1	
Hexachloroethane	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	193-39-5	
Isophorone	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	78-59-1	
2-Methylnaphthalene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	91-57-6	N2
2-Methylphenol(o-Cresol)	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	95-48-7	N2
3&4-Methylphenol(m&p Cresol)	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02		N2
Naphthalene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	91-20-3	
2-Nitroaniline	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	88-74-4	N2
3-Nitroaniline	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	99-09-2	N2
4-Nitroaniline	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	100-01-6	N2
Nitrobenzene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	98-95-3	
2-Nitrophenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	88-75-5	
4-Nitrophenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	86-30-6	
Pentachlorophenol	ND	ug/L	19.0	1	05/14/21 12:12	05/25/21 14:02	87-86-5	
Phenanthrene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	85-01-8	
Phenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	108-95-2	
Pyrene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	120-82-1	

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ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-002 **Lab ID: 10559524003** Collected: 05/09/21 17:38 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625.1 RV MSSV	Analytical Method: EPA 625.1 Preparation Method: EPA 625.1 Pace Analytical Services - Minneapolis							
2,4,5-Trichlorophenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	9.5	1	05/14/21 12:12	05/25/21 14:02	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	35	%.	50-125	1	05/14/21 12:12	05/25/21 14:02	4165-60-0	1M
2-Fluorobiphenyl (S)	30	%.	40-125	1	05/14/21 12:12	05/25/21 14:02	321-60-8	1M
p-Terphenyl-d14 (S)	45	%.	56-125	1	05/14/21 12:12	05/25/21 14:02	1718-51-0	1M
Phenol-d6 (S)	25	%.	16-125	1	05/14/21 12:12	05/25/21 14:02	13127-88-3	
2-Fluorophenol (S)	31	%.	30-125	1	05/14/21 12:12	05/25/21 14:02	367-12-4	
2,4,6-Tribromophenol (S)	38	%.	40-125	1	05/14/21 12:12	05/25/21 14:02	118-79-6	1M
624.1 MSV	Analytical Method: EPA 624.1 Pace Analytical Services - Minneapolis							
Acetone	ND	ug/L	20.0	1		05/19/21 15:10	67-64-1	
Allyl chloride	ND	ug/L	4.0	1		05/19/21 15:10	107-05-1	N2
Benzene	ND	ug/L	1.0	1		05/19/21 15:10	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		05/19/21 15:10	108-86-1	N2
Bromochloromethane	ND	ug/L	1.0	1		05/19/21 15:10	74-97-5	N2
Bromodichloromethane	ND	ug/L	1.0	1		05/19/21 15:10	75-27-4	
Bromoform	ND	ug/L	4.0	1		05/19/21 15:10	75-25-2	
Bromomethane	ND	ug/L	4.0	1		05/19/21 15:10	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		05/19/21 15:10	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	1		05/19/21 15:10	104-51-8	N2
sec-Butylbenzene	ND	ug/L	1.0	1		05/19/21 15:10	135-98-8	N2
tert-Butylbenzene	ND	ug/L	1.0	1		05/19/21 15:10	98-06-6	N2
Carbon tetrachloride	ND	ug/L	1.0	1		05/19/21 15:10	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		05/19/21 15:10	108-90-7	
Chloroethane	ND	ug/L	1.0	1		05/19/21 15:10	75-00-3	
Chloroform	ND	ug/L	1.0	1		05/19/21 15:10	67-66-3	
Chloromethane	ND	ug/L	4.0	1		05/19/21 15:10	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		05/19/21 15:10	95-49-8	N2
4-Chlorotoluene	ND	ug/L	1.0	1		05/19/21 15:10	106-43-4	N2
1,2-Dibromo-3-chloropropane	ND	ug/L	4.0	1		05/19/21 15:10	96-12-8	N2
Dibromochloromethane	ND	ug/L	1.0	1		05/19/21 15:10	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		05/19/21 15:10	106-93-4	N2
Dibromomethane	ND	ug/L	4.0	1		05/19/21 15:10	74-95-3	N2
1,2-Dichlorobenzene	ND	ug/L	1.0	1		05/19/21 15:10	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		05/19/21 15:10	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		05/19/21 15:10	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		05/19/21 15:10	75-71-8	N2
1,1-Dichloroethane	ND	ug/L	1.0	1		05/19/21 15:10	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		05/19/21 15:10	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		05/19/21 15:10	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		05/19/21 15:10	156-59-2	N2
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		05/19/21 15:10	156-60-5	
1,2-Dichloropropane	ND	ug/L	4.0	1		05/19/21 15:10	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		05/19/21 15:10	142-28-9	N2

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-002 **Lab ID: 10559524003** Collected: 05/09/21 17:38 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
624.1 MSV	Analytical Method: EPA 624.1							
	Pace Analytical Services - Minneapolis							
2,2-Dichloropropane	ND	ug/L	4.0	1		05/19/21 15:10	594-20-7	N2
1,1-Dichloropropene	ND	ug/L	1.0	1		05/19/21 15:10	563-58-6	N2
cis-1,3-Dichloropropene	ND	ug/L	4.0	1		05/19/21 15:10	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1		05/19/21 15:10	10061-02-6	
Diethyl ether (Ethyl ether)	ND	ug/L	4.0	1		05/19/21 15:10	60-29-7	N2
Ethylbenzene	ND	ug/L	1.0	1		05/19/21 15:10	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		05/19/21 15:10	87-68-3	N2
Isopropylbenzene (Cumene)	ND	ug/L	1.0	1		05/19/21 15:10	98-82-8	
p-Isopropyltoluene	ND	ug/L	1.0	1		05/19/21 15:10	99-87-6	N2
Methylene Chloride	ND	ug/L	4.0	1		05/19/21 15:10	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		05/19/21 15:10	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		05/19/21 15:10	1634-04-4	N2
Naphthalene	ND	ug/L	4.0	1		05/19/21 15:10	91-20-3	N2
n-Propylbenzene	ND	ug/L	1.0	1		05/19/21 15:10	103-65-1	N2
Styrene	ND	ug/L	1.0	1		05/19/21 15:10	100-42-5	N2
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		05/19/21 15:10	630-20-6	N2
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		05/19/21 15:10	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		05/19/21 15:10	127-18-4	
Tetrahydrofuran	ND	ug/L	10.0	1		05/19/21 15:10	109-99-9	
Toluene	ND	ug/L	1.0	1		05/19/21 15:10	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		05/19/21 15:10	87-61-6	N2
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		05/19/21 15:10	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		05/19/21 15:10	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		05/19/21 15:10	79-00-5	
Trichloroethene	ND	ug/L	0.40	1		05/19/21 15:10	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		05/19/21 15:10	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1		05/19/21 15:10	96-18-4	N2
1,1,2-Trichlorotrifluoroethane	ND	ug/L	1.0	1		05/19/21 15:10	76-13-1	N2
1,2,4-Trimethylbenzene	ND	ug/L	1.0	1		05/19/21 15:10	95-63-6	N2
1,3,5-Trimethylbenzene	ND	ug/L	1.0	1		05/19/21 15:10	108-67-8	N2
Vinyl chloride	ND	ug/L	0.40	1		05/19/21 15:10	75-01-4	
Xylene (Total)	ND	ug/L	3.0	1		05/19/21 15:10	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		05/19/21 15:10	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		05/19/21 15:10	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	107	%.	75-126	1		05/19/21 15:10	17060-07-0	
Toluene-d8 (S)	117	%.	75-125	1		05/19/21 15:10	2037-26-5	
4-Bromofluorobenzene (S)	97	%.	75-125	1		05/19/21 15:10	460-00-4	
1664B HEM, Oil and Grease	Analytical Method: EPA 1664B OG							
	Pace Analytical Services - Minneapolis							
Oil and Grease	ND	mg/L	5.1	1		05/20/21 14:11		
2540C Total Dissolved Solids	Analytical Method: SM 2540C							
	Pace Analytical Services - Minneapolis							
Total Dissolved Solids	**131**	mg/L	10.0	1		05/14/21 18:45		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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ANALYTICAL RESULTS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Sample: E21-0193-002 **Lab ID: 10559524003** Collected: 05/09/21 17:38 Received: 05/11/21 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
350.1 Ammonia	Analytical Method: EPA 350.1 Pace Analytical Services - Minneapolis							
Nitrogen, Ammonia	ND	mg/L	0.10	1		05/24/21 14:36	7664-41-7	
5220D COD	Analytical Method: SM 5220D Preparation Method: SM 5220D Pace Analytical Services - Minneapolis							
Chemical Oxygen Demand	**97.3**	mg/L	50.0	1	05/24/21 09:47	05/24/21 17:12		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 744115
QC Batch Method: EPA 351.2
Analysis Method: EPA 351.2
Analysis Description: 351.2 TKN Water DU
Laboratory: Pace Analytical Services - Duluth, MN
Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: 3968741 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	ND	0.50	05/25/21 09:28	

LABORATORY CONTROL SAMPLE: 3968742

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Kjeldahl, Total	mg/L	10	10.3	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3968743 3968744

Parameter	Units	10559524001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	1.2	10	10	11.7	11.7	106	105	90-110	0	10	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3968745 3968746

Parameter	Units	10559882001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Kjeldahl, Total	mg/L	ND	10	10	10.5	10.9	103	107	90-110	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

Pace Analytical Services, LLC
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QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 742391
QC Batch Method: SM 5310C-2011
Analysis Method: SM 5310C-2011
Analysis Description: 5310C Total Org Carbon DU
Laboratory: Pace Analytical Services - Duluth, MN
Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: 3959524 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Organic Carbon	mg/L	ND	1.0	05/16/21 18:44	

LABORATORY CONTROL SAMPLE: 3959525

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Organic Carbon	mg/L	25	26.1	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3959526 3959527

Parameter	Units	10560035001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Total Organic Carbon	mg/L	ND	25	25	26.7	27.0	105	106	80-120	1	20	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 1671612
QC Batch Method: 3510C
Analysis Method: EPA 608.3
Analysis Description: PCBs(GC) EPA-608.3
Laboratory: Pace National - Mt. Juliet

Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: R3657635-1 Matrix: Water

Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
PCB-1260 (Aroclor 1260)	ug/L	ND	0.500	05/19/21 10:09	
PCB-1016 (Aroclor 1016)	ug/L	ND	0.500	05/19/21 10:09	
PCB-1221 (Aroclor 1221)	ug/L	ND	0.500	05/19/21 10:09	
PCB-1232 (Aroclor 1232)	ug/L	ND	0.500	05/19/21 10:09	
PCB-1242 (Aroclor 1242)	ug/L	ND	0.500	05/19/21 10:09	
PCB-1248 (Aroclor 1248)	ug/L	ND	0.500	05/19/21 10:09	
PCB-1254 (Aroclor 1254)	ug/L	ND	0.500	05/19/21 10:09	
PCB, Total	ug/L	ND	0.500	05/19/21 10:09	
Decachlorobiphenyl (S)	%	63.6	10.0-144	05/19/21 10:09	
Tetrachloro-m-xylene (S)	%	102	10.0-135	05/19/21 10:09	

LABORATORY CONTROL SAMPLE & LCSD: R3657635-2 R3657635-3

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
PCB-1260 (Aroclor 1260)	ug/L	2.50	1.66	2.05	66.4	82.0	8.00-140	21.0	38	
PCB-1016 (Aroclor 1016)	ug/L	2.50	2.30	2.82	92.0	113	50.0-140	20.3	36	
Decachlorobiphenyl (S)	%				57.6	45.8	10.0-144			
Tetrachloro-m-xylene (S)	%				82.7	99.3	10.0-135			

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: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 741405
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: 3953727 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cadmium	ug/L	ND	0.080	05/18/21 11:17	
Chromium	ug/L	ND	0.50	05/18/21 11:17	
Copper	ug/L	ND	1.0	05/18/21 11:17	
Lead	ug/L	ND	0.10	05/18/21 11:17	

LABORATORY CONTROL SAMPLE: 3953728

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	100	97.3	97	85-115	
Chromium	ug/L	100	109	109	85-115	
Copper	ug/L	100	104	104	85-115	
Lead	ug/L	100	103	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3953729 3953730

Parameter	Units	10557912001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	ND	100	100	94.8	85.2	95	85	70-130	11	20	
Chromium	ug/L	8.8	100	100	110	98.4	101	90	70-130	11	20	
Copper	ug/L	24.2	100	100	127	113	103	89	70-130	11	20	
Lead	ug/L	ND	100	100	97.8	87.1	97	87	70-130	12	20	

MATRIX SPIKE SAMPLE: 3953731

Parameter	Units	10559524003 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Cadmium	ug/L	ND	100	95.8	96	70-130	
Chromium	ug/L	50.9	100	154	103	70-130	
Copper	ug/L	20.8	100	126	106	70-130	
Lead	ug/L	24.0	100	130	106	70-130	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 743168
QC Batch Method: EPA 624.1
Analysis Method: EPA 624.1
Analysis Description: 6241 MSV
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: 3963153 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	05/19/21 13:34	N2
1,1,1-Trichloroethane	ug/L	ND	1.0	05/19/21 13:34	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	05/19/21 13:34	
1,1,2-Trichloroethane	ug/L	ND	1.0	05/19/21 13:34	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	1.0	05/19/21 13:34	N2
1,1-Dichloroethane	ug/L	ND	1.0	05/19/21 13:34	
1,1-Dichloroethene	ug/L	ND	1.0	05/19/21 13:34	
1,1-Dichloropropene	ug/L	ND	1.0	05/19/21 13:34	N2
1,2,3-Trichlorobenzene	ug/L	ND	1.0	05/19/21 13:34	N2
1,2,3-Trichloropropane	ug/L	ND	4.0	05/19/21 13:34	N2
1,2,4-Trichlorobenzene	ug/L	ND	1.0	05/19/21 13:34	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	05/19/21 13:34	N2
1,2-Dibromo-3-chloropropane	ug/L	ND	4.0	05/19/21 13:34	N2
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	05/19/21 13:34	N2
1,2-Dichlorobenzene	ug/L	ND	1.0	05/19/21 13:34	
1,2-Dichloroethane	ug/L	ND	1.0	05/19/21 13:34	
1,2-Dichloropropane	ug/L	ND	4.0	05/19/21 13:34	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	05/19/21 13:34	N2
1,3-Dichlorobenzene	ug/L	ND	1.0	05/19/21 13:34	
1,3-Dichloropropane	ug/L	ND	1.0	05/19/21 13:34	N2
1,4-Dichlorobenzene	ug/L	ND	1.0	05/19/21 13:34	
2,2-Dichloropropane	ug/L	ND	4.0	05/19/21 13:34	N2
2-Butanone (MEK)	ug/L	ND	5.0	05/19/21 13:34	
2-Chlorotoluene	ug/L	ND	1.0	05/19/21 13:34	N2
4-Chlorotoluene	ug/L	ND	1.0	05/19/21 13:34	N2
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	05/19/21 13:34	
Acetone	ug/L	ND	20.0	05/19/21 13:34	
Allyl chloride	ug/L	ND	4.0	05/19/21 13:34	N2
Benzene	ug/L	ND	1.0	05/19/21 13:34	
Bromobenzene	ug/L	ND	1.0	05/19/21 13:34	N2
Bromochloromethane	ug/L	ND	1.0	05/19/21 13:34	N2
Bromodichloromethane	ug/L	ND	1.0	05/19/21 13:34	
Bromoform	ug/L	ND	4.0	05/19/21 13:34	
Bromomethane	ug/L	ND	4.0	05/19/21 13:34	
Carbon tetrachloride	ug/L	ND	1.0	05/19/21 13:34	
Chlorobenzene	ug/L	ND	1.0	05/19/21 13:34	
Chloroethane	ug/L	ND	1.0	05/19/21 13:34	
Chloroform	ug/L	ND	1.0	05/19/21 13:34	
Chloromethane	ug/L	ND	4.0	05/19/21 13:34	
cis-1,2-Dichloroethene	ug/L	ND	1.0	05/19/21 13:34	N2

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

METHOD BLANK: 3963153 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
cis-1,3-Dichloropropene	ug/L	ND	4.0	05/19/21 13:34	
Dibromochloromethane	ug/L	ND	1.0	05/19/21 13:34	
Dibromomethane	ug/L	ND	4.0	05/19/21 13:34	N2
Dichlorodifluoromethane	ug/L	ND	1.0	05/19/21 13:34	N2
Diethyl ether (Ethyl ether)	ug/L	ND	4.0	05/19/21 13:34	N2
Ethylbenzene	ug/L	ND	1.0	05/19/21 13:34	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	05/19/21 13:34	N2
Isopropylbenzene (Cumene)	ug/L	ND	1.0	05/19/21 13:34	
m&p-Xylene	ug/L	ND	2.0	05/19/21 13:34	
Methyl-tert-butyl ether	ug/L	ND	1.0	05/19/21 13:34	N2
Methylene Chloride	ug/L	ND	4.0	05/19/21 13:34	
n-Butylbenzene	ug/L	ND	1.0	05/19/21 13:34	N2
n-Propylbenzene	ug/L	ND	1.0	05/19/21 13:34	N2
Naphthalene	ug/L	ND	4.0	05/19/21 13:34	N2
o-Xylene	ug/L	ND	1.0	05/19/21 13:34	
p-Isopropyltoluene	ug/L	ND	1.0	05/19/21 13:34	N2
sec-Butylbenzene	ug/L	ND	1.0	05/19/21 13:34	N2
Styrene	ug/L	ND	1.0	05/19/21 13:34	N2
tert-Butylbenzene	ug/L	ND	1.0	05/19/21 13:34	N2
Tetrachloroethene	ug/L	ND	1.0	05/19/21 13:34	
Tetrahydrofuran	ug/L	ND	10.0	05/19/21 13:34	
Toluene	ug/L	ND	1.0	05/19/21 13:34	
trans-1,2-Dichloroethene	ug/L	ND	1.0	05/19/21 13:34	
trans-1,3-Dichloropropene	ug/L	ND	4.0	05/19/21 13:34	
Trichloroethene	ug/L	ND	0.40	05/19/21 13:34	
Trichlorofluoromethane	ug/L	ND	1.0	05/19/21 13:34	
Vinyl chloride	ug/L	ND	0.40	05/19/21 13:34	
Xylene (Total)	ug/L	ND	3.0	05/19/21 13:34	
1,2-Dichloroethane-d4 (S)	%.	108	75-126	05/19/21 13:34	
4-Bromofluorobenzene (S)	%.	99	75-125	05/19/21 13:34	
Toluene-d8 (S)	%.	115	75-125	05/19/21 13:34	

LABORATORY CONTROL SAMPLE: 3963154

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	20	20.1	101	70-130	N2
1,1,1-Trichloroethane	ug/L	20	20.3	101	70-130	
1,1,2,2-Tetrachloroethane	ug/L	20	20.4	102	60-140	
1,1,2-Trichloroethane	ug/L	20	19.9	100	70-130	
1,1,2-Trichlorotrifluoroethane	ug/L	20	20.3	102	70-130	N2
1,1-Dichloroethane	ug/L	20	20.9	104	70-130	
1,1-Dichloroethene	ug/L	20	19.8	99	50-150	
1,1-Dichloropropene	ug/L	20	20.4	102	70-130	N2
1,2,3-Trichlorobenzene	ug/L	20	17.5	88	70-130	N2

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

LABORATORY CONTROL SAMPLE: 3963154

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,3-Trichloropropane	ug/L	20	19.0	95	70-130	N2
1,2,4-Trichlorobenzene	ug/L	20	17.1	86	70-130	
1,2,4-Trimethylbenzene	ug/L	20	18.1	90	70-130	N2
1,2-Dibromo-3-chloropropane	ug/L	50	50.3	101	70-130	N2
1,2-Dibromoethane (EDB)	ug/L	20	20.0	100	70-130	N2
1,2-Dichlorobenzene	ug/L	20	18.2	91	65-135	
1,2-Dichloroethane	ug/L	20	19.1	96	70-130	
1,2-Dichloropropane	ug/L	20	21.1	105	35-165	
1,3,5-Trimethylbenzene	ug/L	20	18.6	93	70-130	N2
1,3-Dichlorobenzene	ug/L	20	18.8	94	70-130	
1,3-Dichloropropane	ug/L	20	20.7	103	70-130	N2
1,4-Dichlorobenzene	ug/L	20	18.0	90	65-135	
2,2-Dichloropropane	ug/L	20	20.4	102	70-130	N2
2-Butanone (MEK)	ug/L	100	118	118	70-130	
2-Chlorotoluene	ug/L	20	18.0	90	70-130	N2
4-Chlorotoluene	ug/L	20	18.0	90	70-130	N2
4-Methyl-2-pentanone (MIBK)	ug/L	100	109	109	70-130	
Acetone	ug/L	100	95.5	96	70-130	
Allyl chloride	ug/L	20	22.1	110	70-130	N2
Benzene	ug/L	20	20.1	100	65-135	
Bromobenzene	ug/L	20	18.1	91	70-130	N2
Bromochloromethane	ug/L	20	18.5	93	70-130	N2
Bromodichloromethane	ug/L	20	20.9	104	65-135	
Bromoform	ug/L	20	20.0	100	70-130	
Bromomethane	ug/L	20	19.5	97	30-185	
Carbon tetrachloride	ug/L	20	20.4	102	70-130	
Chlorobenzene	ug/L	20	18.5	93	65-135	
Chloroethane	ug/L	20	23.1	115	40-160	
Chloroform	ug/L	20	19.4	97	70-135	
Chloromethane	ug/L	20	20.8	104	30-205	
cis-1,2-Dichloroethene	ug/L	20	18.7	93	70-130	N2
cis-1,3-Dichloropropene	ug/L	20	20.8	104	30-175	
Dibromochloromethane	ug/L	20	21.2	106	70-135	
Dibromomethane	ug/L	20	20.2	101	70-130	N2
Dichlorodifluoromethane	ug/L	20	23.0	115	70-130	N2
Diethyl ether (Ethyl ether)	ug/L	20	20.2	101	70-130	N2
Ethylbenzene	ug/L	20	18.2	91	60-140	
Hexachloro-1,3-butadiene	ug/L	20	20.8	104	70-130	N2
Isopropylbenzene (Cumene)	ug/L	20	17.0	85	70-130	
m&p-Xylene	ug/L	40	38.6	97	70-130	
Methyl-tert-butyl ether	ug/L	20	19.9	99	70-130	N2
Methylene Chloride	ug/L	20	20.3	101	60-140	
n-Butylbenzene	ug/L	20	19.0	95	70-130	N2
n-Propylbenzene	ug/L	20	18.5	92	70-130	N2
Naphthalene	ug/L	20	16.0	80	70-130	N2
o-Xylene	ug/L	20	15.9	79	70-130	
p-Isopropyltoluene	ug/L	20	19.1	96	70-130	N2

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

LABORATORY CONTROL SAMPLE: 3963154

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
sec-Butylbenzene	ug/L	20	18.7	93	70-130	N2
Styrene	ug/L	20	17.4	87	70-130	N2
tert-Butylbenzene	ug/L	20	18.2	91	70-130	N2
Tetrachloroethene	ug/L	20	19.0	95	70-130	
Tetrahydrofuran	ug/L	200	158	79	70-130	
Toluene	ug/L	20	19.1	95	70-130	
trans-1,2-Dichloroethene	ug/L	20	19.4	97	70-130	
trans-1,3-Dichloropropene	ug/L	20	21.5	108	50-150	
Trichloroethene	ug/L	20	19.4	97	65-135	
Trichlorofluoromethane	ug/L	20	23.0	115	50-150	
Vinyl chloride	ug/L	20	22.2	111	30-195	
Xylene (Total)	ug/L	60	54.5	91	70-130	
1,2-Dichloroethane-d4 (S)	%.			107	75-126	
4-Bromofluorobenzene (S)	%.			91	75-125	
Toluene-d8 (S)	%.			100	75-125	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3963155 3963156

Parameter	Units	10559468001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	23.2	20.9	116	104	61-130	11	30	N2
1,1,1-Trichloroethane	ug/L	ND	20	20	25.1	21.6	126	108	62-139	15	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	23.8	21.9	119	110	51-133	8	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	22.3	21.2	111	106	58-128	5	30	
1,1,2-Trichlorotrifluoroethane	ug/L	ND	20	20	26.2	23.2	131	116	68-140	12	30	N2
1,1-Dichloroethane	ug/L	ND	20	20	24.5	21.4	123	107	53-142	14	30	
1,1-Dichloroethene	ug/L	ND	20	20	24.8	20.6	124	103	60-135	18	30	
1,1-Dichloropropene	ug/L	ND	20	20	25.0	21.2	125	106	56-138	16	30	N2
1,2,3-Trichlorobenzene	ug/L	ND	20	20	21.5	18.4	107	92	62-131	15	30	N2
1,2,3-Trichloropropane	ug/L	ND	20	20	23.4	21.1	117	105	53-129	11	30	N2
1,2,4-Trichlorobenzene	ug/L	ND	20	20	20.4	18.5	102	93	58-134	10	30	
1,2,4-Trimethylbenzene	ug/L	ND	20	20	22.4	21.5	112	107	67-132	4	30	N2
1,2-Dibromo-3-chloropropane	ug/L	ND	50	50	58.8	58.9	118	118	50-130	0	30	N2
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	22.7	20.5	114	102	56-131	11	30	N2
1,2-Dichlorobenzene	ug/L	ND	20	20	21.6	20.6	108	103	66-125	5	30	
1,2-Dichloroethane	ug/L	ND	20	20	21.0	19.0	104	94	51-131	10	30	
1,2-Dichloropropane	ug/L	ND	20	20	23.7	21.3	119	106	58-129	11	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	23.0	21.5	115	107	61-139	7	30	N2
1,3-Dichlorobenzene	ug/L	ND	20	20	22.2	21.3	111	106	70-126	4	30	
1,3-Dichloropropane	ug/L	ND	20	20	23.1	21.4	115	107	56-129	8	30	N2
1,4-Dichlorobenzene	ug/L	ND	20	20	21.5	20.3	107	101	66-125	6	30	
2,2-Dichloropropane	ug/L	ND	20	20	24.5	21.4	122	107	56-142	13	30	N2
2-Butanone (MEK)	ug/L	ND	100	100	111	108	109	105	38-128	3	30	
2-Chlorotoluene	ug/L	ND	20	20	22.0	21.3	110	107	68-129	3	30	N2

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3963155 3963156

Parameter	Units	10559468001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Chlorotoluene	ug/L	ND	20	20	21.8	20.6	109	103	69-128	6	30	N2
4-Methyl-2-pentanone (MIBK)	ug/L	ND	100	100	124	122	124	122	42-141	2	30	
Acetone	ug/L	ND	100	100	90.4	84.8	78	73	45-125	6	30	
Allyl chloride	ug/L	ND	20	20	26.9	23.6	134	118	42-149	13	30	N2
Benzene	ug/L	ND	20	20	23.7	20.8	119	104	56-131	13	30	
Bromobenzene	ug/L	ND	20	20	21.4	19.8	107	99	57-125	8	30	N2
Bromochloromethane	ug/L	ND	20	20	21.7	20.2	108	101	59-134	7	30	N2
Bromodichloromethane	ug/L	ND	20	20	23.7	20.8	119	104	59-134	13	30	
Bromoform	ug/L	ND	20	20	22.1	21.0	110	105	49-144	5	30	
Bromomethane	ug/L	ND	20	20	20.9	21.7	104	108	31-150	4	30	
Carbon tetrachloride	ug/L	ND	20	20	26.8	22.2	134	111	64-135	18	30	
Chlorobenzene	ug/L	ND	20	20	22.0	19.9	110	100	65-125	10	30	
Chloroethane	ug/L	ND	20	20	21.1	22.6	106	113	65-135	7	30	
Chloroform	ug/L	ND	20	20	22.8	20.4	114	102	53-134	11	30	
Chloromethane	ug/L	ND	20	20	20.1	20.5	100	102	59-136	2	30	
cis-1,2-Dichloroethene	ug/L	ND	20	20	22.4	19.7	112	99	53-137	13	30	N2
cis-1,3-Dichloropropene	ug/L	ND	20	20	24.6	22.1	123	110	53-132	11	30	
Dibromochloromethane	ug/L	ND	20	20	25.1	22.9	125	115	58-136	9	30	
Dibromomethane	ug/L	ND	20	20	23.2	20.4	116	102	58-130	13	30	N2
Dichlorodifluoromethane	ug/L	ND	20	20	23.5	24.7	117	124	61-138	5	30	N2
Diethyl ether (Ethyl ether)	ug/L	ND	20	20	23.2	21.5	116	107	52-133	8	30	N2
Ethylbenzene	ug/L	ND	20	20	21.5	20.4	107	102	60-129	5	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	27.0	20.0	135	100	60-138	30	30	N2
Isopropylbenzene (Cumene)	ug/L	ND	20	20	19.8	19.9	99	99	71-135	0	30	
m&p-Xylene	ug/L	ND	40	40	46.0	38.6	114	96	66-134	17	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	22.6	21.6	113	108	44-137	5	30	N2
Methylene Chloride	ug/L	ND	20	20	22.5	20.7	113	104	58-128	8	30	
n-Butylbenzene	ug/L	ND	20	20	24.2	21.5	121	107	62-144	12	30	N2
n-Propylbenzene	ug/L	ND	20	20	23.1	21.8	115	109	66-133	6	30	N2
Naphthalene	ug/L	ND	20	20	19.4	18.9	97	94	53-129	2	30	N2
o-Xylene	ug/L	ND	20	20	20.1	18.1	100	90	66-130	11	30	
p-Isopropyltoluene	ug/L	ND	20	20	24.4	22.1	122	111	73-134	10	30	N2
sec-Butylbenzene	ug/L	ND	20	20	24.0	21.9	120	110	70-136	9	30	N2
Styrene	ug/L	ND	20	20	20.2	19.0	101	95	67-130	6	30	N2
tert-Butylbenzene	ug/L	ND	20	20	23.2	20.9	116	105	65-136	10	30	N2
Tetrachloroethene	ug/L	ND	20	20	23.3	21.3	116	106	60-137	9	30	
Tetrahydrofuran	ug/L	ND	200	200	185	165	93	82	44-135	12	30	
Toluene	ug/L	ND	20	20	22.6	20.7	113	104	59-126	9	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	23.3	20.6	117	103	57-133	12	30	
trans-1,3-Dichloropropene	ug/L	ND	20	20	24.6	22.9	123	114	55-138	7	30	
Trichloroethene	ug/L	ND	20	20	23.7	20.2	118	101	61-140	16	30	
Trichlorofluoromethane	ug/L	ND	20	20	22.7	23.7	114	119	64-143	4	30	
Vinyl chloride	ug/L	ND	20	20	22.3	22.3	111	112	60-133	0	30	
Xylene (Total)	ug/L	ND	60	60	66.1	56.7	110	94	67-132	15	30	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3963155 3963156

Parameter	Units	10559468001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2-Dichloroethane-d4 (S)	%.						103	104	75-126			
4-Bromofluorobenzene (S)	%.						94	95	75-125			
Toluene-d8 (S)	%.						101	104	75-125			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 742117
QC Batch Method: EPA 625.1
Analysis Method: EPA 625.1
Analysis Description: 625.1 RV MSSV
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: 3957544 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	10.0	05/25/21 12:42	
1,2-Dichlorobenzene	ug/L	ND	10.0	05/25/21 12:42	N2
1,2-Diphenylhydrazine	ug/L	ND	10.0	05/25/21 12:42	N2
1,3-Dichlorobenzene	ug/L	ND	10.0	05/25/21 12:42	N2
1,4-Dichlorobenzene	ug/L	ND	10.0	05/25/21 12:42	N2
2,4,5-Trichlorophenol	ug/L	ND	10.0	05/25/21 12:42	
2,4,6-Trichlorophenol	ug/L	ND	10.0	05/25/21 12:42	
2,4-Dichlorophenol	ug/L	ND	10.0	05/25/21 12:42	
2,4-Dimethylphenol	ug/L	ND	10.0	05/25/21 12:42	
2,4-Dinitrophenol	ug/L	ND	10.0	05/25/21 12:42	
2,4-Dinitrotoluene	ug/L	ND	10.0	05/25/21 12:42	
2,6-Dinitrotoluene	ug/L	ND	10.0	05/25/21 12:42	
2-Chloronaphthalene	ug/L	ND	10.0	05/25/21 12:42	
2-Chlorophenol	ug/L	ND	10.0	05/25/21 12:42	
2-Methylnaphthalene	ug/L	ND	10.0	05/25/21 12:42	N2
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	05/25/21 12:42	N2
2-Nitroaniline	ug/L	ND	10.0	05/25/21 12:42	N2
2-Nitrophenol	ug/L	ND	10.0	05/25/21 12:42	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	05/25/21 12:42	N2
3,3'-Dichlorobenzidine	ug/L	ND	10.0	05/25/21 12:42	
3-Nitroaniline	ug/L	ND	10.0	05/25/21 12:42	N2
4,6-Dinitro-2-methylphenol	ug/L	ND	10.0	05/25/21 12:42	
4-Bromophenylphenyl ether	ug/L	ND	10.0	05/25/21 12:42	
4-Chloro-3-methylphenol	ug/L	ND	10.0	05/25/21 12:42	
4-Chloroaniline	ug/L	ND	10.0	05/25/21 12:42	N2
4-Chlorophenylphenyl ether	ug/L	ND	10.0	05/25/21 12:42	
4-Nitroaniline	ug/L	ND	10.0	05/25/21 12:42	N2
4-Nitrophenol	ug/L	ND	10.0	05/25/21 12:42	
Acenaphthene	ug/L	ND	10.0	05/25/21 12:42	
Acenaphthylene	ug/L	ND	10.0	05/25/21 12:42	
Anthracene	ug/L	ND	10.0	05/25/21 12:42	
Benzo(a)anthracene	ug/L	ND	10.0	05/25/21 12:42	
Benzo(a)pyrene	ug/L	ND	10.0	05/25/21 12:42	
Benzo(b)fluoranthene	ug/L	ND	10.0	05/25/21 12:42	
Benzo(g,h,i)perylene	ug/L	ND	10.0	05/25/21 12:42	
Benzo(k)fluoranthene	ug/L	ND	10.0	05/25/21 12:42	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	05/25/21 12:42	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	05/25/21 12:42	
bis(2-Chloroisopropyl) ether	ug/L	ND	10.0	05/25/21 12:42	
bis(2-Ethylhexyl)phthalate	ug/L	ND	10.0	05/25/21 12:42	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

METHOD BLANK: 3957544 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/L	ND	10.0	05/25/21 12:42	
Carbazole	ug/L	ND	10.0	05/25/21 12:42	N2
Chrysene	ug/L	ND	10.0	05/25/21 12:42	
Di-n-butylphthalate	ug/L	ND	10.0	05/25/21 12:42	
Di-n-octylphthalate	ug/L	ND	10.0	05/25/21 12:42	
Dibenz(a,h)anthracene	ug/L	ND	10.0	05/25/21 12:42	
Dibenzofuran	ug/L	ND	10.0	05/25/21 12:42	N2
Diethylphthalate	ug/L	ND	10.0	05/25/21 12:42	
Dimethylphthalate	ug/L	ND	10.0	05/25/21 12:42	
Fluoranthene	ug/L	ND	10.0	05/25/21 12:42	
Fluorene	ug/L	ND	10.0	05/25/21 12:42	
Hexachloro-1,3-butadiene	ug/L	ND	10.0	05/25/21 12:42	
Hexachlorobenzene	ug/L	ND	10.0	05/25/21 12:42	
Hexachloroethane	ug/L	ND	10.0	05/25/21 12:42	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	05/25/21 12:42	
Isophorone	ug/L	ND	10.0	05/25/21 12:42	
N-Nitroso-di-n-propylamine	ug/L	ND	10.0	05/25/21 12:42	
N-Nitrosodimethylamine	ug/L	ND	10.0	05/25/21 12:42	
N-Nitrosodiphenylamine	ug/L	ND	10.0	05/25/21 12:42	
Naphthalene	ug/L	ND	10.0	05/25/21 12:42	
Nitrobenzene	ug/L	ND	10.0	05/25/21 12:42	
Pentachlorophenol	ug/L	ND	20.0	05/25/21 12:42	
Phenanthrene	ug/L	ND	10.0	05/25/21 12:42	
Phenol	ug/L	ND	10.0	05/25/21 12:42	
Pyrene	ug/L	ND	10.0	05/25/21 12:42	
2,4,6-Tribromophenol (S)	%.	59	40-125	05/25/21 12:42	
2-Fluorobiphenyl (S)	%.	53	40-125	05/25/21 12:42	
2-Fluorophenol (S)	%.	33	30-125	05/25/21 12:42	
Nitrobenzene-d5 (S)	%.	63	50-125	05/25/21 12:42	
p-Terphenyl-d14 (S)	%.	82	56-125	05/25/21 12:42	
Phenol-d6 (S)	%.	23	16-125	05/25/21 12:42	

LABORATORY CONTROL SAMPLE & LCSD: 3957545 3957546

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	21.7	22.3	43	45	32-125	3	20	
1,2-Dichlorobenzene	ug/L	50	22.8	23.7	46	47	31-125	4	20	N2
1,2-Diphenylhydrazine	ug/L	50	33.1	34.3	66	69	50-125	4	20	N2
1,3-Dichlorobenzene	ug/L	50	22.6	22.2	45	44	30-125	2	20	N2
1,4-Dichlorobenzene	ug/L	50	20.8	22.0	42	44	30-125	5	20	N2
2,4,5-Trichlorophenol	ug/L	50	30.0	30.2	60	60	46-125	1	20	
2,4,6-Trichlorophenol	ug/L	50	29.6	32.4	59	65	45-125	9	20	
2,4-Dichlorophenol	ug/L	50	28.5	29.2	57	58	48-125	2	20	
2,4-Dimethylphenol	ug/L	50	27.4	27.4	55	55	46-125	0	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

LABORATORY CONTROL SAMPLE & LCSD:		3957545	3957546							
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4-Dinitrophenol	ug/L	50	35.8	31.5	72	63	30-125	13	20	
2,4-Dinitrotoluene	ug/L	50	40.7	37.6	81	75	49-125	8	20	
2,6-Dinitrotoluene	ug/L	50	35.1	37.6	70	75	48-125	7	20	
2-Chloronaphthalene	ug/L	50	25.6	29.0	51	58	43-125	12	20	
2-Chlorophenol	ug/L	50	24.7	26.3	49	53	44-125	6	20	
2-Methylnaphthalene	ug/L	50	23.4	25.9	47	52	42-125	10	20	N2
2-Methylphenol(o-Cresol)	ug/L	50	23.7	23.1	47	46	37-125	2	20	N2
2-Nitroaniline	ug/L	50	35.2	37.7	70	75	45-125	7	20	N2
2-Nitrophenol	ug/L	50	30.3	30.5	61	61	50-125	1	20	
3&4-Methylphenol(m&p Cresol)	ug/L	50	20.5	21.5	41	43	33-125	5	20	N2
3,3'-Dichlorobenzidine	ug/L	50	37.4	36.5	75	73	47-125	2	20	
3-Nitroaniline	ug/L	50	37.0	38.0	74	76	44-125	3	20	N2
4,6-Dinitro-2-methylphenol	ug/L	50	39.4	35.1	79	70	41-125	11	20	
4-Bromophenylphenyl ether	ug/L	50	32.6	34.3	65	69	52-125	5	20	
4-Chloro-3-methylphenol	ug/L	50	27.4	27.9	55	56	47-125	2	20	
4-Chloroaniline	ug/L	50	26.8	28.5	54	57	32-125	6	20	N2
4-Chlorophenylphenyl ether	ug/L	50	30.8	33.7	62	67	47-125	9	20	
4-Nitroaniline	ug/L	50	41.6	39.5	83	79	47-125	5	20	N2
4-Nitrophenol	ug/L	50	15.3	15.3	31	31	30-125	0	20	
Acenaphthene	ug/L	50	26.3	29.0	53	58	46-125	10	20	
Acenaphthylene	ug/L	50	28.8	31.7	58	63	30-125	10	20	
Anthracene	ug/L	50	34.7	34.4	69	69	53-125	1	20	
Benzo(a)anthracene	ug/L	50	38.1	37.8	76	76	52-125	1	20	
Benzo(a)pyrene	ug/L	50	43.1	40.6	86	81	60-125	6	20	
Benzo(b)fluoranthene	ug/L	50	40.7	38.1	81	76	59-125	7	20	
Benzo(g,h,i)perylene	ug/L	50	40.8	40.3	82	81	53-125	1	20	
Benzo(k)fluoranthene	ug/L	50	40.8	39.6	82	79	59-125	3	20	
bis(2-Chloroethoxy)methane	ug/L	50	31.4	33.0	63	66	51-125	5	20	
bis(2-Chloroethyl) ether	ug/L	50	29.6	31.6	59	63	50-125	7	20	
bis(2-Chloroisopropyl) ether	ug/L	50	27.9	30.1	56	60	48-125	7	20	
bis(2-Ethylhexyl)phthalate	ug/L	50	41.1	37.8	82	76	55-125	9	20	
Butylbenzylphthalate	ug/L	50	39.1	38.5	78	77	55-125	1	20	
Carbazole	ug/L	50	38.2	37.6	76	75	58-125	2	20	N2
Chrysene	ug/L	50	37.8	38.4	76	77	51-125	2	20	
Di-n-butylphthalate	ug/L	50	37.3	37.0	75	74	59-125	1	20	
Di-n-octylphthalate	ug/L	50	40.4	39.3	81	79	57-125	3	20	
Dibenz(a,h)anthracene	ug/L	50	40.5	39.7	81	79	55-125	2	20	
Dibenzofuran	ug/L	50	29.9	32.8	60	66	49-125	9	20	N2
Diethylphthalate	ug/L	50	36.5	35.6	73	71	52-125	2	20	
Dimethylphthalate	ug/L	50	33.4	35.1	67	70	50-125	5	20	
Fluoranthene	ug/L	50	39.7	37.0	79	74	58-125	7	20	
Fluorene	ug/L	50	31.6	32.6	63	65	51-125	3	20	
Hexachloro-1,3-butadiene	ug/L	50	19.8	20.7	40	41	30-125	4	20	
Hexachlorobenzene	ug/L	50	34.3	34.1	69	68	50-125	1	20	
Hexachloroethane	ug/L	50	20.1	20.8	40	42	30-125	3	20	
Indeno(1,2,3-cd)pyrene	ug/L	50	40.4	39.1	81	78	56-125	3	20	
Isophorone	ug/L	50	29.5	31.3	59	63	46-125	6	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

LABORATORY CONTROL SAMPLE & LCSD: 3957545 3957546

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
N-Nitroso-di-n-propylamine	ug/L	50	31.0	33.5	62	67	50-125	8	20	
N-Nitrosodimethylamine	ug/L	50	19.9	20.2	40	40	32-125	2	20	
N-Nitrosodiphenylamine	ug/L	50	30.2	29.8	60	60	47-125	1	20	
Naphthalene	ug/L	50	25.4	26.4	51	53	42-125	4	20	
Nitrobenzene	ug/L	50	31.1	32.5	62	65	51-125	4	20	
Pentachlorophenol	ug/L	50	39.6	37.2	79	74	51-125	6	20	
Phenanthrene	ug/L	50	35.8	35.3	72	71	55-125	1	20	
Phenol	ug/L	50	11.9	12.1	24	24	15-125	2	20	
Pyrene	ug/L	50	39.5	37.6	79	75	51-125	5	20	
2,4,6-Tribromophenol (S)	%.				68	70	40-125			
2-Fluorobiphenyl (S)	%.				49	55	40-125			
2-Fluorophenol (S)	%.				32	33	30-125			
Nitrobenzene-d5 (S)	%.				62	65	50-125			
p-Terphenyl-d14 (S)	%.				76	78	56-125			
Phenol-d6 (S)	%.				23	24	16-125			

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 743416
QC Batch Method: EPA 1664B OG
Analysis Method: EPA 1664B OG
Analysis Description: 1664B HEM, Oil and Grease
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: 3964508 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Oil and Grease	mg/L	ND	5.0	05/20/21 11:18	

LABORATORY CONTROL SAMPLE: 3964509

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	40	37.4	94	78-114	

MATRIX SPIKE SAMPLE: 3964510

Parameter	Units	10559735001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Oil and Grease	mg/L	ND	42.1	41.8	91	78-114	

SAMPLE DUPLICATE: 3964511

Parameter	Units	10559310001 Result	Dup Result	RPD	Max RPD	Qualifiers
Oil and Grease	mg/L	5.9	8.4	34	18	D6

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 741991
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: 3956826 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	ND	10.0	05/14/21 18:45	

LABORATORY CONTROL SAMPLE: 3956827

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	1000	1130	113	80-120	

SAMPLE DUPLICATE: 3956828

Parameter	Units	10559953001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	322	314	3	5	

SAMPLE DUPLICATE: 3956829

Parameter	Units	10559953002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	355	370	4	5	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
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Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 743976
QC Batch Method: EPA 350.1
Analysis Method: EPA 350.1
Analysis Description: 350.1 Ammonia
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: 3968339 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, Ammonia	mg/L	ND	0.10	05/24/21 14:28	

LABORATORY CONTROL SAMPLE: 3968340

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, Ammonia	mg/L	2.5	2.5	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3968341 3968342

Parameter	Units	10559974001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	0.19	2.5	2.5	2.7	2.6	100	97	90-110	3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3968343 3968344

Parameter	Units	10560775001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, Ammonia	mg/L	ND	2.5	2.5	2.5	2.5	98	100	90-110	2	20	

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALITY CONTROL DATA

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

QC Batch: 744085
QC Batch Method: SM 5220D
Analysis Method: SM 5220D
Analysis Description: 5220D COD
Laboratory: Pace Analytical Services - Minneapolis
Associated Lab Samples: 10559524001, 10559524003

METHOD BLANK: 3968663 Matrix: Water
Associated Lab Samples: 10559524001, 10559524003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chemical Oxygen Demand	mg/L	ND	50.0	05/24/21 17:11	

LABORATORY CONTROL SAMPLE: 3968664

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chemical Oxygen Demand	mg/L	300	310	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3968665 3968666

Parameter	Units	10560967001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	2130	2500	2500	4240	4160	84	81	80-120	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3968667 3968668

Parameter	Units	10559896001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chemical Oxygen Demand	mg/L	162	250	250	391	356	92	78	80-120	9	20	M1

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REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

QUALIFIERS

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

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 adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

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.

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.

BATCH QUALIFIERS

Batch: 743416

[BE] Batch extracted by solid phase extraction (SPE).

Batch: 744483

[M5] A matrix spike/matrix spike duplicate was not performed for this batch due to insufficient sample volume.

ANALYTE QUALIFIERS

1M	Surrogate recovery outside laboratory control limits due to an emulsion forming during extraction.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
D6	The precision between the sample and sample duplicate exceeded laboratory control limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
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.

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, LLC
1700 Elm Street
Minneapolis, MN 55414
(612)607-1700

RECEIVED
SEP 30 2021
INDUSTRIAL SECTION

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 3M Guin Stormwater - Landfill-Revised Report
Pace Project No.: 10559524

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
10559524001	**E21-0193-001**	EPA 351.2	744115	EPA 351.2	744423
10559524003	**E21-0193-002**	EPA 351.2	744115	EPA 351.2	744423
10559524001	**E21-0193-001**	SM 5310C-2011	742391		
10559524003	**E21-0193-002**	SM 5310C-2011	742391		
10559524001	**E21-0193-001**	3510C	1671612	EPA 608.3	1671612
10559524003	**E21-0193-002**	3510C	1671612	EPA 608.3	1671612
10559524001	**E21-0193-001**	EPA 200.8	741405	EPA 200.8	741795
10559524003	**E21-0193-002**	EPA 200.8	741405	EPA 200.8	741795
10559524001	**E21-0193-001**	EPA 625.1	742117	EPA 625.1	744483
10559524003	**E21-0193-002**	EPA 625.1	742117	EPA 625.1	744483
10559524001	**E21-0193-001**	EPA 624.1	743168		
10559524003	**E21-0193-002**	EPA 624.1	743168		
10559524001	**E21-0193-001**	EPA 1664B OG	743416		
10559524003	**E21-0193-002**	EPA 1664B OG	743416		
10559524001	**E21-0193-001**	SM 2540C	741991		
10559524003	**E21-0193-002**	SM 2540C	741991		
10559524001	**E21-0193-001**	EPA 350.1	743976		
10559524003	**E21-0193-002**	EPA 350.1	743976		
10559524001	**E21-0193-001**	SM 5220D	744085	SM 5220D	744295
10559524003	**E21-0193-002**	SM 5220D	744085	SM 5220D	744295

Pace Analytical™
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Docur[ment]

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accu[rately]

WO# : 10559524

10559524

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	3M Environmental	Report To:	Carie Mathison	Attention:	
Address:		Copy To:		Company Name:	
				Address:	
Email To:		Purchase Order No.:		Pace Quote Reference:	
Phone:	Fax: n/a	Project Name:	3M Guin Stormwater	Pace Project Manager:	Martha Hansen, 612-607-6451
Requested Due Date/TAT:		Project Number:		Pace Profile #:	18177 line 1

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER ________

Site Location STATE: AL

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N ↓	1664B Oil & Grease, 5310C TOC	200.8 metals*	350.1 NH3, 5220D COD	351.2 TKN	2540C TDS	~~Hex Chromium, BOD~~ (NS)	~~2540F Settleable solids~~ (NS)	~~9223 E Coli~~ (NS)	625.1 SVOC	624.1 VOC	608.3 PCB	PFAS	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	DSN001-1 L	WT	G			5/9/21	1720		22	9	5	1	6		1				x	x	x	x	x	↓	↓	↓	x	x	x	x	X	001
2	DSN001-1 L PFAS Field blank	WT	G			5/9/21	1720		1	1																				x		002
3	DSN001-2 L	WT	G			5/9/21	1738		22	9	5	1	6		1				x	x	x	x	x	↓	↓	↓	x	x	x	x	X	003
4	DSN001-2 L PFAS Field blank	WT	G			5/9/21	1738		1	1																				x		004
5																																
6																																
7																																
8																																
9																																
10																																
11																																
12																																

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
E coli has a hold time of 8hrs. Hex Chrom has a hold time of 24 hours. These will be analyzed at ~~Pace Tuscaloosa~~ SET Decatur	Mill C. Swift	5/10/21	10:00	LJ - PACE	5/11/21	1020	3.9	Y	Y	Y
BOD, Settleable Solids have a hold time of 48 hours. These will be analyzed at ~~Pace Minneapolis~~ SET Decatur										
Please avoid sampling on weekends, Fridays, and Monday mornings										
							Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Max Schrett

SIGNATURE of SAMPLER: Mill C Swift

DATE Signed (MM/DD/YY): 5/9/2021

DSN001-1L
Temp: 23.2°C
DO: 8.22 mg/L
PH: 7.7
TRC: 0.0 mg/L

DSN001-2 L
Temp: 19.7°C
DO: 8.73 mg/L
PH: 7.3
TRC: 0.0 mg/L

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Pace Analytical®	Document Name: **Sample Condition Upon Receipt (SCUR) - MN**	Document Revised: 14Apr2021 **Page 1 of 1**
	Document No.: **ENV-FRM-MIN4-0150 Rev.02**	Pace Analytical Services - **Minneapolis**

Sample Condition Upon Receipt

Client Name: 3M

Project #:

WO#: 10559524

PM: MKH Due Date: 05/18/21

CLIENT: 3M ENV

Courier: ☒ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Pace ☐ SpeeDee ☐ Commercial

Tracking Number: 9550 9944 0023 See Exceptions ☐ ENV-FRM-MIN4-0142

Custody Seal on Cooler/Box Present? ☒ Yes ☐ No **Seals Intact?** ☒ Yes ☐ No **Biological Tissue Frozen?** ☐ Yes ☐ No ☒ N/A

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other:_____ **Temp Blank?** ☒ Yes ☐ No

Thermometer: ☒ T1(0461) ☐ T2(1336) ☐ T3(0459) ☐ OS418-LS ☐ T4(0254) ☐ T5(0489) ☐ 160285052 **Type of Ice:** ☒ Wet ☐ Blue ☐ None ☐ Dry ☐ Melted

Did Samples Originate in West Virginia? ☐ Yes ☒ No **Were All Container Temps Taken?** ☐ Yes ☐ No ☒ N/A

Temp should be above freezing to 6°C **Cooler Temp Read w/temp blank:** 3.9 °C **Average Corrected Temp (no temp blank only):** ____ °C ☐ See Exceptions ENV-FRM-MIN4-0142 ☐ 1 Container

Correction Factor: 0.0 **Cooler Temp Corrected w/temp blank:** 3.9 °C

USDA Regulated Soil: (☒ N/A, water sample/Other:_____) **Date/Initials of Person Examining Contents:** 5/11/21

Did samples originate in a quarantine zone within the United States: AL, AR, CA, FL, GA, ID, LA. MS, NC, NM, NY, OK, OR, SC, TN, TX or VA (check maps)? ☐ Yes ☐ No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? ☐ Yes ☐ No

If Yes to either question, fill out a Regulated Soil Checklist (F-MN-Q-338) and include with SCUR/COC paperwork.

				COMMENTS:
Chain of Custody Present and Filled Out?	☒ Yes	☐ No		1.
Chain of Custody Relinquished?	☒ Yes	☐ No		2.
Sampler Name and/or Signature on COC?	☒ Yes	☐ No	☐ N/A	3.
Samples Arrived within Hold Time?	☒ Yes	☐ No		4.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☒ No		5. ☐ Fecal Coliform ☐ HPC ☐ Total Coliform/E coli ☐ BOD/cBOD ☐ Hex Chrome ☐ Turbidity ☐ Nitrate ☐ Nitrite ☐ Orthophos ☐ Other_____
Rush Turn Around Time Requested?	☐ Yes	☒ No		6.
Sufficient Volume?	☒ Yes	☐ No		7.
Correct Containers Used? -Pace Containers Used?	☒ Yes ☒ Yes	☐ No ☐ No		8.
Containers Intact?	☒ Yes	☐ No		9.
Field Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☒ N/A	10. Is sediment visible in the dissolved container? ☐ Yes ☐ No
Is sufficient information available to reconcile the samples to the COC? Matrix: ☒ Water ☐ Soil ☐ Oil ☐ Other_____	☒ Yes	☐ No		11. If no, write ID/ Date/Time on Container Below: See Exception ☐ ENV-FRM-MIN4-0142
All containers needing acid/base preservation have been checked?	☒ Yes	☐ No	☐ N/A	12. Sample #
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, <2pH, NaOH >9 Sulfide, NaOH>10 Cyanide)	☒ Yes	☐ No	☐ N/A	☐ NaOH ☐ HNO_3 ☐ H_2SO_4 ☐ Zinc Acetate
Exceptions: VOA, Coliform, TOC/DOC, Oil and Grease, DRO/8015 (water) and Dioxin/PFAS	☒ Yes	☐ No	☐ N/A	Positive for Res. Chlorine? ☐ Yes ☐ No pH Paper Lot# See Exception ☐ ENV-FRM-MIN4-0142
				Res. Chlorine | 0-6 Roll | 0-6 Strip | 0-14 Strip
Extra labels present on soil VOA or WIDRO containers?	☐ Yes	☐ No	☒ N/A	13. See Exception ☐ ENV-FRM-MIN4-0140
Headspace in VOA Vials (greater than 6mm)?	☐ Yes	☒ No	☐ N/A	
Trip Blank Present?	☐ Yes	☒ No	☐ N/A	14.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☒ N/A	Pace Trip Blank Lot # (if purchased):_____

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted:_____ Date/Time:_____

Comments/Resolution:_____

Project Manager Review: [signature] **Date:** 5/12/21

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers).

Labeled by: 1712

Intra-Regional Chain of Custody

WO# : 10559524

PM: MKH Due Date: 05/25/21
CLIENT: 3M ENV

Pace Analytical
www.pacelabs.com

Workorder: 10559524 **Workorder Name:** 3M Guin Stormwater - Landfill **Owner Received Date:** 5/11/2021 **Due Date:** 5/25/2021

Received at:	Send To Lab:
Pace Analytical Minnesota 1700 Elm Street Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical Duluth 4730 Oneota St. Duluth, MN 55807 Phone (218) 727-6380

Report To:
Martha Hansen

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: BP3S	DG9S					Requested Analysis: EPA 351.2	SM5310C-2011										LAB USE ONLY
1	E21-0193-001	PS	5/9/2021 17:20	10559524001	Water	1	3					X	X										
2	E21-0193-002	PS	5/9/2021 17:38	10559524003	Water	1	3					X	X										
3																							
4																							
5																							

Transfers	Released By	Date/Time	Received By	Date/Time
1	[illegible] Pace	5/14/21 1105	[illegible] 5/13/21	1900
2	[illegible] 5/13/21	2130	John Gatt Pace	5/14/21 07:50
3				
4				

Comments:

Cooler Temperature on Receipt 0.5 °C | **Custody Seal** (Y) or N | **Received on Ice** (Y) or N | **Samples Intact** (Y) or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical	Document Name: Sample Condition Upon Receipt Form	Document Revised: 17June2019 Page 1 of 1
	Document No.: F-DUL-C-001-rev.07	Issuing Authority: Pace Duluth Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: Pace MN

Project #: WO#: 10559524

PM: MKH Due Date: 05/25/21

CLIENT: 3M ENV

Courier: ☐Fed Ex ☐UPS ☐USPS ☐Client ☐SpeeDee ☒Pace ☐Other:

Tracking Number:

Custody Seal on Cooler/Box Present? ☒Yes ☐No **Seals Intact?** ☒Yes ☐No

Packing Material: ☒Bubble Wrap ☒Bubble Bags ☐None ☐Other:

Type of Ice: ☐Wet ☐Blue ☐None ☒Samples on ice, cooling process has begun

Is there evidence of ice formation in samples? ☐Yes ☒No **Biological Tissue Frozen?** ☐Yes ☐No ☒NA

Temp Blank? ☒Yes ☐No **Thermometer Used:** ☒ 01339252/1710 ☐ 122639816 **Correction Factor °C:** -0.3

Temp should be above freezing to 6 °C **Cooler Temp Read °C:** 0.8 **Cooler Temp Corrected °C:** 0.5

Date and Initials of Person Examining Contents: 5/13/21 DC 05/14/2021

Comments:

Chain of Custody Present?	☒Yes	☐No	☐N/A	1.
Chain of Custody Filled Out?	☒Yes	☐No	☐N/A	2.
Chain of Custody Relinquished?	☒Yes	☐No	☐N/A	3.
Sampler Name and Signature on COC?	☐Yes	☐No	☒N/A	4.
Samples Arrived within Hold Time?	☒Yes	☐No	☐N/A	5. If Fecal: ☐<8 hours ☐ >8, <24 hours ☐ >24 hours
Short Hold Time Analysis (<72 hr)?	☐Yes	☒No	☐N/A	6.
Rush Turn Around Time Requested?	☐Yes	☒No	☐N/A	7.
Sufficient Volume?	☒Yes	☐No	☐N/A	8.
Correct Containers Used?	☒Yes	☐No	☐N/A	9.
-Pace Containers Used?	☒Yes	☐No	☐N/A	
Containers Intact?	☒Yes	☐No	☐N/A	10.
Filtered Volume Received for Dissolved Tests?	☐Yes	☐No	☒N/A	11. Note if sediment is visible in the dissolved containers:
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: WT	☒Yes	☐No	☐N/A	12.
All containers needing acid/base preservation properly preserved?	☒Yes	☐No	☐N/A	13. Note samples needing adjustment:
Headspace in Methyl Mercury Container	☐Yes	☐No	☒N/A	14.
Headspace in VOA Vials (>6mm)?	☐Yes	☐No	☒N/A	15.
Trip Blank Present?	☐Yes	☐No	☒N/A	16.
Trip Blank Custody Seals Present?	☐Yes	☐No	☒N/A	
Pace Trip Blank Lot # (if purchased):				

CLIENT NOTIFICATION/RESOLUTION: **Field Data Required?** ☐Yes ☐No

Person Contacted: Date/Time:

Comments/Resolution:

FECAL WAIVER ON FILE: Y N TEMPERATURE WAIVER ON FILE: Y N

Project Manager Review: **Date:** 5/14/21

F006

Internal Transfer Chain of Custody

☐ Samples Pre-Logged into eCOC.

State Of Origin: AL
Cert. Needed: ☐ Yes ☒ No

Workorder: 10559524 Workorder Name: 3M Guin Stormwater - Landfill Owner Received Date: 5/11/2021 Results Requested By: 5/25/2021

Report To	Subcontract To
Martha Hansen Pace Analytical Minnesota 1700 Elm Street Minneapolis, MN 55414 Phone (612)607-6451	Pace National 12065 Lebanon Rd Mt. Juliet, TN 37122 Phone (615) 758-5858

Requested Analysis / Preserved Containers

L1352948

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Unpreserved AG50	608.3 PCBs (Pace National)	LAB USE ONLY
1	E21-0193-001	PS	5/9/2021 17:20	10559524001	Water	2	X	-01
2	E21-0193-002	PS	5/9/2021 17:38	10559524003	Water	2	X	-02
3								
4								
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	5/13/21 1640	Olivia [signature]	5/14/21 930
2				
3				

Comments:

Cooler Temperature on Receipt a.6 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

****In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document.*
This chain of custody is considered complete as is since this information is available in the owner laboratory.

G640=0.6 [initials] Fedex: 9371 9292 9521

Sample Receipt Checklist
COC Seal Present Intact: Y N
COC Signed Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
RAD Screen <0.5 mR hr: Y N
If Applicable
VOA Zero Headspace: __Y__N
Pres.Correct Check: __Y__N

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139010.D
Report Date: 26-May-2021 17:08

Pace Analytical Services, Inc.

8260B/624/524.2 VOLATILE ISTD AND RATIO REPORT (UNIX)

Data file : \\192.168.10.12\chem\10msv6.i\051921A.b\139010.D
Lab Smp Id: 10559524001 Client Smp ID: E21-0193-001
Inj Date : 19-MAY-2021 14:46
Operator : LPM Inst ID: 10msv6.i
Smp Info : 10559524001
Misc Info : 57444
Comment : 8260B/624/524.2 VOLATILE CAPILLARY METHOD
Method : \\192.168.10.12\chem\10msv6.i\051921A.b\V6-051321-6241-57409.m
Meth Date : 26-May-2021 17:05 jries Quant Type: ISTD
Cal Date : 13-MAY-2021 15:30 Cal File: 133014B.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A

Concentration Formula: Amt * DF * Uf * 1/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)	
1	Propylene	41	Compound Not Detected.						
2	Dichlorodifluoromethane	85	Compound Not Detected.						
3	Chloromethane	50	Compound Not Detected.						
4	Vinyl chloride	62	Compound Not Detected.						
5	1,3-Butadiene	54	Compound Not Detected.						
6	Bromomethane	94	Compound Not Detected.						
7	Chloroethane	64	Compound Not Detected.						(D)
8	Trichlorofluoromethane	101	Compound Not Detected.						
9	Dichlorofluoromethane	67	Compound Not Detected.						
10	Diethyl ether (Ethyl ether)	59	Compound Not Detected.						
11	Ethanol	45	Compound Not Detected.						
12	1,1-Dichloroethene	96	Compound Not Detected.						
13	1,1,2-Trichlorotrifluoroethane	101	Compound Not Detected.						
14	Carbon disulfide	76	2.723	2.723	(0.584)	260	0.04479	0.045(aM)	
15	Iodomethane	142	Compound Not Detected.						
16	Acrolein	56	Compound Not Detected.						(D)
17	Allyl chloride	41	Compound Not Detected.						(D)
18	2-Propanol	45	Compound Not Detected.						
19	Methylene Chloride	84	3.121	3.121	(0.669)	354	0.12373	0.12(aQ)	
* 20	Acetone-d6 (IS)	46	3.110	3.110	(1.000)	95739	100.000		
21	Acetone	58	3.152	3.147	(1.013)	1514	4.06414	4.1(Q)	
22	trans-1,2-Dichloroethene	96	Compound Not Detected.						
23	Methyl acetate	74	Compound Not Detected.						

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139010.D
Report Date: 26-May-2021 17:08

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	
	24 n-Hexane	86	3.298	3.293	(1.061)	516	0.62291	0.62(aQ)	
	25 Methyl-tert-butyl ether	73	Compound Not Detected.						
	26 tert-Butyl Alcohol	59	Compound Not Detected.						
	27 Acetonitrile	41	3.481	3.481	(0.747)	54543	136.928	137	
	28 Diisopropyl ether	45	Compound Not Detected.						
	29 Chloroprene	53	Compound Not Detected.						
	30 1,1-Dichloroethane	63	Compound Not Detected.						
	31 Acrylonitrile	53	Compound Not Detected.						
	32 Vinyl acetate	43	Compound Not Detected.						(D)
	33 Ethyl-tert-butyl ether	59	Compound Not Detected.						
	34 cis-1,2-Dichloroethene	96	Compound Not Detected.						
	35 2,2-Dichloropropane	77	Compound Not Detected.						(D)
	36 Bromochloromethane	130	Compound Not Detected.						
	37 Cyclohexane	56	Compound Not Detected.						
	38 Chloroform	83	Compound Not Detected.						
	39 Ethyl acetate	43	Compound Not Detected.						
	40 Carbon tetrachloride	117	Compound Not Detected.						
	41 sec-Butyl alcohol	45	Compound Not Detected.						
	42 Tetrahydrofuran	72	Compound Not Detected.						
	43 1,1,1-Trichloroethane	97	Compound Not Detected.						
	44 2-Butanone (MEK)	43	Compound Not Detected.						
	45 1,1-Dichloropropene	75	Compound Not Detected.						
	46 2,2,4-Trimethylpentane	57	Compound Not Detected.						
	47 Benzene	78	Compound Not Detected.						
	48 Propionitrile	54	Compound Not Detected.						
*	49 Pentafluorobenzene (IS)	168	4.664	4.664	(1.000)	266188	50.0000		
	50 Methacrylonitrile	41	Compound Not Detected.						(D)
	51 Tert-Amylmethyl ether	73	Compound Not Detected.						(D)
$	52 1,2-Dichloroethane-d4 (S)	65	4.732	4.732	(1.015)	179474	55.1469	55.1	
	53 Isobutanol	43	Compound Not Detected.						(D)
	54 1,2-Dichloroethane	62	4.773	4.779	(1.024)	739	0.18360	0.18(aQ)	
	55 tert-Amyl Alcohol	59	Compound Not Detected.						
	56 Trichloroethene	130	Compound Not Detected.						
	57 Methylcyclohexane	98	Compound Not Detected.						(D)
*	58 1,4-Difluorobenzene (IS)	114	5.045	5.045	(1.000)	353022	50.0000		
	59 Tert-Amyl ethyl ether	59	Compound Not Detected.						
	60 n-Butanol	56	Compound Not Detected.						(D)
	61 Dibromomethane	174	Compound Not Detected.						
	62 Ethyl acrylate	55	Compound Not Detected.						
	63 1,2-Dichloropropane	63	Compound Not Detected.						
	64 Bromodichloromethane	83	Compound Not Detected.						
	65 Methyl methacrylate	69	Compound Not Detected.						
*	66 1,4-Dioxane-d8 (IS)	96	5.558	5.558	(1.000)	48698	2000.00		
	67 1,4-Dioxane (p-Dioxane)	88	Compound Not Detected.						
	68 3-Pentanone	57	Compound Not Detected.						(D)
	69 2-Chloroethylvinyl ether	63	Compound Not Detected.						
	70 cis-1,3-Dichloropropene	75	Compound Not Detected.						
$	71 Toluene-d8 (S)	98	6.018	6.018	(0.840)	500368	57.4595	57.4	
	72 Toluene	92	Compound Not Detected.						
	73 2-Nitropropane	43	Compound Not Detected.						(D)
	74 4-Methyl-2-pentanone (MIBK)	43	Compound Not Detected.						
	75 trans-1,3-Dichloropropene	75	Compound Not Detected.						
	76 Tetrachloroethene	166	Compound Not Detected.						
	77 4-Methyl-2-pentanol	45	Compound Not Detected.						

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139010.D
Report Date: 26-May-2021 17:08

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	
78	Ethyl methacrylate	69	Compound Not Detected.						
79	1,1,2-Trichloroethane	97	Compound Not Detected.						
80	Dibromochloromethane	129	Compound Not Detected.						
81	1,3-Dichloropropane	76	Compound Not Detected.						
82	1,2-Dibromoethane (EDB)	107	Compound Not Detected.						
83	2-Hexanone	43	6.923	6.918	(0.966)	726	0.53343	0.53(aQ)	
* 84	Chlorobenzene-D5 (IS)	117	7.164	7.164	(1.000)	318856	50.0000		
85	Chlorobenzene	112	Compound Not Detected.						
86	Ethylbenzene	91	Compound Not Detected.						
87	1,1,1,2-Tetrachloroethane	131	Compound Not Detected.						
88	m&p-Xylene	106	Compound Not Detected.						
89	o-Xylene	106	Compound Not Detected.						
90	Styrene	104	Compound Not Detected.						
91	Bromoform	173	Compound Not Detected.						
92	Isopropylbenzene (Cumene)	105	Compound Not Detected.						
$ 93	4-Bromofluorobenzene (S)	95	8.100	8.100	(0.898)	164032	48.9200	48.9	
94	cis-1,4-Dichloro-2-butene	53	Compound Not Detected.						(D)
95	Bromobenzene	156	Compound Not Detected.						
96	n-Propylbenzene	91	Compound Not Detected.						
97	1,1,2,2-Tetrachloroethane	83	Compound Not Detected.						
98	4-Ethyltoluene	105	Compound Not Detected.						
99	2-Chlorotoluene	91	Compound Not Detected.						
100	1,3,5-Trimethylbenzene	105	Compound Not Detected.						
101	1,2,3-Trichloropropane	110	Compound Not Detected.						
102	trans-1,4-Dichloro-2-butene	53	Compound Not Detected.						
103	4-Chlorotoluene	91	Compound Not Detected.						
104	tert-Butylbenzene	119	Compound Not Detected.						
105	1,2,4-Trimethylbenzene	105	Compound Not Detected.						
106	sec-Butylbenzene	105	Compound Not Detected.						
107	Dicyclopentadiene	66	Compound Not Detected.						
108	p-Isopropyltoluene	119	Compound Not Detected.						
109	1,3-Dichlorobenzene	146	Compound Not Detected.						
* 110	1,4-Dichlorobenzene-d4 (IS)	152	9.015	9.015	(1.000)	194075	50.0000		
111	1,4-Dichlorobenzene	146	9.020	9.026	(1.001)	1665	0.31535	0.32(aQ)	
112	1,2,3-Trimethylbenzene	105	Compound Not Detected.						
113	n-Butylbenzene	91	Compound Not Detected.						
114	1,2-Dichlorobenzene	146	Compound Not Detected.						
115	1,2-Dibromo-3-chloropropane	157	Compound Not Detected.						
116	Hexachloro-1,3-butadiene	225	Compound Not Detected.						
117	1,2,4-Trichlorobenzene	180	Compound Not Detected.						
118	Naphthalene	128	Compound Not Detected.						
119	1,2,3-Trichlorobenzene	180	Compound Not Detected.						
120	2-Methylnaphthalene	142	Compound Not Detected.						
121	1-Methylnaphthalene	141	Compound Not Detected.						

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
Q - Qualifier signal failed the ratio test.
M - Compound response manually integrated.
D - User disabled compound identification.

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139010.D
Report Date: 26-May-2021 17:08

Pace Analytical Services, Inc.

8260B/624/524.2 VOLATILE ISTD AND RATIO REPORT (UNIX)

Data file : \\192.168.10.12\chem\10msv6.i\051921A.b\139010.D
Lab Smp Id: 10559524001 Client Smp ID: E21-0193-001
Inj Date : 19-MAY-2021 14:46
Operator : LPM Inst ID: 10msv6.i
Smp Info : 10559524001
Misc Info : 57444
Comment : 8260B/624/524.2 VOLATILE CAPILLARY METHOD
Method : \\192.168.10.12\chem\10msv6.i\051921A.b\V6-051321-6241-57409.m
Meth Date : 26-May-2021 17:05 jries Quant Type: ISTD
Cal Date : 13-MAY-2021 15:30 Cal File: 133014B.D
Als bottle: 10
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A

Concentration Formula: Amt * DF * Uf * 1/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)
Cpnd Variable		Local Compound Variable

ISTD	RT	AREA	AMOUNT
* 20 Acetone-d6 (IS)	3.111	152881	100.000

	CONCENTRATIONS				QUANT		
RT	AREA	ON-COL(ug/L)	FINAL(ug/L)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
1.432	179068	117.128637	117	0		0	20
Unknown				CAS #:			
1.897	26414	17.2776890	17.3	0		0	20
Unknown				CAS #:			
2.075	21984	14.3795136	14.4	0		0	20
Unknown				CAS #:			
4.136	0	0.00000000	0.00	0		0	9

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139010.D
Report Date: 26-May-2021 17:08

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name: 3M Environmental
Lab Smp Id: 10559524001
Operator : LPM
Sample Location:
Sample Matrix: WATER
Analysis Type: VOA
Inj Date: 19-MAY-2021 14:46

Client SDG: 10MSV6-051921A
Client Smp ID: E21-0193-001
Sample Date: 09-MAY-2021
Sample Point:
Date Received:11-MAY-2021 10:20
Level: LOW

Number TICs found: 4

CONCENTRATION UNITS:
(ug/L or ug/KG) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	1.432	117	_J__
2.	Unknown	1.897	17.3	_J__
3.	Unknown	2.075	14.4	_J__
4.	Unknown	4.136	0.00	_____

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139011.D
Report Date: 26-May-2021 17:08

Pace Analytical Services, Inc.

8260B/624/524.2 VOLATILE ISTD AND RATIO REPORT (UNIX)

Data file : \\192.168.10.12\chem\10msv6.i\051921A.b\139011.D
Lab Smp Id: 10559524003 Client Smp ID: E21-0193-002
Inj Date : 19-MAY-2021 15:10
Operator : LPM Inst ID: 10msv6.i
Smp Info : 10559524003
Misc Info : 57444
Comment : 8260B/624/524.2 VOLATILE CAPILLARY METHOD
Method : \\192.168.10.12\chem\10msv6.i\051921A.b\V6-051321-6241-57409.m
Meth Date : 26-May-2021 17:05 jries Quant Type: ISTD
Cal Date : 13-MAY-2021 15:30 Cal File: 133014B.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A

Concentration Formula: Amt * DF * Uf * 1/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)
Cpnd Variable		Local Compound Variable

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	FINAL (ug/L)	
1	Propylene	41	1.526	1.531	(0.327)	321	0.11815	0.12(aQ)	
2	Dichlorodifluoromethane	85	Compound Not Detected.						
3	Chloromethane	50	Compound Not Detected.						
4	Vinyl chloride	62	Compound Not Detected.						
5	1,3-Butadiene	54	Compound Not Detected.						
6	Bromomethane	94	Compound Not Detected.						
7	Chloroethane	64	Compound Not Detected.						
8	Trichlorofluoromethane	101	Compound Not Detected.						
9	Dichlorofluoromethane	67	Compound Not Detected.						
10	Diethyl ether (Ethyl ether)	59	Compound Not Detected.						
11	Ethanol	45	Compound Not Detected.						(D)
12	1,1-Dichloroethene	96	Compound Not Detected.						
13	1,1,2-Trichlorotrifluoroethane	101	Compound Not Detected.						
14	Carbon disulfide	76	2.718	2.723	(0.583)	224	0.03642	0.036(a)	
15	Iodomethane	142	Compound Not Detected.						
16	Acrolein	56	Compound Not Detected.						(D)
17	Allyl chloride	41	Compound Not Detected.						(D)
18	2-Propanol	45	Compound Not Detected.						
19	Methylene Chloride	84	3.116	3.121	(0.668)	455	0.15011	0.15(aQM)	
* 20	Acetone-d6 (IS)	46	3.110	3.110	(1.000)	100071	100.000		
21	Acetone	58	3.147	3.147	(1.012)	3346	8.59309	8.6	
22	trans-1,2-Dichloroethene	96	Compound Not Detected.						
23	Methyl acetate	74	Compound Not Detected.						

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139011.D
Report Date: 26-May-2021 17:08

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	
24	n-Hexane	86	3.293	3.293	(1.059)	609	0.70335	0.70(aQ)	
25	Methyl-tert-butyl ether	73	Compound Not Detected.						
26	tert-Butyl Alcohol	59	Compound Not Detected.						
27	Acetonitrile	41	Compound Not Detected.						
28	Diisopropyl ether	45	Compound Not Detected.						
29	Chloroprene	53	Compound Not Detected.						
30	1,1-Dichloroethane	63	Compound Not Detected.						
31	Acrylonitrile	53	Compound Not Detected.						
32	Vinyl acetate	43	Compound Not Detected.						(D)
33	Ethyl-tert-butyl ether	59	Compound Not Detected.						
34	cis-1,2-Dichloroethene	96	Compound Not Detected.						
35	2,2-Dichloropropane	77	Compound Not Detected.						
36	Bromochloromethane	130	Compound Not Detected.						
37	Cyclohexane	56	Compound Not Detected.						
38	Chloroform	83	Compound Not Detected.						
39	Ethyl acetate	43	Compound Not Detected.						(D)
40	Carbon tetrachloride	117	Compound Not Detected.						
41	sec-Butyl alcohol	45	Compound Not Detected.						
42	Tetrahydrofuran	72	Compound Not Detected.						
43	1,1,1-Trichloroethane	97	Compound Not Detected.						
44	2-Butanone (MEK)	43	4.434	4.439	(0.951)	2135	1.69936	1.7(Q)	
45	1,1-Dichloropropene	75	Compound Not Detected.						
46	2,2,4-Trimethylpentane	57	Compound Not Detected.						
47	Benzene	78	Compound Not Detected.						
48	Propionitrile	54	Compound Not Detected.						
* 49	Pentafluorobenzene (IS)	168	4.664	4.664	(1.000)	282020	50.0000		
50	Methacrylonitrile	41	Compound Not Detected.						(D)
51	Tert-Amylmethyl ether	73	Compound Not Detected.						
$ 52	1,2-Dichloroethane-d4 (S)	65	4.727	4.732	(1.013)	183802	53.3062	53.3	
53	Isobutanol	43	Compound Not Detected.						(D)
54	1,2-Dichloroethane	62	4.779	4.779	(1.025)	836	0.19604	0.20(a)	
55	tert-Amyl Alcohol	59	Compound Not Detected.						
56	Trichloroethene	130	Compound Not Detected.						
57	Methylcyclohexane	98	Compound Not Detected.						
* 58	1,4-Difluorobenzene (IS)	114	5.046	5.045	(1.000)	374745	50.0000		
59	Tert-Amyl ethyl ether	59	Compound Not Detected.						
60	n-Butanol	56	Compound Not Detected.						(D)
61	Dibromomethane	174	Compound Not Detected.						
62	Ethyl acrylate	55	Compound Not Detected.						
63	1,2-Dichloropropane	63	Compound Not Detected.						
64	Bromodichloromethane	83	Compound Not Detected.						
65	Methyl methacrylate	69	Compound Not Detected.						
* 66	1,4-Dioxane-d8 (IS)	96	5.558	5.558	(1.000)	52198	2000.00		
67	1,4-Dioxane (p-Dioxane)	88	Compound Not Detected.						
68	3-Pentanone	57	Compound Not Detected.						(D)
69	2-Chloroethylvinyl ether	63	Compound Not Detected.						
70	cis-1,3-Dichloropropene	75	Compound Not Detected.						
$ 71	Toluene-d8 (S)	98	6.018	6.018	(0.840)	536500	58.4506	58.4	
72	Toluene	92	Compound Not Detected.						
73	2-Nitropropane	43	Compound Not Detected.						(D)
74	4-Methyl-2-pentanone (MIBK)	43	Compound Not Detected.						
75	trans-1,3-Dichloropropene	75	Compound Not Detected.						
76	Tetrachloroethene	166	Compound Not Detected.						
77	4-Methyl-2-pentanol	45	Compound Not Detected.						

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139011.D
Report Date: 26-May-2021 17:08

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/L)	CONCENTRATIONS FINAL (ug/L)	
	78 Ethyl methacrylate	69	Compound Not Detected.						
	79 1,1,2-Trichloroethane	97	Compound Not Detected.						
	80 Dibromochloromethane	129	Compound Not Detected.						
	81 1,3-Dichloropropane	76	Compound Not Detected.						
	82 1,2-Dibromoethane (EDB)	107	Compound Not Detected.						
	83 2-Hexanone	43	Compound Not Detected.						(D)
*	84 Chlorobenzene-D5 (IS)	117	7.164	7.164	(1.000)	336084	50.0000		
	85 Chlorobenzene	112	Compound Not Detected.						
	86 Ethylbenzene	91	Compound Not Detected.						
	87 1,1,1,2-Tetrachloroethane	131	Compound Not Detected.						
	88 m&p-Xylene	106	Compound Not Detected.						
	89 o-Xylene	106	Compound Not Detected.						
	90 Styrene	104	Compound Not Detected.						
	91 Bromoform	173	Compound Not Detected.						
	92 Isopropylbenzene (Cumene)	105	Compound Not Detected.						
$	93 4-Bromofluorobenzene (S)	95	8.100	8.100	(0.899)	177509	48.3701	48.4	
	94 cis-1,4-Dichloro-2-butene	53	Compound Not Detected.						
	95 Bromobenzene	156	Compound Not Detected.						
	96 n-Propylbenzene	91	Compound Not Detected.						
	97 1,1,2,2-Tetrachloroethane	83	Compound Not Detected.						
	98 4-Ethyltoluene	105	Compound Not Detected.						
	99 2-Chlorotoluene	91	Compound Not Detected.						
	100 1,3,5-Trimethylbenzene	105	Compound Not Detected.						
	101 1,2,3-Trichloropropane	110	Compound Not Detected.						
	102 trans-1,4-Dichloro-2-butene	53	Compound Not Detected.						
	103 4-Chlorotoluene	91	Compound Not Detected.						
	104 tert-Butylbenzene	119	Compound Not Detected.						
	105 1,2,4-Trimethylbenzene	105	Compound Not Detected.						
	106 sec-Butylbenzene	105	Compound Not Detected.						
	107 Dicyclopentadiene	66	Compound Not Detected.						
	108 p-Isopropyltoluene	119	Compound Not Detected.						
	109 1,3-Dichlorobenzene	146	Compound Not Detected.						
*	110 1,4-Dichlorobenzene-d4 (IS)	152	9.010	9.015	(1.000)	212408	50.0000		
	111 1,4-Dichlorobenzene	146	9.021	9.026	(1.001)	666	0.11525	0.12(aQ)	
	112 1,2,3-Trimethylbenzene	105	Compound Not Detected.						
	113 n-Butylbenzene	91	Compound Not Detected.						
	114 1,2-Dichlorobenzene	146	Compound Not Detected.						
	115 1,2-Dibromo-3-chloropropane	157	Compound Not Detected.						
	116 Hexachloro-1,3-butadiene	225	Compound Not Detected.						
	117 1,2,4-Trichlorobenzene	180	Compound Not Detected.						
	118 Naphthalene	128	Compound Not Detected.						
	119 1,2,3-Trichlorobenzene	180	Compound Not Detected.						
	120 2-Methylnaphthalene	142	Compound Not Detected.						
	121 1-Methylnaphthalene	141	Compound Not Detected.						

QC Flag Legend

a - Target compound detected but, quantitated amount
    Below Limit Of Quantitation(BLOQ).
Q - Qualifier signal failed the ratio test.
M - Compound response manually integrated.
D - User disabled compound identification.

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139011.D
Report Date: 26-May-2021 17:08

Pace Analytical Services, Inc.

8260B/624/524.2 VOLATILE ISTD AND RATIO REPORT (UNIX)

Data file : \\192.168.10.12\chem\10msv6.i\051921A.b\139011.D
Lab Smp Id: 10559524003 Client Smp ID: E21-0193-002
Inj Date : 19-MAY-2021 15:10
Operator : LPM Inst ID: 10msv6.i
Smp Info : 10559524003
Misc Info : 57444
Comment : 8260B/624/524.2 VOLATILE CAPILLARY METHOD
Method : \\192.168.10.12\chem\10msv6.i\051921A.b\V6-051321-6241-57409.m
Meth Date : 26-May-2021 17:05 jries Quant Type: ISTD
Cal Date : 13-MAY-2021 15:30 Cal File: 133014B.D
Als bottle: 11
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A

Concentration Formula: Amt * DF * Uf * 1/Vo * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	5.000	ng unit correction factor
Vo	5.000	Sample Volume purged (mL)
Cpnd Variable		Local Compound Variable

ISTD	RT	AREA	AMOUNT
* 20 Acetone-d6 (IS)	3.111	169822	100.000

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ug/L)	FINAL(ug/L)	QUAL	LIBRARY	LIB ENTRY	CPND #
Unknown				CAS #:			
1.871	25454	14.9885041	15.0	0	0		20
Unknown				CAS #:			
3.833	0	0.00000000	0.00	0	0		9

Data File: \\192.168.10.12\chem\10msv6.i\051921A.b\139011.D
Report Date: 26-May-2021 17:08

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name: 3M Environmental
Lab Smp Id: 10559524003
Operator : LPM
Sample Location:
Sample Matrix: WATER
Analysis Type: VOA
Inj Date: 19-MAY-2021 15:10

Client SDG: 10MSV6-051921A
Client Smp ID: E21-0193-002
Sample Date: 09-MAY-2021
Sample Point:
Date Received:11-MAY-2021 10:20
Level: LOW

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/KG) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	1.871	15.0	J
2.	Unknown	3.833	0.00	

Pace Analytical Services, Inc.

Semivolatile REPORT SW-846 Method 8270/EPA 625

Data file : \\192.168.10.12\chem\10mssH.i\052521.b\05252117.D
Lab Smp Id: 10559524001 Client Smp ID: E21-0193-001
Inj Date : 25-MAY-2021 13:35 MS Autotune Date: 16-MAY-2019 11:4
Operator : MS4 Inst ID: 10mssH.i
Smp Info : 10559524001,
Misc Info : 24505,
Comment : RCRA 8270C/625 - SEMIVOLATILES
Method : \\192.168.10.12\chem\10mssH.i\052521.b\6251H-052521_24502.m
Meth Date : 26-May-2021 13:30 mszymanski Quant Type: ISTD
Cal Date : 25-MAY-2021 10:56 Cal File: 05252111.D
Als bottle: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A

Concentration Formula: Amt * DF * Uf * Vt / (Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Unit Factor (ng)
Vt	1000.000	Volume of final extract (uL)
Vo	100.000	Volume of sample extracted (mL)
Vi	1.000	Volume of Sample Injected (uL)
Cpnd Variable		Local Compound Variable

			QUANT SIG						CONCENTRATIONS ON-COLUMN	FINAL
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE		(ug/mL)	(ug/L)
	138	1,4-Dioxane	88	Compound Not Detected.						
	1	N-Nitrosodimethylamine	74	Compound Not Detected.						
	2	Pyridine	79	Compound Not Detected.						
$	3	2-Fluorophenol (S)	112	3.794	3.791	(0.763)	20273		1.42036	14.2(R)
$	4	Phenol-d6 (S)	99	4.610	4.615	(0.927)	20564		1.10860	11.1(R)
	5	Phenol	94	Compound Not Detected.						
	6	bis(2-Chloroethyl) ether	63	Compound Not Detected.						
	7	2-Chlorophenol	128	Compound Not Detected.						
	8	1,3-Dichlorobenzene	146	Compound Not Detected.						
*	9	1,4-Dichlorobenzene-d4 (IS)	152	4.971	4.971	(1.000)	39523		4.00000	
	10	1,4-Dichlorobenzene	146	Compound Not Detected.						
	11	Benzyl alcohol	79	Compound Not Detected.						
	12	1,2-Dichlorobenzene	146	Compound Not Detected.						
	13	2-Methylphenol(o-Cresol)	107	Compound Not Detected.						
	14	bis(2-Chloroisopropyl) ether	45	Compound Not Detected.						
	15	3&4-Methylphenol(m&p Cresol)	107	Compound Not Detected.						
	17	N-Nitroso-di-n-propylamine	70	Compound Not Detected.						
	18	Hexachloroethane	117	Compound Not Detected.						
$	19	Nitrobenzene-d5 (S)	82	5.482	5.485	(0.888)	30209		1.59522	16.0(R)
	20	Nitrobenzene	77	Compound Not Detected.						
	21	Isophorone	82	Compound Not Detected.						

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/L)	
	23 2,4-Dimethylphenol	107	Compound Not Detected.						
	22 2-Nitrophenol	139	Compound Not Detected.						
	24 Benzoic acid	105	Compound Not Detected.						
	25 bis(2-Chloroethoxy)methane	93	Compound Not Detected.						
	26 2,4-Dichlorophenol	162	Compound Not Detected.						
	27 1,2,4-Trichlorobenzene	180	Compound Not Detected.						
*	28 Naphthalene-d8 (IS)	136	6.173	6.173	(1.000)	167529	4.00000		(Q)
	29 Naphthalene	128	Compound Not Detected.						
	30 4-Chloroaniline	127	Compound Not Detected.						
	31 Hexachloro-1,3-butadiene	225	Compound Not Detected.						
	32 4-Chloro-3-methylphenol	107	Compound Not Detected.						
	33 2-Methylnaphthalene	142	Compound Not Detected.						
	34 1-Methylnaphthalene	142	Compound Not Detected.						
	35 Hexachlorocyclopentadiene	237	Compound Not Detected.						
	36 2,4,6-Trichlorophenol	196	Compound Not Detected.						
	37 2,4,5-Trichlorophenol	196	Compound Not Detected.						
$	38 2-Fluorobiphenyl (S)	172	7.224	7.227	(0.916)	37738	1.38992	13.9	(R)
	39 2-Chloronaphthalene	162	Compound Not Detected.						
	40 2-Nitroaniline	65	Compound Not Detected.						
	41 Dimethylphthalate	163	Compound Not Detected.						
	42 2,6-Dinitrotoluene	165	Compound Not Detected.						
	43 Acenaphthylene	152	Compound Not Detected.						
	44 3-Nitroaniline	138	Compound Not Detected.						
*	45 Acenaphthene-d10 (IS)	164	7.886	7.889	(1.000)	80361	4.00000		
	47 2,4-Dinitrophenol	184	Compound Not Detected.						
	46 Acenaphthene	154	Compound Not Detected.						
	48 4-Nitrophenol	65	Compound Not Detected.						
	49 2,4-Dinitrotoluene	165	Compound Not Detected.						
	50 Dibenzofuran	168	Compound Not Detected.						
	51 Diethylphthalate	149	Compound Not Detected.						
	52 4-Chlorophenylphenyl ether	204	Compound Not Detected.						
	53 4-Nitroaniline	138	Compound Not Detected.						
	54 Fluorene	166	Compound Not Detected.						
	55 4,6-Dinitro-2-methylphenol	198	Compound Not Detected.						
	56 N-Nitrosodiphenylamine	169	Compound Not Detected.						
	57 Azobenzene	77	Compound Not Detected.						
	58 1,2-Diphenylhydrazine	77	Compound Not Detected.						
$	59 2,4,6-Tribromophenol (S)	330	8.659	8.662	(1.098)	5992	1.92278	19.2	(R)
	60 4-Bromophenylphenyl ether	248	Compound Not Detected.						
	61 Hexachlorobenzene	284	Compound Not Detected.						
	62 Pentachlorophenol	266	Compound Not Detected.						
*	63 Phenanthrene-d10 (IS)	188	9.352	9.349	(1.000)	146292	4.00000		
	64 Phenanthrene	178	Compound Not Detected.						
	65 Anthracene	178	Compound Not Detected.						
	66 Carbazole	167	Compound Not Detected.						
	67 di-n-Butylphthalate	149	Compound Not Detected.						(D)
	68 Fluoranthene	202	Compound Not Detected.						
	69 Benzidine	184	Compound Not Detected.						
	70 Pyrene	202	Compound Not Detected.						
$	71 p-Terphenyl-d14 (S)	244	11.205	11.205	(0.893)	65568	2.23614	22.4	(R)
	72 Butylbenzylphthalate	149	Compound Not Detected.						
	74 3,3'-Dichlorobenzidine	252	Compound Not Detected.						
	73 bis(2-Ethylhexyl)phthalate	149	Compound Not Detected.						
	75 Benzo(a)anthracene	228	Compound Not Detected.						

	Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	CONCENTRATIONS FINAL (ug/L)	
*	76 Chrysene-d12 (IS)	240	12.549	12.552	(1.000)	119586	4.00000		(Q)
	77 Chrysene	228	Compound Not Detected.						
	78 di-n-Octylphthalate	149	Compound Not Detected.						
	79 Benzo(b)fluoranthene	252	Compound Not Detected.						
	80 Benzo(k)fluoranthene	252	Compound Not Detected.						
	81 Benzo(a)pyrene	252	Compound Not Detected.						
*	82 Perylene-d12 (IS)	264	14.154	14.154	(1.000)	109606	4.00000		
	83 Indeno(1,2,3-cd)pyrene	276	Compound Not Detected.						
	84 Dibenz(a,h)anthracene	278	Compound Not Detected.						
	85 Benzo(g,h,i)perylene	276	Compound Not Detected.						

QC Flag Legend

Q - Qualifier signal failed the ratio test.
R - Spike/Surrogate failed recovery limits.
D - User disabled compound identification.

Pace Analytical Services, Inc.

Semivolatile REPORT SW-846 Method 8270/EPA 625

Data file : \\192.168.10.12\chem\10mssH.i\052521.b\05252117.D
Lab Smp Id: 10559524001 Client Smp ID: E21-0193-001
Inj Date : 25-MAY-2021 13:35 MS Autotune Date: 16-MAY-2019 11:4
Operator : MS4 Inst ID: 10mssH.i
Smp Info : 10559524001,
Misc Info : 24505,
Comment : RCRA 8270C/625 - SEMIVOLATILES
Method : \\192.168.10.12\chem\10mssH.i\052521.b\6251H-052521_24502.m
Meth Date : 26-May-2021 13:30 mszymanski Quant Type: ISTD
Cal Date : 25-MAY-2021 10:56 Cal File: 05252111.D
Als bottle: 7
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A

Concentration Formula: Amt * DF * Uf * Vt / (Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Unit Factor (ng)
Vt	1000.000	Volume of final extract (uL)
Vo	100.000	Volume of sample extracted (mL)
Vi	1.000	Volume of Sample Injected (uL)
Cpnd Variable		Local Compound Variable

ISTD	RT	AREA	AMOUNT
* 82 Perylene-d12 (IS)	14.155	349720	4.000

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ug/mL)	FINAL(ug/L)	QUAL	LIBRARY	LIB ENTRY	CPND #
7-Nonenamide				CAS #: 90949-53-4			
13.558	118048	1.35020032	13.5	72	NIST05.L	26953	82
Sulfurous acid, butyl undecyl ester				CAS #: 1000309-17-8			
14.737	42599	0.48723626	4.9	72	NIST05.L	119557	82
Heptacosane				CAS #: 593-49-7			
15.198	38821	0.44402888	4.4	64	NIST05.L	165300	82

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name: 3M Environmental
Lab Smp Id: 10559524001
Operator : MS4
Sample Location:
Sample Matrix: WATER
Analysis Type: SV
Inj Date: 25-MAY-2021 13:35

Client SDG: 10MSSH-052521
Client Smp ID: E21-0193-001
Sample Date: 09-MAY-2021
Sample Point:
Date Received:11-MAY-2021 10:20
Level: LOW

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/KG) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 90949-53-4	7-Nonenamide	13.558	13.5	NJ__
2. 1000309-17-	Sulfurous acid, butyl undec	14.737	4.9	NJ__
3. 593-49-7	Heptacosane	15.198	4.4	NJ__

Pace Analytical Services, Inc.

Semivolatile REPORT SW-846 Method 8270/EPA 625

Data file : \\192.168.10.12\chem\10mssH.i\052521.b\05252118.D
Lab Smp Id: 10559524003 Client Smp ID: E21-0193-002
Inj Date : 25-MAY-2021 14:02 MS Autotune Date: 16-MAY-2019 11:4
Operator : MS4 Inst ID: 10mssH.i
Smp Info : 10559524003,
Misc Info : 24505,
Comment : RCRA 8270C/625 - SEMIVOLATILES
Method : \\192.168.10.12\chem\10mssH.i\052521.b\6251H-052521_24502.m
Meth Date : 26-May-2021 13:30 mszymanski Quant Type: ISTD
Cal Date : 25-MAY-2021 10:56 Cal File: 05252111.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A

Concentration Formula: Amt * DF * Uf * Vt / (Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Unit Factor (ng)
Vt	1000.000	Volume of final extract (uL)
Vo	105.000	Volume of sample extracted (mL)
Vi	1.000	Volume of Sample Injected (uL)
Cpnd Variable		Local Compound Variable

		Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	FINAL (ug/L)
	138	1,4-Dioxane	88	Compound Not Detected.					
	1	N-Nitrosodimethylamine	74	Compound Not Detected.					
	2	Pyridine	79	Compound Not Detected.					
$	3	2-Fluorophenol (S)	112	3.789	3.791	(0.762)	45145	3.14464	29.9
$	4	Phenol-d6 (S)	99	4.610	4.615	(0.927)	46732	2.50475	23.8
	5	Phenol	94	Compound Not Detected.					
	6	bis(2-Chloroethyl) ether	63	Compound Not Detected.					
	7	2-Chlorophenol	128	Compound Not Detected.					
	8	1,3-Dichlorobenzene	146	Compound Not Detected.					
*	9	1,4-Dichlorobenzene-d4 (IS)	152	4.971	4.971	(1.000)	39753	4.00000	
	10	1,4-Dichlorobenzene	146	Compound Not Detected.					
	11	Benzyl alcohol	79	Compound Not Detected.					
	12	1,2-Dichlorobenzene	146	Compound Not Detected.					
	13	2-Methylphenol(o-Cresol)	107	Compound Not Detected.					
	14	bis(2-Chloroisopropyl) ether	45	Compound Not Detected.					
	15	3&4-Methylphenol(m&p Cresol)	107	Compound Not Detected.					
	17	N-Nitroso-di-n-propylamine	70	Compound Not Detected.					
	18	Hexachloroethane	117	Compound Not Detected.					
$	19	Nitrobenzene-d5 (S)	82	5.482	5.485	(0.888)	48861	2.63191	25.1(R)
	20	Nitrobenzene	77	Compound Not Detected.					
	21	Isophorone	82	Compound Not Detected.					

			QUANT SIG					CONCENTRATIONS ON-COLUMN	FINAL	
		Compounds	MASS	RT	EXP RT	REL RT	RESPONSE	(ug/mL)	(ug/L)	
	23	2,4-Dimethylphenol	107	Compound Not Detected.						
	22	2-Nitrophenol	139	Compound Not Detected.						
	24	Benzoic acid	105	Compound Not Detected.						
	25	bis(2-Chloroethoxy)methane	93	Compound Not Detected.						
	26	2,4-Dichlorophenol	162	Compound Not Detected.						
	27	1,2,4-Trichlorobenzene	180	Compound Not Detected.						
*	28	Naphthalene-d8 (IS)	136	6.173	6.173	(1.000)	164235	4.00000		(Q)
	29	Naphthalene	128	Compound Not Detected.						
	30	4-Chloroaniline	127	Compound Not Detected.						
	31	Hexachloro-1,3-butadiene	225	Compound Not Detected.						
	32	4-Chloro-3-methylphenol	107	Compound Not Detected.						
	33	2-Methylnaphthalene	142	Compound Not Detected.						
	34	1-Methylnaphthalene	142	Compound Not Detected.						
	35	Hexachlorocyclopentadiene	237	Compound Not Detected.						
	36	2,4,6-Trichlorophenol	196	Compound Not Detected.						
	37	2,4,5-Trichlorophenol	196	Compound Not Detected.						
$	38	2-Fluorobiphenyl (S)	172	7.227	7.227	(0.916)	59854	2.22680	21.2	(R)
	39	2-Chloronaphthalene	162	Compound Not Detected.						
	40	2-Nitroaniline	65	Compound Not Detected.						
	41	Dimethylphthalate	163	Compound Not Detected.						
	42	2,6-Dinitrotoluene	165	Compound Not Detected.						
	43	Acenaphthylene	152	Compound Not Detected.						
	44	3-Nitroaniline	138	Compound Not Detected.						
*	45	Acenaphthene-d10 (IS)	164	7.886	7.889	(1.000)	79555	4.00000		
	47	2,4-Dinitrophenol	184	Compound Not Detected.						
	46	Acenaphthene	154	Compound Not Detected.						
	48	4-Nitrophenol	65	Compound Not Detected.						
	49	2,4-Dinitrotoluene	165	Compound Not Detected.						
	50	Dibenzofuran	168	Compound Not Detected.						
	51	Diethylphthalate	149	Compound Not Detected.						
	52	4-Chlorophenylphenyl ether	204	Compound Not Detected.						
	53	4-Nitroaniline	138	Compound Not Detected.						
	54	Fluorene	166	Compound Not Detected.						
	55	4,6-Dinitro-2-methylphenol	198	Compound Not Detected.						
	56	N-Nitrosodiphenylamine	169	Compound Not Detected.						
	57	Azobenzene	77	Compound Not Detected.						
	58	1,2-Diphenylhydrazine	77	Compound Not Detected.						
$	59	2,4,6-Tribromophenol (S)	330	8.662	8.662	(1.098)	11855	3.84271	36.6	(R)
	60	4-Bromophenylphenyl ether	248	Compound Not Detected.						
	61	Hexachlorobenzene	284	Compound Not Detected.						
	62	Pentachlorophenol	266	Compound Not Detected.						
*	63	Phenanthrene-d10 (IS)	188	9.349	9.349	(1.000)	143267	4.00000		
	64	Phenanthrene	178	Compound Not Detected.						
	65	Anthracene	178	Compound Not Detected.						
	66	Carbazole	167	Compound Not Detected.						
	67	di-n-Butylphthalate	149	Compound Not Detected.						
	68	Fluoranthene	202	Compound Not Detected.						
	69	Benzidine	184	Compound Not Detected.						
	70	Pyrene	202	Compound Not Detected.						
$	71	p-Terphenyl-d14 (S)	244	11.205	11.205	(0.893)	96733	3.39387	32.3	(R)
	72	Butylbenzylphthalate	149	Compound Not Detected.						
	74	3,3'-Dichlorobenzidine	252	Compound Not Detected.						
	73	bis(2-Ethylhexyl)phthalate	149	Compound Not Detected.						(D)
	75	Benzo(a)anthracene	228	Compound Not Detected.						

Compounds	QUANT SIG MASS	RT	EXP RT	REL RT	RESPONSE	CONCENTRATIONS ON-COLUMN (ug/mL)	CONCENTRATIONS FINAL (ug/L)	
* 76 Chrysene-d12 (IS)	240	12.549	12.552	(1.000)	116243	4.00000		(Q)
77 Chrysene	228	Compound Not Detected.						
78 di-n-Octylphthalate	149	Compound Not Detected.						
79 Benzo(b)fluoranthene	252	Compound Not Detected.						
80 Benzo(k)fluoranthene	252	Compound Not Detected.						
81 Benzo(a)pyrene	252	Compound Not Detected.						
* 82 Perylene-d12 (IS)	264	14.152	14.154	(1.000)	105101	4.00000		
83 Indeno(1,2,3-cd)pyrene	276	Compound Not Detected.						
84 Dibenz(a,h)anthracene	278	Compound Not Detected.						
85 Benzo(g,h,i)perylene	276	Compound Not Detected.						

QC Flag Legend

Q - Qualifier signal failed the ratio test.
R - Spike/Surrogate failed recovery limits.
D - User disabled compound identification.

Pace Analytical Services, Inc.

Semivolatile REPORT SW-846 Method 8270/EPA 625

Data file : \\192.168.10.12\chem\10mssH.i\052521.b\05252118.D
Lab Smp Id: 10559524003 Client Smp ID: E21-0193-002
Inj Date : 25-MAY-2021 14:02 MS Autotune Date: 16-MAY-2019 11:4
Operator : MS4 Inst ID: 10mssH.i
Smp Info : 10559524003,
Misc Info : 24505,
Comment : RCRA 8270C/625 - SEMIVOLATILES
Method : \\192.168.10.12\chem\10mssH.i\052521.b\6251H-052521_24502.m
Meth Date : 26-May-2021 13:30 mszymanski Quant Type: ISTD
Cal Date : 25-MAY-2021 10:56 Cal File: 05252111.D
Als bottle: 8
Dil Factor: 1.00000
Integrator: HP RTE Compound Sublist: all.sub
Target Version: RC10A

Concentration Formula: Amt * DF * Uf * Vt / (Vo * Vi) * CpndVariable

Name	Value	Description
DF	1.000	Dilution Factor
Uf	1.000	Unit Factor (ng)
Vt	1000.000	Volume of final extract (uL)
Vo	105.000	Volume of sample extracted (mL)
Vi	1.000	Volume of Sample Injected (uL)
Cpnd Variable		Local Compound Variable

ISTD	RT	AREA	AMOUNT
* 9 1,4-Dichlorobenzene-d4	4.971	288777	4.000
* 82 Perylene-d12 (IS)	14.152	339147	4.000

	CONCENTRATIONS			QUANT			
RT	AREA	ON-COL(ug/mL)	FINAL(ug/L)	QUAL	LIBRARY	LIB ENTRY	CPND #
1,5-Pentanediol, 3-methyl-					CAS #: 4457-71-0		
3.187	32443	0.44938223	4.3	12	NIST05.L	8569	9
Eicosane					CAS #: 112-95-8		
14.325	51961	0.61283656	5.8	89	NIST05.L	113490	82
Tricosane					CAS #: 638-67-5		
14.732	74579	0.87960147	8.4	68	NIST05.L	139233	82
Tetracosane					CAS #: 646-31-1		
15.195	74126	0.87426706	8.3	53	NIST05.L	146922	82

		CONCENTRATIONS			QUANT		
RT	AREA	ON-COL(ug/mL)	FINAL(ug/L)	QUAL	LIBRARY	LIB ENTRY	CPND #
====	====	============	============	====	=======	=========	======
Sulfurous acid, 2-propyl undecyl ester					CAS #: 1000309-12-2		
15.721	52581	0.62015383	5.9	64	NIST05.L	110485	82

Pace Analytical Services, Inc.

TENTATIVELY IDENTIFIED COMPOUNDS

Client Name: 3M Environmental
Lab Smp Id: 10559524003
Operator : MS4
Sample Location:
Sample Matrix: WATER
Analysis Type: SV
Inj Date: 25-MAY-2021 14:02

Client SDG: 10MSSH-052521
Client Smp ID: E21-0193-002
Sample Date: 09-MAY-2021
Sample Point:
Date Received:11-MAY-2021 10:20
Level: LOW

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/KG) ug/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	4457-71-0	1,5-Pentanediol, 3-methyl-	3.187	4.3	NJ
2.	112-95-8	Eicosane	14.325	5.8	NJ
3.	638-67-5	Tricosane	14.732	8.4	NJ
4.	646-31-1	Tetracosane	15.195	8.3	NJ
5.	1000309-12-	Sulfurous acid, 2-propyl un	15.721	5.9	NJ

Report of Analysis

Pace Analytical Services, LLC
1700 Elm St SE Suite 200
Minneapolis, MN 55414
Attention: Martha Hansen

Project Name: 3M Guin Stormwater- Landfill

Project Number: 10559524

Lot Number:**WE17052**

Date Completed:05/28/2021
Revision Date: 07/14/2021

Karen Coonan

07/14/2021 3:21 PM
Approved and released by:
Project Manager II: **Karen L. Coonan**

Case Narrative
Pace Analytical Services, LLC
Lot Number: WE17052

Revised report – July 14, 2021
A revised report has been issued.As requested, the analyte list for the sample results has been updated.

All other sample results are as reported in the original PDF report. This report supersedes and replaces any prior reports issued under this lot number.

This Report of Analysis contains the analytical result(s) for the sample(s) listed on the Sample Summary following this Case Narrative. The sample receiving date is documented in the header information associated with each sample.

All results listed in this report relate only to the samples that are contained within this report.

Sample receipt, sample analysis, and data review have been performed in accordance with the most current approved The NELAC Institute (TNI) standards, the Pace Analytical Services, LLC ("Pace") Laboratory Quality Manual, standard operating procedures (SOPs), and Pace policies. Any exceptions to the TNI standards, the Laboratory Quality Manual, SOPs or policies are qualified on the results page or discussed below.

Samples associated with this report were performed in accordance with the 3M Technical Specifications Manual Revision 1, July 17, 2020.

The following SOP applies:
ME003NI Determination of Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS (Isotope Dilution)

Sample WE17052-003 required centrifugation prior to extraction, due to excessive solids present in the samples. Centrifugation was performed following the PFAS Aqueous Centrifuge Protocol; samples were spiked with Surrogate (SUR; Extracted Internal Standard/EIS) and shaken vigorously before being poured into a conical bottle and centrifuged. The centrifuged aqueous sample was decanted back into the original sample bottle, off of the condensed solids remaining in the centrifuge bottle. Original sample bottle was rinsed as normal and centrifuge bottle was rinsed with 4mL of MeOH. Centrifuge bottle rinsate was added to the elution. Samples concentrated to <10mL and reconstituted to 10mL using MeOH by transfer pipet.

The laboratory control sample (LCS) and / or laboratory control sample duplicate (LCSD) for prep batch 92988 exceeded acceptance criteria for the following analytes: GenX. This analyte was spiked at double the concentration indicated, so recovery will be artificially high; affected samples are: WE17052-001, WE17052-002, WE17052-003, WE17052-004.

The laboratory control sample (LCS) for prep batch 92988 recovered outside acceptance criteria for the following analytes: PFBS, ADONA, PFOSA, PFNA, MeFOSA, EtFOSA, 10:2FTS, and PFHxDA. For the following samples, there was an insufficient amount to perform a re-extraction or re-analysis: WE17052-001, WE17052-002, WE17052-003, WE17052-004. The data has been reported.

Surrogate recovery for the following samples was outside of acceptance limits: WE17052-001, WE17052-003. There was insufficient sample to perform a re-extraction; therefore, the data have been reported. Samples were received with only one bottle each.

Sample Summary
Pace Analytical Services, LLC
Lot Number: WE17052
Project Name: 3M Guin Stormwater- Landfill
Project Number: 10559524

Sample Number	Sample ID	Matrix	Date Sampled	Date Received
001	E21-0193-001	Aqueous	05/09/2021 1720	05/14/2021
002	E21-0193-001 PFAS FIELD BLANK	Aqueous	05/09/2021 1720	05/14/2021
003	E21-0193-002	Aqueous	05/09/2021 1738	05/14/2021
004	E21-0193-002 PFAS FIELD BLANK	Aqueous	05/09/2021 1738	05/14/2021

(4 samples)

Detection Summary
Pace Analytical Services, LLC
Lot Number: WE17052
Project Name: 3M Guin Stormwater- Landfill
Project Number: 10559524

Sample	Sample ID	Matrix	Parameter	Method	Result	Q	Units	Page
001	E21-0193-001	Aqueous	PFBS	PFAS by ID	60	L	ng/L	5
001	E21-0193-001	Aqueous	PFHxS	PFAS by ID	44		ng/L	5
001	E21-0193-001	Aqueous	PFBA	PFAS by ID	32		ng/L	5
001	E21-0193-001	Aqueous	PFHpA	PFAS by ID	21		ng/L	5
001	E21-0193-001	Aqueous	PFPeA	PFAS by ID	14		ng/L	5
003	E21-0193-002	Aqueous	PFBS	PFAS by ID	8.5	L	ng/L	7
003	E21-0193-002	Aqueous	PFBA	PFAS by ID	5.6		ng/L	7

(7 detections)

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WE17052-001**

Description: **E21-0193-001** Matrix: **Aqueous**

Date Sampled: **05/09/2021 1720** Project Name: **3M Guin Stormwater- Landfill**

Date Received: **05/14/2021** Project Number: **10559524**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch	Sample Vol.(mL)	Final Vol. (mL)
1	SOP SPE	PFAS by ID SOP (3M)	1	05/21/2021 1857	JJG	05/20/2021 1726	92988	285.00	10.00

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND	Q	7.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND	Q	7.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	L	7.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	L	7.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**60**	**L**	**3.5**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND	Q	3.5	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND	Q	3.5	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	L	3.5	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	**355-46-4**	**PFAS by ID SOP**	**44**		**3.5**	**ng/L**	**1**
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**32**		**3.5**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.5	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND	Q	3.5	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	**375-85-9**	**PFAS by ID SOP**	**21**		**3.5**	**ng/L**	**1**
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	L	3.5	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	**2706-90-3**	**PFAS by ID SOP**	**14**		**3.5**	**ng/L**	**1**

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	210	50-150
13C2_6:2FTS		106	50-150
13C2_8:2FTS		76	50-150
13C2_PFDoA	N	41	50-150
13C3_PFBS		75	50-150
13C3_PFHxS		62	50-150
13C3-HFPO-DA		77	50-150
13C4_PFBA		65	50-150
13C4_PFHpA		92	50-150
13C5_PFPeA		86	50-150
13C6_PFDA		83	50-150
13C8_PFOS	N	45	50-150
13C8_PFOSA		81	50-150
13C9_PFNA		83	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** | Laboratory ID: **WE17052-002**

Description: **E21-0193-001 PFAS FIELD BLANK** | Matrix: **Aqueous**

Date Sampled: **05/09/2021 1720** | Project Name: **3M Guin Stormwater- Landfill**

Date Received: **05/14/2021** | Project Number: **10559524**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch	Sample Vol.(mL)	Final Vol. (mL)
1	SOP SPE	PFAS by ID SOP (3M)	1	05/21/2021 1814	JJG	05/20/2021 1726	92988	222.00	10.00

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		9.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		9.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		9.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		9.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		9.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	L	9.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	L	9.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND	L	4.5	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.5	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.5	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	L	4.5	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.5	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.5	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.5	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.5	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.5	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	L	4.5	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.5	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		86	50-150
13C2_6:2FTS		94	50-150
13C2_8:2FTS		91	50-150
13C2_PFDoA		92	50-150
13C3_PFBS		95	50-150
13C3_PFHxS		88	50-150
13C3-HFPO-DA		88	50-150
13C4_PFBA		99	50-150
13C4_PFHpA		98	50-150
13C5_PFPeA		91	50-150
13C6_PFDA		92	50-150
13C8_PFOS		84	50-150
13C8_PFOSA		91	50-150
13C9_PFNA		92	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WE17052-003**

Description: **E21-0193-002** Matrix: **Aqueous**

Date Sampled: **05/09/2021 1738** Project Name: **3M Guin Stormwater- Landfill**

Date Received: **05/14/2021** Project Number: **10559524**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch	Sample Vol.(mL)	Final Vol. (mL)
1	SOP SPE	PFAS by ID SOP (3M)	1	05/21/2021 1907	JJG	05/20/2021 1726	92988	279.00	10.00

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		7.2	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		7.2	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		7.2	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		7.2	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND	Q	7.2	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	L	7.2	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	L	7.2	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	**375-73-5**	**PFAS by ID SOP**	**8.5**	L	**3.6**	**ng/L**	**1**
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		3.6	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		3.6	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	L	3.6	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		3.6	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	**375-22-4**	**PFAS by ID SOP**	**5.6**		**3.6**	**ng/L**	**1**
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		3.6	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		3.6	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		3.6	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	L	3.6	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		3.6	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS	N	180	50-150
13C2_6:2FTS		109	50-150
13C2_8:2FTS		89	50-150
13C2_PFDoA		66	50-150
13C3_PFBS		80	50-150
13C3_PFHxS		77	50-150
13C3-HFPO-DA		82	50-150
13C4_PFBA		71	50-150
13C4_PFHpA		91	50-150
13C5_PFPeA		86	50-150
13C6_PFDA		86	50-150
13C8_PFOS		61	50-150
13C8_PFOSA		74	50-150
13C9_PFNA		86	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

PFAS by LC/MS/MS

Client: **Pace Analytical Services, LLC** Laboratory ID: **WE17052-004**

Description: **E21-0193-002 PFAS FIELD BLANK** Matrix: **Aqueous**

Date Sampled: **05/09/2021 1738** Project Name: **3M Guin Stormwater- Landfill**

Date Received: **05/14/2021** Project Number: **10559524**

Run	Prep Method	Analytical Method	Dilution	Analysis Date	Analyst	Prep Date	Batch	Sample Vol.(mL)	Final Vol. (mL)
1	SOP SPE	PFAS by ID SOP (3M)	1	05/21/2021 1825	JJG	05/20/2021 1726	92988	249.00	10.00

Parameter	CAS Number	Analytical Method	Result	Q	LOQ	Units	Run
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)	756426-58-1	PFAS by ID SOP	ND		8.0	ng/L	1
11-chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3...)	763051-92-9	PFAS by ID SOP	ND		8.0	ng/L	1
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)	39108-34-4	PFAS by ID SOP	ND		8.0	ng/L	1
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)	27619-97-2	PFAS by ID SOP	ND		8.0	ng/L	1
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)	757124-72-4	PFAS by ID SOP	ND		8.0	ng/L	1
Hexafluoropropylene oxide dimer acid (GenX)	13252-13-6	PFAS by ID SOP	ND	L	8.0	ng/L	1
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	919005-14-4	PFAS by ID SOP	ND	L	8.0	ng/L	1
Perfluoro-1-butanesulfonic acid (PFBS)	375-73-5	PFAS by ID SOP	ND	L	4.0	ng/L	1
Perfluoro-1-decanesulfonic acid (PFDS)	335-77-3	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-1-nonanesulfonic acid (PFNS)	68259-12-1	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-1-octanesulfonamide (PFOSA)	754-91-6	PFAS by ID SOP	ND	L	4.0	ng/L	1
Perfluorohexanesulfonic acid (PFHxS)	355-46-4	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-butanoic acid (PFBA)	375-22-4	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-decanoic acid (PFDA)	335-76-2	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-dodecanoic acid (PFDoA)	307-55-1	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-heptanoic acid (PFHpA)	375-85-9	PFAS by ID SOP	ND		4.0	ng/L	1
Perfluoro-n-nonanoic acid (PFNA)	375-95-1	PFAS by ID SOP	ND	L	4.0	ng/L	1
Perfluoro-n-pentanoic acid (PFPeA)	2706-90-3	PFAS by ID SOP	ND		4.0	ng/L	1

Surrogate	Q	Run 1 % Recovery	Acceptance Limits
13C2_4:2FTS		92	50-150
13C2_6:2FTS		86	50-150
13C2_8:2FTS		91	50-150
13C2_PFDoA		91	50-150
13C3_PFBS		83	50-150
13C3_PFHxS		87	50-150
13C3-HFPO-DA		96	50-150
13C4_PFBA		92	50-150
13C4_PFHpA		87	50-150
13C5_PFPeA		90	50-150
13C6_PFDA		90	50-150
13C8_PFOS		77	50-150
13C8_PFOSA		86	50-150
13C9_PFNA		87	50-150

LOQ = Limit of *Quantitation*
ND = Not detected at or above the LOQ
H = Out of holding time
B = Detected in the method blank
N = Recovery is out of criteria
W = Reported on wet weight basis
E = Quantitation of compound exceeded the calibration range
P = The RPD between two GC columns exceeds 40%
Q = Surrogate failure
L = LCS/LCSD failure
S = MS/MSD failure

QC Summary

PFAS by LC/MS/MS - MB

Sample ID: WQ92988-001
Batch: 92988
Analytical Method: PFAS by ID SOP (3M)

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 05/20/2021 1726

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	ng/L	05/21/2021 1711
11Cl-PF3OUdS	ND		1	8.0	ng/L	05/21/2021 1711
8:2 FTS	ND		1	8.0	ng/L	05/21/2021 1711
6:2 FTS	ND		1	8.0	ng/L	05/21/2021 1711
4:2 FTS	ND		1	8.0	ng/L	05/21/2021 1711
GenX	ND		1	8.0	ng/L	05/21/2021 1711
ADONA	ND		1	8.0	ng/L	05/21/2021 1711
PFBS	ND		1	4.0	ng/L	05/21/2021 1711
PFDS	ND		1	4.0	ng/L	05/21/2021 1711
PFNS	ND		1	4.0	ng/L	05/21/2021 1711
PFOSA	ND		1	4.0	ng/L	05/21/2021 1711
PFHxS	ND		1	4.0	ng/L	05/21/2021 1711
PFBA	ND		1	4.0	ng/L	05/21/2021 1711
PFDA	ND		1	4.0	ng/L	05/21/2021 1711
PFDoA	ND		1	4.0	ng/L	05/21/2021 1711
PFHpA	ND		1	4.0	ng/L	05/21/2021 1711
PFNA	ND		1	4.0	ng/L	05/21/2021 1711
PFPeA	ND		1	4.0	ng/L	05/21/2021 1711

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		83	50-150
13C2_6:2FTS		104	50-150
13C2_8:2FTS		88	50-150
13C2_PFDoA		103	50-150
13C3_PFBS		86	50-150
13C3_PFHxS		81	50-150
13C3-HFPO-DA		102	50-150
13C4_PFBA		97	50-150
13C4_PFHpA		96	50-150
13C5_PFPeA		94	50-150
13C6_PFDA		96	50-150
13C8_PFOS		80	50-150
13C8_PFOSA		90	50-150
13C9_PFNA		88	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
* = RSD is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ92988-101
Batch: 92988
Analytical Method: PFAS by ID SOP (3M)
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 05/20/2021 1726

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	ng/L	05/21/2021 1721
11Cl-PF3OUdS	ND		1	8.0	ng/L	05/21/2021 1721
8:2 FTS	ND		1	8.0	ng/L	05/21/2021 1721
6:2 FTS	ND		1	8.0	ng/L	05/21/2021 1721
4:2 FTS	ND		1	8.0	ng/L	05/21/2021 1721
GenX	ND		1	8.0	ng/L	05/21/2021 1721
ADONA	ND		1	8.0	ng/L	05/21/2021 1721
PFBS	ND		1	4.0	ng/L	05/21/2021 1721
PFDS	ND		1	4.0	ng/L	05/21/2021 1721
PFNS	ND		1	4.0	ng/L	05/21/2021 1721
PFOSA	ND		1	4.0	ng/L	05/21/2021 1721
PFHxS	ND		1	4.0	ng/L	05/21/2021 1721
PFBA	ND		1	4.0	ng/L	05/21/2021 1721
PFDA	ND		1	4.0	ng/L	05/21/2021 1721
PFDoA	ND		1	4.0	ng/L	05/21/2021 1721
PFHpA	ND		1	4.0	ng/L	05/21/2021 1721
PFNA	ND		1	4.0	ng/L	05/21/2021 1721
PFPeA	ND		1	4.0	ng/L	05/21/2021 1721

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		86	50-150
13C2_6:2FTS		86	50-150
13C2_8:2FTS		101	50-150
13C2_PFDoA		85	50-150
13C3_PFBS		84	50-150
13C3_PFHxS		70	50-150
13C3-HFPO-DA		84	50-150
13C4_PFBA		90	50-150
13C4_PFHpA		85	50-150
13C5_PFPeA		90	50-150
13C6_PFDA		88	50-150
13C8_PFOS		84	50-150
13C8_PFOSA		83	50-150
13C9_PFNA		82	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
* = RSD is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - MB

Sample ID: WQ92988-201
Batch: 92988
Analytical Method: PFAS by ID SOP (3M)

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 05/20/2021 1726

Parameter	Result	Q	Dil	LOQ	Units	Analysis Date
9Cl-PF3ONS	ND		1	8.0	ng/L	05/21/2021 1732
11Cl-PF3OUdS	ND		1	8.0	ng/L	05/21/2021 1732
8:2 FTS	ND		1	8.0	ng/L	05/21/2021 1732
6:2 FTS	ND		1	8.0	ng/L	05/21/2021 1732
4:2 FTS	ND		1	8.0	ng/L	05/21/2021 1732
GenX	ND		1	8.0	ng/L	05/21/2021 1732
ADONA	ND		1	8.0	ng/L	05/21/2021 1732
PFBS	ND		1	4.0	ng/L	05/21/2021 1732
PFDS	ND		1	4.0	ng/L	05/21/2021 1732
PFNS	ND		1	4.0	ng/L	05/21/2021 1732
PFOSA	ND		1	4.0	ng/L	05/21/2021 1732
PFHxS	ND		1	4.0	ng/L	05/21/2021 1732
PFBA	ND		1	4.0	ng/L	05/21/2021 1732
PFDA	ND		1	4.0	ng/L	05/21/2021 1732
PFDoA	ND		1	4.0	ng/L	05/21/2021 1732
PFHpA	ND		1	4.0	ng/L	05/21/2021 1732
PFNA	ND		1	4.0	ng/L	05/21/2021 1732
PFPeA	ND		1	4.0	ng/L	05/21/2021 1732

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		74	50-150
13C2_6:2FTS		78	50-150
13C2_8:2FTS		79	50-150
13C2_PFDoA		86	50-150
13C3_PFBS		71	50-150
13C3_PFHxS		73	50-150
13C3-HFPO-DA		82	50-150
13C4_PFBA		82	50-150
13C4_PFHpA		87	50-150
13C5_PFPeA		83	50-150
13C6_PFDA		84	50-150
13C8_PFOS		78	50-150
13C8_PFOSA		70	50-150
13C9_PFNA		100	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
* = RSD is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ92988-002
Batch: 92988
Analytical Method: PFAS by ID SOP (3M)
Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 05/20/2021 1726

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	30	31		1	104	80-120	05/21/2021 1742
11Cl-PF3OUdS	30	29		1	96	80-120	05/21/2021 1742
8:2 FTS	31	32		1	103	80-120	05/21/2021 1742
6:2 FTS	30	36		1	119	80-120	05/21/2021 1742
4:2 FTS	30	30		1	100	80-120	05/21/2021 1742
GenX	32	79	N	1	248	80-120	05/21/2021 1742
ADONA	30	38	N	1	126	80-120	05/21/2021 1742
PFBS	28	30		1	107	80-120	05/21/2021 1742
PFDS	31	34		1	112	80-120	05/21/2021 1742
PFNS	31	26		1	84	80-120	05/21/2021 1742
PFOSA	32	40	N	1	126	80-120	05/21/2021 1742
PFHxS	29	32		1	111	80-120	05/21/2021 1742
PFBA	32	37		1	114	80-120	05/21/2021 1742
PFDA	32	34		1	106	80-120	05/21/2021 1742
PFDoA	32	33		1	103	80-120	05/21/2021 1742
PFHpA	32	37		1	115	80-120	05/21/2021 1742
PFNA	32	37		1	115	80-120	05/21/2021 1742
PFPeA	32	35		1	108	80-120	05/21/2021 1742

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		93	50-150
13C2_6:2FTS		78	50-150
13C2_8:2FTS		88	50-150
13C2_PFDoA		93	50-150
13C3_PFBS		84	50-150
13C3_PFHxS		81	50-150
13C3-HFPO-DA		79	50-150
13C4_PFBA		86	50-150
13C4_PFHpA		86	50-150
13C5_PFPeA		92	50-150
13C6_PFDA		90	50-150
13C8_PFOS		84	50-150
13C8_PFOSA		86	50-150
13C9_PFNA		88	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
* = RSD is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ92988-102
Batch: 92988
Analytical Method: PFAS by ID SOP (3M)

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 05/20/2021 1726

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	%Rec Limit	Analysis Date
9Cl-PF3ONS	190	170		1	89	80-120	05/21/2021 1753
11Cl-PF3OUdS	190	150		1	82	80-120	05/21/2021 1753
8:2 FTS	190	210		1	111	80-120	05/21/2021 1753
6:2 FTS	190	200		1	104	80-120	05/21/2021 1753
4:2 FTS	190	170		1	93	80-120	05/21/2021 1753
GenX	200	480	N	1	241	80-120	05/21/2021 1753
ADONA	190	220		1	119	80-120	05/21/2021 1753
PFBS	180	170		1	97	80-120	05/21/2021 1753
PFDS	190	180		1	91	80-120	05/21/2021 1753
PFNS	190	160		1	81	80-120	05/21/2021 1753
PFOSA	200	260	N	1	129	80-120	05/21/2021 1753
PFHxS	180	200		1	108	80-120	05/21/2021 1753
PFBA	200	210		1	103	80-120	05/21/2021 1753
PFDA	200	190		1	95	80-120	05/21/2021 1753
PFDoA	200	190		1	94	80-120	05/21/2021 1753
PFHpA	200	170		1	87	80-120	05/21/2021 1753
PFNA	200	210		1	106	80-120	05/21/2021 1753
PFPeA	200	200		1	100	80-120	05/21/2021 1753

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		78	50-150
13C2_6:2FTS		67	50-150
13C2_8:2FTS		70	50-150
13C2_PFDoA		87	50-150
13C3_PFBS		76	50-150
13C3_PFHxS		72	50-150
13C3-HFPO-DA		75	50-150
13C4_PFBA		82	50-150
13C4_PFHpA		83	50-150
13C5_PFPeA		79	50-150
13C6_PFDA		78	50-150
13C8_PFOS		85	50-150
13C8_PFOSA		64	50-150
13C9_PFNA		73	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
* = RSD is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

PFAS by LC/MS/MS - LCS

Sample ID: WQ92988-202
Batch: 92988
Analytical Method: PFAS by ID SOP (3M)

Matrix: Aqueous
Prep Method: SOP SPE
Prep Date: 05/20/2021 1726

Parameter	Spike Amount (ng/L)	Result (ng/L)	Q	Dil	% Rec	% RSD	%Rec Limit	% RSD Limit	Analysis Date
9Cl-PF3ONS	520	600		1	115	13	80-120	20	05/21/2021 1804
11Cl-PF3OUdS	530	580		1	110	15	80-120	20	05/21/2021 1804
8:2 FTS	540	630		1	118	6.8	80-120	20	05/21/2021 1804
6:2 FTS	530	550		1	104	8.2	80-120	20	05/21/2021 1804
4:2 FTS	520	570		1	109	7.6	80-120	20	05/21/2021 1804
GenX	560	1300	N	1	238	2.2	80-120	20	05/21/2021 1804
ADONA	530	620		1	118	3.7	80-120	20	05/21/2021 1804
PFBS	500	600	N	1	121	11	80-120	20	05/21/2021 1804
PFDS	540	530		1	98	11	80-120	20	05/21/2021 1804
PFNS	540	580		1	107	16	80-120	20	05/21/2021 1804
PFOSA	560	630		1	112	7.3	80-120	20	05/21/2021 1804
PFHxS	510	560		1	110	1.4	80-120	20	05/21/2021 1804
PFBA	560	600		1	108	5.3	80-120	20	05/21/2021 1804
PFDA	560	600		1	108	6.9	80-120	20	05/21/2021 1804
PFDoA	560	610		1	108	7.0	80-120	20	05/21/2021 1804
PFHpA	560	610		1	109	14	80-120	20	05/21/2021 1804
PFNA	560	680	N	1	122	7.0	80-120	20	05/21/2021 1804
PFPeA	560	620		1	111	5.4	80-120	20	05/21/2021 1804

Surrogate	Q	% Rec	Acceptance Limit
13C2_4:2FTS		76	50-150
13C2_6:2FTS		68	50-150
13C2_8:2FTS		72	50-150
13C2_PFDoA		78	50-150
13C3_PFBS		71	50-150
13C3_PFHxS		73	50-150
13C3-HFPO-DA		76	50-150
13C4_PFBA		83	50-150
13C4_PFHpA		79	50-150
13C5_PFPeA		78	50-150
13C6_PFDA		74	50-150
13C8_PFOS		72	50-150
13C8_PFOSA		77	50-150
13C9_PFNA		64	50-150

LOQ = Limit of Quantitation
ND = Not detected at or above the LOQ
N = Recovery is out of criteria
P = The RPD between two GC columns exceeds 40%
* = RSD is out of criteria
+ = RPD is out of criteria

Note: Calculations are performed before rounding to avoid round-off errors in calculated results

Chain of Custody
and
Miscellaneous Documents

Internal Transfer Chain of Custody

Pace Analytical
www.pacelabs.com

☐ Samples Pre-Logged into eCOC.

State Of Origin: AL
Cert. Needed: ☐ Yes ☒ No
Owner Received Date: 5/11/2021 Results Requested By: 5/25/2021

Workorder: 10559524 **Workorder Name:** 3M Guin Stormwater - Landfill

Report To	Subcontract To
Martha Hansen Pace Analytical Minnesota 1700 Elm Street Minneapolis, MN 55414 Phone (612)607-6451	Pace Analytical West Columbia 106 Vantage Point Drive West Columbia, SC 29172 Phone (803)791-9700

WE17052
KLC2

Item	Sample ID	Sample Type	Collect Date/Time	Lab ID	Matrix	Preserved Containers: Acetate	Requested Analysis: EPA 537M PFAS (Pace SC)	LAB USE ONLY
1	E21-0193-001	PS	5/6/2021 17:20	10559524001	Water	1	X	
2	E21-0193-001 PFAS Field Blank	PS	5/6/2021 17:20	10559524002	Water	1	X	
3	E21-0193-002	PS	5/6/2021 17:38	10559524003	Water	1	X	
4	E21-0193-002 PFAS Field Blank	PS	5/6/2021 17:38	10559524004	Water	1	X	
5								

Transfers	Released By	Date/Time	Received By	Date/Time
1	[signature] Pace	5/13/21 1715		
2				
3	FedEx	10:20 5/14/21	[signature]	5/14/21 10:20

Comments: airbill eligible

Cooler Temperature on Receipt 3.8 °C | Custody Seal Y or N | Received on Ice Y or N | Samples Intact Y or N

***In order to maintain client confidentiality, location/name of the sampling site, sampler's name and signature may not be provided on this COC document. This chain of custody is considered complete as is since this information is available in the owner laboratory.

Pace Analytical Services, LLC (formerly Shealy Environmental Services, Inc.)
106 Vantage Point Drive West Columbia, SC 29172 (803) 791-9700 Fax (803) 791-9111 www.pacelabs.com

Pace Analytical

Samples Receipt Checklist (SRC) (ME0018C-15)
Issuing Authority: Pace ENV WCOL

Revised:9/29/2020
Page 1 of 1

Sample Receipt Checklist (SRC)

Client: PACE Cooler Inspected by/date: JSH / 05/17/2021 Lot #: WE17052

Means of receipt: ☐ Pace ☐ Client ☐ UPS ☑ FedEx ☐ Other:

☐ Yes	☑ No		1. Were custody seals present on the cooler?
☐ Yes	☐ No	☑ NA	2. If custody seals were present, were they intact and unbroken?

pH Strip ID: NA Chlorine Strip ID: NA Tested by: NA

Original temperature upon receipt / Derived (Corrected) temperature upon receipt %Solid Snap-Cup ID: NA

3.8 / 3.8 °C NA / NA °C NA / NA °C NA / NA °C

Method: ☐ Temperature Blank ☑ Against Bottles IR Gun ID: 5 IR Gun Correction Factor: 0 °C

Method of coolant: ☑ Wet Ice ☐ Ice Packs ☐ Dry Ice ☐ None

☐ Yes	☐ No	☑ NA	3. If temperature of any cooler exceeded 6.0°C, was Project Manager Notified? PM was Notified by: phone / email / face-to-face (circle one).
☐ Yes	☑ No	☐ NA	4. Is the commercial courier's packing slip attached to this form? AIRBILL ILEGIBLE
☑ Yes	☐ No		5. Were proper custody procedures (relinquished/received) followed?
☑ Yes	☐ No		6. Were sample IDs listed on the COC?
☑ Yes	☐ No		7. Were sample IDs listed on all sample containers?
☑ Yes	☐ No		8. Was collection date & time listed on the COC?
☑ Yes	☐ No		9. Was collection date & time listed on all sample containers?
☐ Yes	☑ No		10. Did all container label information (ID, date, time) agree with the COC?
☑ Yes	☐ No		11. Were tests to be performed listed on the COC?
☑ Yes	☐ No		12. Did all samples arrive in the proper containers for each test and/or in good condition (unbroken, lids on, etc.)?
☑ Yes	☐ No		13. Was adequate sample volume available?
☐ Yes	☑ No		14. Were all samples received within ½ the holding time or 48 hours, whichever comes first?
☐ Yes	☑ No		15. Were any samples containers missing/excess (circle one) samples Not listed on COC?
☐ Yes	☐ No	☑ NA	16. For VOA and RSK-175 samples, were bubbles present >"pea size" (¼"or 6mm in diameter) in any of the VOA vials?
☐ Yes	☐ No	☑ NA	17. Were all DRO/metals/nutrient samples received at a pH of < 2?
☐ Yes	☐ No	☑ NA	18. Were all cyanide samples received at a pH > 12 and sulfide samples received at a pH > 9?
☐ Yes	☐ No	☑ NA	19. Were all applicable NH_3/TKN/cyanide/phenol/625.1/608.3 (< 0.5mg/L) samples free of residual chlorine?
☐ Yes	☐ No	☑ NA	20. Were client remarks/requests (i.e. requested dilutions, MS/MSD designations, etc…) correctly transcribed from the COC into the comment section in LIMS?
☐ Yes	☑ No		21. Was the quote number listed on the container label? If yes, Quote #

Sample Preservation (Must be completed for any sample(s) incorrectly preserved or with headspace.)

Sample(s) NA were received incorrectly preserved and were adjusted accordingly in sample receiving with NA mL of circle one: H_2SO_4, HNO_3, HCl, NaOH using SR # NA.

Time of preservation NA. If more than one preservative is needed, please note in the comments below.

Sample(s) NA were received with bubbles >6 mm in diameter.

Samples(s) NA were received with TRC > 0.5 mg/L (if #19 is *no*) and were adjusted accordingly in sample receiving with sodium thiosulfate ($Na_2S_2O_3$) with: Shealy ID: NA.

SR barcode labels applied by: JSH Date: 05/17/21

Comments: IDS ON CONTAINERS; WE17052-001: DSN001-1 L; -002: DSN001-1 L PFAS FIELD BLANK; -003: DSN001-2 L; -004: DSN001-2 PFAS FIELD BLANK

SOUTHERN ENVIRONMENTAL TESTING

June 14, 2021

Revised Report

Darrin Miller
3M Company - Guin
6675 US HWY 43
Guin, AL 35563

We appreciate the opportunity to provide our services to you on this project. Please find attached in this revised report the data for the sample(s) listed below:

Lab ID	Sample Description	Date Collected	Date Submitted
DB02492-01	DSN001-1M	05/09/2021	05/09/2021
DB02492-02	DSN001-1 L	05/09/2021	05/09/2021
DB02492-03	DSN001-2 L	05/09/2021	05/09/2021

This cover page and the attached chain-of-custody record(s) are integral parts of your report. Southern Environmental Testing considers this report your official record. This information shall remain in Southern Environmental Testing's active database for a period of one (1) calendar year before archiving. Any replacement of this information after archiving may result in an administrative fee to cover the cost of retrieval.

If you have any questions or would like more information regarding these analyses, please call our Decatur facility at (256) 280-2567 or our Florence facility at (256) 740-5532.

Margaret Aiken
Project Manager

3103 Northington Court
Florence, AL 35630
(256) 740-5532

PO Box 487
Florence, AL 35630
(256) 740-5529 Fax

2919 Fairgrounds Road SW
Decatur, AL 35603
(256) 280-2567

PO Box 2084
Decatur, AL 35602
(256) 350-0686 Fax

SAMPLE RESULTS REPORT - REVISED

Report Date/Time: 06/14/2021 13:08

REPORT TO

Darrin Miller
3M Company - Guin
6675 US HWY 43
Guin, AL 35563

Analyte Name	Result	Units	Qualifer	Regulatory Limit
Sample Point: DSN001-1M	**Sample ID: DB02492-01**	**Collected: 05/09/2021**	**Submitted: 05/09/2021**	
Anions by IC				
Nitrite-Nitrogen	<0.0600	mg/l	H	
Nitrate-Nitrogen	0.517	mg/l	H	
Inorganics				
Biochemical Oxygen Demand	5.36	mg/l		
Hexavalent Chromium	<0.0100	mg/l		
Total Phosphorus	0.270	mg/l	H, Y	
Total Kjeldahl Nitrogen	<1.50	mg/l	H, Y	
Total Nitrogen	<1.76	mg/l		
Total Suspended Solids	22.0	mg/l	H	
Sample Point: DSN001-1 L	**Sample ID: DB02492-02**	**Collected: 05/09/2021**	**Submitted: 05/09/2021**	
Anions by IC				
Nitrite-Nitrogen	<0.0600	mg/l	H	
Nitrate-Nitrogen	0.583	mg/l	H	
Microbiological				
E. coli	246	col/100 ml		
Inorganics				
Biochemical Oxygen Demand	7.56	mg/l		
Hexavalent Chromium	<0.0100	mg/l		
Total Phosphorus	3.00	mg/l	H, Y	
Settleable Solids	0.200	ml/l		
Total Kjeldahl Nitrogen	<1.50	mg/l	H, Y	
Total Nitrogen	<1.76	mg/l		
Total Suspended Solids	1120	mg/l	H	
Sample Point: DSN001-2 L	**Sample ID: DB02492-03**	**Collected: 05/09/2021**	**Submitted: 05/09/2021**	
Anions by IC				

SAMPLE RESULTS REPORT - REVISED

Report Date/Time: 06/14/2021 13:08

REPORT TO

Darrin Miller
3M Company - Guin
6675 US HWY 43
Guin, AL 35563

Analyte Name	Result	Units	Qualifer	Regulatory Limit
Sample Point: DSN001-2 L	**Sample ID: DB02492-03**	**Collected: 05/09/2021**	**Submitted: 05/09/2021**	
Anions by IC (Continued)				
Nitrite-Nitrogen	0.106	mg/l	H	
Nitrate-Nitrogen	0.738	mg/l	H	
Microbiological				
E. coli	24200	col/100 ml		
Inorganics				
Biochemical Oxygen Demand	4.66	mg/l		
Hexavalent Chromium	<0.0100	mg/l		
Total Phosphorus	0.760	mg/l	H, Y	
Settleable Solids	<0.200	ml/l		
Total Kjeldahl Nitrogen	<1.50	mg/l	H, Y	
Total Nitrogen	<1.76	mg/l		
Total Suspended Solids	52.0	mg/l	H	

SAMPLE RESULTS REPORT - REVISED

Report Date/Time: 06/14/2021 13:08

REPORT TO

Darrin Miller
3M Company - Guin
6675 US HWY 43
Guin, AL 35563

All calculations are performed prior to rounding per EPA and *Standard Methods* requirements. Calibration data for field analyses conducted by SET or *ENERSOLV* personnel are available upon request.

Data Qualifiers

H Sample beyond accepted holding time.

Y Analysis performed from improperly preserved container.

< Less than reporting limit

Analysis Information

Lab Number	Analysis	Referenced Method	Analyst	SET Facility	Collection Date/Time	Analysis Start Date/Time	Analysis End Date/Time (BOD, CBOD, Coliforms)
DB02492-01	Nitrate-Nitrogen	EPA 300.0, Rev 2.1	LLW	Decatur	05/09/2021 18:17	06/04/2021 14:33	
DB02492-01	Nitrite-Nitrogen	EPA 300.0, Rev 2.1	LLW	Decatur	05/09/2021 18:17	06/04/2021 14:33	
DB02492-01	Hexavalent Chromium	SM 3500-Cr B-2011	SH	Decatur	05/09/2021 18:17	05/10/2021 14:00	
DB02492-01	Total Kjeldahl Nitrogen	SM 4500-Norg C-2011	DS	Decatur	05/09/2021 18:17	06/07/2021 08:44	
DB02492-01	Total Phosphorus	SM 4500-P E-2011	SH	Decatur	05/09/2021 18:17	06/07/2021 10:00	
DB02492-01	Biochemical Oxygen Demand	SM 5210 B-2011	KC	Decatur	05/09/2021 18:17	05/11/2021 17:00	05/16/2021 12:05
DB02492-01	Total Suspended Solids	USGS I-3765-85	JRW	Decatur	05/09/2021 18:17	06/04/2021 15:00	

SAMPLE RESULTS REPORT - REVISED

Report Date/Time: 06/14/2021 13:08

REPORT TO

Darrin Miller
3M Company - Guin
6675 US HWY 43
Guin, AL 35563

Analysis Information

Lab Number	Analysis	Referenced Method	Analyst	SET Facility	Collection Date/Time	Analysis Start Date/Time	Analysis End Date/Time (BOD, CBOD, Coliforms)
DB02492-02	E. coli	Colilert 18/SM9223B-04	DD	Decatur	05/09/2021 17:20	05/09/2021 21:00	05/11/2021 15:30
DB02492-02	Nitrate-Nitrogen	EPA 300.0, Rev 2.1	LLW	Decatur	05/09/2021 17:20	06/04/2021 14:45	
DB02492-02	Nitrite-Nitrogen	EPA 300.0, Rev 2.1	LLW	Decatur	05/09/2021 17:20	06/04/2021 14:45	
DB02492-02	Settleable Solids	SM 2540-F-2011	SH	Decatur	05/09/2021 17:20	05/10/2021 08:45	
DB02492-02	Hexavalent Chromium	SM 3500-Cr B-2011	SH	Decatur	05/09/2021 17:20	05/10/2021 14:00	
DB02492-02	Total Kjeldahl Nitrogen	SM 4500-Norg C-2011	DS	Decatur	05/09/2021 17:20	06/07/2021 08:44	
DB02492-02	Total Phosphorus	SM 4500-P E-2011	SH	Decatur	05/09/2021 17:20	06/07/2021 10:00	
DB02492-02	Biochemical Oxygen Demand	SM 5210 B-2011	KC	Decatur	05/09/2021 17:20	05/11/2021 17:00	05/16/2021 12:05
DB02492-02	Total Suspended Solids	USGS I-3765-85	JRW	Decatur	05/09/2021 17:20	06/04/2021 15:00	
DB02492-03	E. coli	Colilert 18/SM9223B-04	DD	Decatur	05/09/2021 17:38	05/09/2021 21:00	05/11/2021 15:30
DB02492-03	Nitrate-Nitrogen	EPA 300.0, Rev 2.1	LLW	Decatur	05/09/2021 17:38	06/04/2021 14:57	
DB02492-03	Nitrite-Nitrogen	EPA 300.0, Rev 2.1	LLW	Decatur	05/09/2021 17:38	06/04/2021 14:57	
DB02492-03	Settleable Solids	SM 2540-F-2011	SH	Decatur	05/09/2021 17:38	05/10/2021 08:45	
DB02492-03	Hexavalent Chromium	SM 3500-Cr B-2011	SH	Decatur	05/09/2021 17:38	05/10/2021 14:00	
DB02492-03	Total Kjeldahl Nitrogen	SM 4500-Norg C-2011	DS	Decatur	05/09/2021 17:38	06/07/2021 08:44	
DB02492-03	Total Phosphorus	SM 4500-P E-2011	SH	Decatur	05/09/2021 17:38	06/07/2021 10:00	
DB02492-03	Biochemical Oxygen Demand	SM 5210 B-2011	KC	Decatur	05/09/2021 17:38	05/11/2021 17:00	05/16/2021 12:05
DB02492-03	Total Suspended Solids	USGS I-3765-85	JRW	Decatur	05/09/2021 17:38	06/04/2021 15:00	

ENERSOLV a Solutions Company

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD
2220 BELTLINE ROAD SW DECATUR, ALABAMA 35601
(256) 350-0846

www.enersolv.com

PAGE 1 of 1

COMPANY/CLIENT NAME	CLIENT P.O. NUMBER	ENERSOLV PROJECT NUMBER
ENERSOLV		ENE-160607
CLIENT POINT OF CONTACT	**CLIENT PHYSICAL ADDRESS**	**CITY/STATE/ZIP**
Darrin Miller	2220 Beltline Rd	Decatur, AL 35601
CLIENT EMAIL	**PHONE NUMBER**	**OTHER INFORMATION**
dmiller@enersolv.com	256-350-0846	3M Guin, Alabama
SAMPLE COLLECTED BY	**EXPEDITED REPORT DELIVERY (SURCHARGE)**	
Max Sumrall	**DATE DUE (REQUIRED)**	

REQUESTED ANALYSES

ENERSOLV LAB NUMBER	SAMPLE DESCRIPTION	SAMPLE TRANSFER/GRAB DATE	SAMPLE TRANSFER/GRAB TIME	GRAB	COMP	Hex Chromium, Dup	Settleable Solids	E. Coli	P	TSS	TN	Res chlor
DB02492-01	DSN001-1 M	5-9-21	1817	X		X			X	X	X	X
-02	DSN001-1 L	5-9-21	~~1738~~ 1820	X		X	X	X	X	X	X	
-03	DSN001-2 L	5-9-21	1738	X		X	X	X	X	X	X	

Comments: Additional test added per client

Collector to complete shaded areas, as applicable

SAMPLE TEMPERATURE RECEIVED @ 3.8

SAMPLER INFORMATION		FIELD INFORMATION								Qty	Type	Vol.	Preserv.	Parameter	
Start Date		pH su		TRC mg/l	0	DO mg/l		Temp deg C							
Start Time		Date		Date	5/9/21	Date		Date							
Stop Date		Time		Time	1820	Time		Time							
Stop Time		Analyst		Analyst	DM	Analyst		Analyst							
		SM 4500H+B		SM 4500-Cl D		SM 4500-O G		SM 2550B							

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
Max Sumrall	5/9/21	2039						
RECEIVED BY: (SIGNATURE)	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**	**RECEIVED BY: (SIGNATURE)**	**DATE**	**TIME**

RECEIVED FOR LABORATORY USE BY: (SIGNATURE)	DATE	TIME	SAMPLE STATUS:
Jaylyn Jones	5/9/21	2039	☐ Accepted ☐ Rejected ☐ Accepted with Exception

Enersolv Form FLD-020-SOP A rev. 5

GCMS Sub-Report

3M Guin Process and Landfill Water

GC/MS Purge and Trap Analysis

Laboratory Request Number: E21-0193

Report Date – Date of Last Signature

Testing Laboratory
3M Global EHS Laboratory
Building 260-5N-17
Maplewood, MN 55144-1000

Requester

Blaine Pyron
3M Guin EHS
0001-01-01
brpyron@mmm.com

3M Global EHS Laboratory
Laboratory Director: Brian Mader, Ph.D.
Project Lead: Timothy Gutzkow
Report Author: Kevin Eich

GCMS Sub-Report E21-0193
3M Guin Process and Landfill Water
GC/MS Purge and Trap Analysis
Report Date: Date of Last Signature

Introduction/Summary

The 3M Global EHS Laboratory prepared and analyzed samples collected by Enersolv personnel from the 3M Guin facility. Analysis of the samples was completed as specified under 3M Global EHS Laboratory General Project Outline (GPO) number E21-0193.

Samples were prepared and analyzed for TFE, VDF, HFP, PMVE, PBSF, PFSA monomer, and DIOFB. Additional internal standard and surrogate mixes were added during sample analysis just prior to initiation of purging. Analyses were conducted using method ETS-8-182.2 "Analysis of Volatile Organic Compounds Using Purge and Trap Gas Chromatography/Mass Spectrometry Using EPA Method 8260C".

Some analytes or similar chemistries have historically shown instability in water. Sample collection using amber vials and filling them with 10 mL instead of 40 mL (i.e. to zero headspace) utilizes the volatility of the target analytes to stabilize them. The sample vials are analyzed using the soil mode of purge and trap analysis where the entire contents of the vial are purged (water and headspace). Gas phase standards are used for the calibration curve to provide reliable calibration of the instrumentation. Due to the instability of DIOFB, calibration curves were prepared in a manner to reduce the amount of time from preparation to analysis and fresh CCVs were prepared the following day to demonstrate instrument stability. LCS samples were prepared at the same time but dispersed throughout the analysis to demonstrate the degradation of DIOFB and to a lesser degree the PFSA monomer. Due to the limited room temperature and refrigerated stability for DIOFB, sample results should be considered qualitative only. Stability information indicates shipping and sample handling for the other target analytes should not have affected the data integrity. The following table summarizes the sample results using the analytical method identified above. All results for quality control samples prepared and analyzed with the samples will be reported and discussed elsewhere in this report.

Summary of Sample Results

Description_2	TFE	VDF	HFP	PMVE	PBSF	PFSA monomer	DIOFB
DSN001-1 L	<0.0946	<0.0958	<0.0950	<0.0938	<0.0946	<0.467	<0.471
DSN001-1 M	<0.0856	<0.0866	<0.0859	<0.0849	<0.0856	<0.423	<0.426
TFD manhole	<0.0965	<0.0976	<0.0969	<0.0957	<0.0965	NR	<0.480
Travel Blank	<0.0937	<0.0949	<0.0941	<0.0930	<0.0937	<0.463	<0.467

Units are in ug/L = micrograms per liter which is equivalent to ng/mL (nanograms per milliliter).

Not Reportable: LMS recovery was outside 100% +/- 50%.

The analytical data uncertainties associated with the reported results are as follows: TFE +/- 5.6%, VDF +/- 15%, HFP +/- 12%, PMVE +/- 7.8%, PBSF +/- 12%, and PFSA monomer +/- 23%.

Due to instability of this DIOFB at room temperature, all DIOFB reported results (unless noted otherwise) should be considered a minimum estimated value only. No uncertainty will be provided for this analyte.

Target Analytes

Acronym or Short Name	CAS Number
TFE	116-14-3
VDF	75-38-7
HFP	116-15-4
PMVE	1187-93-5
PBSF	375-72-4
PFSA monomer	88190-28-7
DIOFB	375-50-8

Sample Info

Location	LIMS Sample ID	Sampling Date/Time	Received Date	Last Analysis Date	Holding Times (Days)
DSN001-1 L	E21-0193-001	5/9/2021 5:20:00 PM	5/11/2021	2021-05-24 17:10:37	15
DSN001-1 M	E21-0193-003	5/9/2021 6:17:00 PM	5/11/2021	2021-05-24 21:49:56	15
TFD manhole	E21-0193-006	5/20/2021 8:46:00 AM	5/25/2021	2021-06-03 14:59:52	14
Travel Blank	E21-0193-007		5/11/2021	2021-05-24 22:45:53	

Holding Times

Acronym or Short Name	Chemical Name	Refrigerated Sample Stability	Room Temperature Stability
DIOFB	1,4-Diiodocotafluorobutane; Octafluoro-1,4-diiodobutane	< 7.5 days	3.8 hours
HFP	1,1,2,3,3,3-Hexafluoro-1-propene	35 days	> 10 hours
PBSF	Perfluorobutanesulfonyl fluoride	35 days	> 10 hours
PFSA monomer	1,1,2,2,3,3,4,4-octafluoro-4-[(trifluoroethenyl)oxy]-1-butanesulfonyl fluoride	35 days	> 10 hours
PMVE	Perfluoromethylvinylether	35 days	> 10 hours
TFE	Tetrafluoroethylene	35 days	> 10 hours
VDF	1,1-Difluoroethylene	35 days	> 10 hours

Data is archived with GEN20-07-01.

Last time point tested was 35 days.

At ten hours a downward trend of recovery suggests that room temperature stability for the PFSA monomer is less than a day. Longer analysis times on instrument will result in greater analytical data uncertainty of this target analyte.

Methods - Analytical and Preparatory

Methods

Analysis was completed following 3M Global EHS Laboratory method ETS-8-182.2 "Analysis of Volatile Organic Compounds Using Purge and Trap Gas Chromatography/Mass Spectrometry Using EPA Method 8260C". Results apply to the samples as received.

Accreditation

The laboratory's quality system has been audited and was found to be in conformance with the EPA GLPs (40 CFR 792) as well as ISO/IEC 17025:2017 by an independent assessment. The specific test included in this report is not on the lab's scope of accreditation.

Vial Preparation

For each location, the 3M Global EHS Laboratory prepared volatile organic analysis (VOA) vials. Four amber vials were marked with a 10 mL "fill to here" line and pretreated with 0.120 mL of a 1:1 concentrated HCl:Water solution. Additionally, blank trip vials were prepared. Instructions were provided for filling the vials.

Sample Preparation

Selected vials for analysis were individually weighed and compared to 40 mL amber vials that were filled with exactly 120 µL of a 1:1 concentrated HCl: Milli Q Water and 10 mL of Milli Q water to determine the exact volume of sample placed in the vial. The vials were placed directly onto the purge and trap autosampler. Vials designated as laboratory control matrix spikes were fortified with a gas standard of the target analytes prior to placement on the purge and trap autosampler.

After analysis was complete, the pH of the sample vials was verified using pH strips. Each vial had a measured pH <2, thus demonstrating each vial was properly acid preserved.

Analysis

All samples and quality control samples were analyzed using the soil mode of operation.

Manual Integrations

Due to the nature of the samples and the range of concentrations found in the samples, the software used for processing the analytical results is not able to consistently integrate the analytical peak; therefore, manual integration of the analytical peak is necessary. All manual integrations are performed following the procedures outlined in method ETS-12-010.3. The consistency of the laboratory's integration is ensured through the training of laboratory personnel, the peer review process required for all manual integrations, spot checking of manual integrations by the QAU, and where necessary the review of manual integrations by laboratory management.

Data Analysis

Calibration

For the target analytes, instrument standards used to generate the calibration curve were prepared from dilutions of a gas standard spiked into the headspace of a 40 mL amber VOA vial containing approximately 10 mL Milli Q water and approximately 120 µL of a 1:1 HCl:water mixture. Internal standard calibration was used. A quadratic curve fit with a 1/x weight factor was used producing a coefficient of determination, (r2), greater than 0.990.

System Suitability-Tune Check

Acceptable system performance was demonstrated by meeting manufacturer specifications for mass resolution, mass accuracy, and sensitivity using the internal calibrant perfluorotributylamine, also known as PFTBA prior to analyzing a calibration curve.

Limit of Quantitation (LOQ)

The LLOQ was equal to the lowest standard in the calibration curve that had at least twice the area counts of the appropriate method blanks.

Target Analyte	LOQ (ng)
TFE	0.984
VDF	0.996
HFP	0.988
PMVE	0.976

Target Analyte	LOQ (ng)
PBSF	0.984
PFSA monomer	4.86
DIOFB	4.90

Continuing Calibration Verification

During the analytical sequence, continuing calibration verification samples (CCVs) were analyzed to confirm that the instrument response and the initial calibration curve was still in control. All reported results were bracketed by CCVs that met method acceptance criteria of 100%±30 with the following exceptions:

Batch Name	CCV ID	CCV not meeting method acceptance criteria
R210524 Decatur.batch.bin	GCMS-210524-CCV-01-5	DIOFB: 65.6%
R210524 Decatur.batch.bin	GCMS-210524-CCV-01-6	DIOFB: 63.3%

Due to the instability of the PFSA monomer and DIOFB, fresh CCVs were prepared the following day after the completion of an analysis to verify instrument stability if a failing CCV bracketed the samples at the end of an analysis.

The analytical data uncertainty will be adjusted as appropriate.

Data Analysis

Blanks

Three types of blanks were prepared and analyzed with the samples: method blank, solvent blanks, and trip blanks. Each blank result was reviewed and used to evaluate method performance to determine the LOQ for each analyte. Method blanks had area counts/response ratios that were less than half the LOQ.

Lab Control Spikes (LCSs)

Low, mid, and high lab control spikes were prepared and analyzed in triplicate. LCSs were prepared by spiking known amounts of the analytes from a gas standard into a 40 mL I-chem vial with approximately 10 mL of laboratory reagent water treated with approximately 120 µL of a 1:1 HCl:water solution.

Method ETS-8-182.2 states that the recovery of LCSs at each spiking level must be within 70%-130% of the expected concentration with an RSD ≤25%. All LCS samples met method accuracy criteria with the following exceptions:

Aliquot ID	Laboratory Control Spike Recovery
LCS-210524-004	DIOFB: 131%
LCS-210524-009	DIOFB: 48.4%

LCS Group	Laboratory Control Spike Precision
210524-2	DIOFB: +/- 26%
210524-3	DIOFB: +/- 35%

The analytical data uncertainty will be adjusted as appropriate.

Laboratory Control Samples

	Target Analyte	TFE			VDF			HFP		
LCS Group	Aliquot ID	Conc (ng)	Theoretical (ng)	Percent Recovery	Conc (ng)	Theoretical (ng)	Percent Recovery	Conc (ng)	Theoretical (ng)	Percent Recovery
210524-1	LCS-210524-001	2.55	2.46	104%	2.40	2.49	96.4%	2.36	2.47	95.5%
	LCS-210524-002	2.54	2.46	103%	2.57	2.49	103%	2.42	2.47	98.0%
	LCS-210524-003	2.60	2.46	106%	2.61	2.49	105%	2.59	2.47	105%
	Average/Precision			**104% +/- 1.5%**			**101% +/- 4.5%**			**99.5% +/- 4.9%**
210524-2	LCS-210524-004	12.0	12.1	99.2%	11.7	12.3	95.1%	12.3	12.2	101%
	LCS-210524-005	12.0	12.1	99.2%	11.6	12.3	94.3%	11.6	12.2	95.1%
	LCS-210524-006	11.8	12.1	97.5%	11.2	12.3	91.1%	11.9	12.2	97.5%
	Average/Precision			**98.6% +/- 1.0%**			**93.5% +/- 2.3%**			**97.9% +/- 3.0%**
210524-3	LCS-210524-007	121	121	100%	114	123	92.7%	126	122	103%
	LCS-210524-008	121	121	100%	126	123	102%	124	122	102%
	LCS-210524-009	117	121	96.7%	96.9	123	78.8%	123	122	101%
	Average/Precision			**98.9% +/- 1.9%**			**91.2% +/- 13%**			**102% +/- 0.98%**
210603-1	LCS-210603-001	2.68	2.46	109%	2.53	2.49	102%	2.57	2.47	104%
	LCS-210603-002	2.63	2.46	107%	2.74	2.49	110%	2.50	2.47	101%
	LCS-210603-003	2.61	2.46	106%	2.84	2.49	114%	2.57	2.47	104%
	Average/Precision			**107% +/- 1.4%**			**109% +/- 5.6%**			**103% +/- 1.7%**
210603-2	LCS-210603-004	12.1	12.1	100%	11.8	12.3	95.9%	11.5	12.2	94.3%
	LCS-210603-005	12.1	12.1	100%	11.8	12.3	95.9%	11.4	12.2	93.4%
	LCS-210603-006	11.8	12.1	97.5%	11.5	12.3	93.5%	11.4	12.2	93.4%
	Average/Precision			**99.2% +/- 1.5%**			**95.1% +/- 1.5%**			**93.7% +/- 0.55%**
210603-3	LCS-210603-007	125	121	103%	140	123	114%	125	122	102%
	LCS-210603-008	126	121	104%	142	123	115%	126	122	103%
	LCS-210603-009	123	121	102%	119	123	96.7%	119	122	97.5%
	Average/Precision			**103% +/- 0.97%**			**109% +/- 9.4%**			**101% +/- 2.9%**

Laboratory Control Samples

	Target Analyte	PMVE			PBSF			PFSA monomer		
LCS Group	Aliquot ID	Conc (ng)	Theoretical (ng)	Percent Recovery	Conc (ng)	Theoretical (ng)	Percent Recovery	Conc (ng)	Theoretical (ng)	Percent Recovery
210524-1	LCS-210524-001	2.49	2.44	102%	2.70	2.46	110%	NR	NR	NR
	LCS-210524-002	2.42	2.44	99.2%	2.39	2.46	97.2%	NR	NR	NR
	LCS-210524-003	2.62	2.44	107%	2.30	2.46	93.5%	NR	NR	NR
	Average/Precision			**103% +/- 3.8%**			**100% +/- 8.7%**			**NR**
210524-2	LCS-210524-004	12.0	12.0	100%	11.8	12.1	97.5%	12.2	11.9	103%
	LCS-210524-005	11.9	12.0	99.2%	11.1	12.1	91.7%	10.1	11.9	84.9%
	LCS-210524-006	11.8	12.0	98.3%	10.4	12.1	86.0%	8.50	11.9	71.4%
	Average/Precision			**99.2% +/- 0.86%**			**91.7% +/- 6.3%**			**86.4% +/- 18%**
210524-3	LCS-210524-007	122	120	102%	121	121	100%	111	119	93.3%
	LCS-210524-008	124	120	103%	108	121	89.3%	95.4	119	80.2%
	LCS-210524-009	121	120	101%	103	121	85.1%	86.2	119	72.4%
	Average/Precision			**102% +/- 0.98%**			**91.5% +/- 8.4%**			**82.0% +/- 13%**
210603-1	LCS-210603-001	2.64	2.44	108%	2.62	2.46	107%	NR	NR	NR
	LCS-210603-002	2.49	2.44	102%	2.51	2.46	102%	NR	NR	NR
	LCS-210603-003	2.46	2.44	101%	2.41	2.46	98.0%	NR	NR	NR
	Average/Precision			**104% +/- 3.6%**			**102% +/- 4.4%**			**NR**
210603-2	LCS-210603-004	11.5	12.0	95.8%	12.3	12.1	102%	12.0	11.9	101%
	LCS-210603-005	11.3	12.0	94.2%	12.0	12.1	99.2%	10.3	11.9	86.6%
	LCS-210603-006	11.2	12.0	93.3%	11.5	12.1	95.0%	10.3	11.9	86.6%
	Average/Precision			**94.4% +/- 1.3%**			**98.7% +/- 3.6%**			**91.4% +/- 9.1%**
210603-3	LCS-210603-007	122	120	102%	132	121	109%	125	119	105%
	LCS-210603-008	122	120	102%	128	121	106%	109	119	91.6%
	LCS-210603-009	116	120	96.7%	126	121	104%	115	119	96.6%
	Average/Precision			**100% +/- 3.1%**			**106% +/- 2.4%**			**97.7% +/- 6.9%**

NR: Not Reportable: Theoretical value is below the lower limit of quantitation.

Laboratory Control Samples

	Target Analyte	DIOFB		
LCS Group	Aliquot ID	Conc (ng)	Theoretical (ng)	Percent Recovery
210524-1	LCS-210524-001	NR	NR	NR
	LCS-210524-002	NR	NR	NR
	LCS-210524-003	NR	NR	NR
	Average/Precision			**NR**
210524-2	LCS-210524-004	15.9	12.1	131%(a)
	LCS-210524-005	12.6	12.1	104%
	LCS-210524-006	9.37	12.1	77.4%
	Average/Precision			**104% +/- 26%(p)**
210524-3	LCS-210524-007	121	121	100%
	LCS-210524-008	86.0	121	71.1%
	LCS-210524-009	58.6	121	48.4%(a)
	Average/Precision			**73.2% +/- 35%(p)**
210603-1	LCS-210603-001	NR	NR	NR
	LCS-210603-002	NR	NR	NR
	LCS-210603-003	NR	NR	NR
	Average/Precision			**NR**
210603-2	LCS-210603-004	14.6	12.1	121%
	LCS-210603-005	11.3	12.1	93.4%
	LCS-210603-006	10.9	12.1	90.1%
	Average/Precision			**102% +/- 17%**
210603-3	LCS-210603-007	131	121	108%
	LCS-210603-008	101	121	83.5%
	LCS-210603-009	100	121	82.6%
	Average/Precision			**91.4% +/- 16%**

NR: Not Reportable: Theoretical value is below the lower limit of quantitation.

(a): Laboratory Control Sample did not meet the method acceptance criteria for accuracy of 100% +/- 30%.

(p): Laboratory Control Sample did not meet the method acceptance criteria for precision of <25%.

Analytical Data Uncertainty

Analytical data uncertainty is based on historical QC data that is control charted and used to evaluate method accuracy and precision. The analytical data uncertainty is calculated following ETS-12-012.5. The standard deviation is calculated for the set of accuracy results (in %) obtained for the QC samples. For method ETS-8-182.2, the most recent QC samples were used. The analytical data uncertainty is calculated by multiplying the standard deviation by a factor, which corresponds to a confidence level of 95%. When determining the analytical data uncertainty assigned to the sample results, in addition to the analytical data method uncertainty, the QC samples prepared with the project samples are also reviewed. Instances where QC samples do not meet method acceptance criteria, the analytical data uncertainty may be adjusted for that target analyte provided the QC result is greater than the calculated analytical data uncertainty. In situations where the performance-based approach allowed by ETS-8-182 to analyze for unvalidated analytes was not successful due to the non-compliance of QC elements the results will be flagged as qualitative. Qualitative results should be considered estimates or minimum estimates if the target analyte has known instability.

Analytical Data Uncertainty

Target Analyte	N	Factor	Standard Deviation (%)	Analytical Data Uncertainty
HFP	50	2.00	6.35	+/- 13%
PFSA monomer	50	2.00	12.0	+/- 24%
PBSF	50	2.00	6.30	+/- 13%
PMVE	50	2.00	4.37	+/- 8.7%
TFE	50	2.00	3.30	+/- 6.6%
VDF	50	2.00	7.75	+/- 16%

Due to instability of DIOFB at room temperature, all DIOFB reported results (unless noted otherwise) should be considered a minimum estimated value only. No uncertainty will be provided for this analyte.

Laboratory Matrix Spikes (LMS)

A laboratory matrix spike sample was prepared for selected sampling points to verify that the analytical method is applicable for the collected matrix. Lab matrix spikes are generated by addition of a gas standard of the target analytes to a sample received by the laboratory prior to analysis. Lab matrix spike recoveries within method acceptance criteria of 100±30% confirm that "unknown" components in the sample matrix do not significantly interfere with the extraction and analysis of the analytes of interest.

Additionally, every vial analyzed had internal standards and surrogate standards added automatically prior to purging the vial. Surrogate recovery standards (± 25%) and lab matrix spike recoveries met method acceptance criteria.

Sample Results

Location	Target Analyte / Aliquot ID	TFE Spike Conc. (ug/L)	TFE Theoretical Conc. (ug/L)	TFE (ug/L)/ Percent Recovery	VDF Spike Conc. (ug/L)	VDF Theoretical Conc. (ug/L)	VDF (ug/L)/ Percent Recovery	HFP Spike Conc. (ug/L)	HFP Theoretical Conc. (ug/L)	HFP (ug/L)/ Percent Recovery
DSN001-1 L	E21-0193-001.1	NA	NA	<0.0946	NA	NA	<0.0958	NA	NA	<0.0950
	E21-0193-001.2	2.54	2.46	102%	2.44	2.51	97.2%	2.42	2.49	97.2%
DSN001-1 M	E21-0193-003.1	NA	NA	<0.0856	NA	NA	<0.0866	NA	NA	<0.0859
	E21-0193-003.2	2.09	2.09	100%	1.88	2.11	89.1%	1.95	2.10	92.9%
TFD manhole	E21-0193-006.1	NA	NA	<0.0965	NA	NA	<0.0976	NA	NA	<0.0969
	E21-0193-006.2	2.40	2.31	104%	2.55	2.33	109%	2.46	2.32	106%
Travel Blank	E21-0193-007.1	NA	NA	<0.0937	NA	NA	<0.0949	NA	NA	<0.0941

Location	Target Analyte / Aliquot ID	PMVE Spike Conc. (ug/L)	PMVE Theoretical Conc. (ug/L)	PMVE (ug/L)/ Percent Recovery	PBSF Spike Conc. (ug/L)	PBSF Theoretical Conc. (ug/L)	PBSF (ug/L)/ Percent Recovery	PFSA monomer Spike Conc. (ug/L)	PFSA monomer Theoretical Conc. (ug/L)	PFSA monomer (ug/L)/ Percent Recovery
DSN001-1 L	E21-0193-001.1	NA	NA	<0.0938	NA	NA	<0.0946	NA	NA	<0.467
	E21-0193-001.2	2.46	2.46	100%	2.42	2.48	97.6%	2.36	2.45	96.3%
DSN001-1 M	E21-0193-003.1	NA	NA	<0.0849	NA	NA	<0.0856	NA	NA	<0.423
	E21-0193-003.2	2.03	2.07	98.1%	1.99	2.09	95.2%	1.85	2.06	89.8%
TFD manhole	E21-0193-006.1	NA	NA	<0.0957	NA	NA	<0.0965	NA	NA	NR
	E21-0193-006.2	2.39	2.29	104%	2.53	2.31	110%	NA	NA	NR
Travel Blank	E21-0193-007.1	NA	NA	<0.0930	NA	NA	<0.0937	NA	NA	<0.463

Location	Target Analyte / Aliquot ID	DIOFB Spike Conc. (ug/L)	DIOFB Theoretical Conc. (ug/L)	DIOFB (ug/L)/ Percent Recovery
DSN001-1 L	E21-0193-001.1	NA	NA	<0.471
	E21-0193-001.2	1.92	2.47	77.7%
DSN001-1 M	E21-0193-003.1	NA	NA	<0.426
	E21-0193-003.2	1.52	2.08	73.1%
TFD manhole	E21-0193-006.1	NA	NA	<0.480
	E21-0193-006.2	2.41	2.30	105%
Travel Blank	E21-0193-007.1	NA	NA	<0.467

Units are in ug/L = micrograms per liter which is equivalent to ng/mL (nanograms per milliliter).

NA: Not Applicable

NR: Not Reportable: LMS recovery was outside 100% +/- 50%

Surrogate Results

Location	Aliquot ID	Dibromofluoromethane	1,2-dichloroethane-d4	Toluene-d8	1-Bromo-4-fluorobenzene (BFB)
DSN001-1 L	E21-0193-001.1	95.7%	98.4%	101%	101%
	E21-0193-001.2	100%	101%	98.1%	101%
DSN001-1 M	E21-0193-003.1	102%	94.3%	98.7%	97.5%
	E21-0193-003.2	105%	98.3%	98.8%	100%
TFD manhole	E21-0193-006.1	92.4%	95.9%	99.1%	91.2%
	E21-0193-006.2	100%	94.5%	103%	90.3%
Travel Blank		**101%**	**98.2%**	**99.6%**	**99.7%**

Conclusion

Laboratory control spikes were used to determine the analytical method accuracy and precision for all analytes. The accuracy and precision were then used to estimate the method uncertainty for the results. Lab matrix spike recoveries demonstrated that the analytical method was appropriate for the given sample matrix. Analysis was completed using 3M Global EHS Laboratory method ETS-8-182.2 "Analysis of Volatile Organic Compounds Using Purge and Trap Gas Chromatography/Mass Spectrometry Using EPA Method 8260C".

Data/Sample Retention

All remaining sample and associated project data (hardcopy and electronic) will be archived according to 3M Global EHS Laboratory standard operating procedures.

Signatures

Digitally signed by Kevin J. Eich
DN: c=US, st=MN, l=St. Paul, o=3M, ou=EHS Laboratory, cn=Kevin J. Eich, email=keich@mmm.com
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Kevin J. Eich, Specialist Chemist, Report Author

Digitally signed by Michelle D. Malinsky
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Michelle D. Malinsky, Ph.D., Advanced Specialist Chemist, Technical Reviewer

The 3M Global EHS Laboratory's Quality Assurance Unit has audited the data and report for this project.

Digitally signed by Bobbie Starkey
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Date: 2021.09.01 15:48:46 -05'00'
Adobe Acrobat version: 2017.011.30199

Quality Assurance Representative

LC/MS Sub-Report

Analysis of 3M Guin Stormwater and Wastewater Samples

Laboratory Request Number: E21-0193

Method Requirement: 3M Method ETS-8-044.5

Report Date – Date of Last Signature

Testing Laboratory

3M Global EHS Laboratory
Building 260-5N-17
Maplewood, MN 55144-1000

Requester

Blaine Pyron
3M Guin EHS
0001-01-01
(205) 468-8442
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The laboratory's quality system has been audited and was found to be in conformance with the EPA GLPs (40 CFR 792) as well as ISO/IEC 17025:2017 by an independent assessment. The specific test included in this report is on the lab's scope of accreditation, however, not all quality system elements have been followed.

3M Global EHS Laboratory

3M Global EHS Laboratory Manager: Brian T. Mader, Ph.D.
3M Principal Analytical Investigator: Susan Wolf
3M Report Author: Chelsie Grochow

LC/MS Sub-Report

Analysis of 3M Guin Stormwater and Wastewater Samples

Report Date: Date of Last Signature

1 Introduction/Summary

The 3M Global EHS Laboratory prepared and analyzed water samples collected from the 3M Guin facility's stormwater discharge location "DSN001-1 M", landfill discharge locations "DSN001-1 L" and "DSN001-2 L", wastewater facility discharge "RDL", and total facility wastewater discharge "TFD manhole". The samples were collected on April 7, 2021, May 9, 2021, or May 20, 2021 and received on ice by the 3M Global EHS Laboratory on April 9, 2021, May 11, 2021, June 15, 2021 or May 25, 2021. The results in this report apply to the samples as received from Enersolv personnel. Analysis of the samples was completed as specified under 3M Global EHS Laboratory General Project Outline (GPO) number E21-0193. The initial request for samples being analyzed by the 3M Global EHS Laboratory was to look for a different subset of the compound(s) depending on the sampling location. This would require running the samples individually. For efficiency purposes, the requester was contacted and asked it would be acceptable to run all samples together which means generating data for analytes that may not have been required for a location. The requester approved of running all samples together and the analyte list was based on various data sources.

The 3M Global EHS Laboratory prepared sample containers for the collection of water sample from five sampling locations. Each sample was collected as a single replicate. The sample containers were marked with a "fill to here" line that corresponded to a final volume of 50 mL or 100 mL. All sample bottles were fortified with internal standards prior to being sent to the field for sample collection. A travel blank set including a travel blank matrix spike were provided. The sample containers for the field matrix spikes were fortified with appropriate spike solutions containing all target analytes prior to being sent to the field for sample collection.

Samples were prepared and analyzed for the target analytes listed in Table 2 using method ETS-8-044.5 "Method of Analysis for the Determination of Perfluorinated Compounds in Water by LC/MS/MS; Direct Injection Analysis". Internal standards were used to aid in the data quality objectives for select target analytes.

Table 1 summarizes the sample results using the analytical method identified above. All results for quality control samples prepared and analyzed with the samples will be discussed elsewhere in this report.

Table 1. Sample Results Summary. [1]

Sample ID	Sample Description	Sampling Date/Time	PFPA Concentration (ng/mL)	2233-TFPA Concentration (ng/mL)	2333-TFPA Concentration (ng/mL)	FBSA Concentration (ng/mL)	N-MeFOSAA Concentration (ng/mL)	N-EtFOSAA Concentration (ng/mL)
E21-0193-001	DSN001-1 L	5/9/2021 17:20	0.0326	<0.500	<2.00	0.0140	<0.00998	0.0482
E21-0193-002	DSN001-2 L	5/9/2021 17:38	0.0366	<0.500	<2.00	<0.0102	<0.00998	<0.0200
E21-0193-003	DSN001-1 M	5/9/2021 18:17	0.0534	<0.500	<2.00	<0.0102	<0.00998	<0.0200
E21-0193-004	RDL	4/7/2021 08:52	NA	NA	NA	0.0136	<0.00998	<0.0200
E21-0193-006	TFD manhole	5/20/2021 08:46	0.0364	<0.500	<2.00	0.0266	<0.00998	0.0270
E21-0193-007	Travel Blank	3/10/2021 13:30	<0.0250	<0.500	<2.00	<0.0102	<0.00998	<0.0200

Sample ID	Sample Description	Sampling Date/Time	PFBSI Concentration (ng/mL)	MeFBSE Concentration (ng/mL)	FBSE Concentration (ng/mL)	FBSEE Diol Concentration (ng/mL)	FBSEE-DA Concentration (ng/mL)	FBSAA Concentration (ng/mL)
E21-0193-001	DSN001-1 L	5/9/2021 17:20	<0.0100	<0.0506 [5]	<0.0206 [5]	<0.0100	<0.0100	<0.0500 [5]
E21-0193-002	DSN001-2 L	5/9/2021 17:38	<0.0100	<0.0506	<0.0206	<0.0100	<0.0100	<0.0500
E21-0193-003	DSN001-1 M	5/9/2021 18:17	<0.0100	<0.0506	<0.0206	<0.0100	<0.0100	<0.0500
E21-0193-004	RDL	4/7/2021 08:52	<0.0100	42.8	<0.0206	<0.0100	<0.0100	<0.0500
E21-0193-006	TFD manhole	5/20/2021 08:46	<0.0100	<0.0506	<0.0206	<0.0100	<0.0100	<0.0500
E21-0193-007	Travel Blank	3/10/2021 13:30	<0.0100	<0.0506	<0.0206	<0.0100	<0.0100	<0.0500

Sample ID	Sample Description	Sampling Date/Time	MeFBSAA Concentration (ng/mL)	DBI Concentration (ng/mL)	PECHS Concentration (ng/mL)	BPAF Concentration (ng/mL)	PFHxSA Concentration (ng/mL)	C4 Curative [3] Concentration (ng/mL)
E21-0193-001	DSN001-1 L	5/9/2021 17:20	0.0782 [5]	<0.00998	<0.00922 [2]	<0.0500 [2]	<0.0100	<0.0942
E21-0193-002	DSN001-2 L	5/9/2021 17:38	0.0260	<0.00998	<0.00922	<0.0500	<0.0100	<0.0942
E21-0193-003	DSN001-1 M	5/9/2021 18:17	<0.0100	<0.00998	<0.00922	<0.0500	0.0210	<0.0942
E21-0193-004	RDL	4/7/2021 08:52	0.0360	<0.00998	<0.00922	<0.0500	<0.0100	<0.0942
E21-0193-006	TFD manhole	5/20/2021 08:46	0.0226	<0.00998 [2]	<0.00922	0.0588	0.198	<0.0942
E21-0193-007	Travel Blank	3/10/2021 13:30	<0.0100	<0.00998	<0.00922	<0.0500	<0.0100	<0.0942

NA = Not Applicable; target analyte not requested for the sample location

(1) Samples were analyzed using both internal and external calibration. See section 3.7 of the report for the analytical data uncertainty assigned to the sample results.

(2) Analytical data uncertainty is expanded for this sample result due to a non-compliant QC element. See section 3.8 of the report for additional information.

(3) The C4 Methyl Amide Phosphonium Curative is measured as the Phosphonium, triphenyl(phenylmethyl)-, salt (TPBP).

(4) PFSA monomer reacts in water to form the hydrolysis products 2,2,3,3,4,4-hexafluoro-4-sulfobutanoic acid (hydrolysis product 1) and 1,1,2,2,3,3,4,4-octafluoro-4-[(trifluoroethenyl)oxy]butane-1-sulfonic acid (hydrolysis product 2). These two hydrolysis products were summed and reported as MV-4S (PFSA monomer).

(5) Data is reported with FMS recoveries outside of 100±50% and ***should be considered qualitative, estimates at best.***

Table 1 continued. Sample Results Summary. (1)

Sample ID	Sample Description	Sampling Date/Time	PBSA Concentration (ng/mL)	PBSA-C1 Concentration (ng/mL)	MV-4S (4) Concentration (ng/mL)
E21-0193-001	DSN001-1 L	5/9/2021 17:20	<0.0100	<0.0100	0.444
E21-0193-002	DSN001-2 L	5/9/2021 17:38	<0.0100	<0.0100	0.110
E21-0193-003	DSN001-1 M	5/9/2021 18:17	<0.0100	<0.0100	0.140
E21-0193-004	RDL	4/7/2021 08:52	0.210	<0.0100	NA
E21-0193-006	TFD manhole	5/20/2021 08:46	<0.0100	<0.0100	0.179
E21-0193-007	Travel Blank	3/10/2021 13:30	<0.0100	<0.0100	<0.100

NA = Not Applicable; target analyte not requested for the sample location

(1) Samples were analyzed using both internal and external calibration. See section 3.7 of the report for the analytical data uncertainty assigned to the sample results.

(2) Analytical data uncertainty is expanded for this sample result due to a non-compliant QC element. See section 3.8 of the report for additional information.

(3) The C4 Methyl Amide Phosphonium Curative is measured as the Phosphonium, triphenyl(phenylmethyl)-, salt (TPBP).

(4) PFSA monomer reacts in water to form the hydrolysis products 2,2,3,3,4,4-hexafluoro-4-sulfobutanoic acid (hydrolysis product 1) and 1,1,2,2,3,3,4,4-octafluoro-4-[(trifluoroethenyl)oxy]butane-1-sulfonic acid (hydrolysis product 2). These two hydrolysis products were summed and reported as MV-4S (PFSA monomer).

(5) Data is reported with FMS recoveries outside of 100±50% and ***should be considered qualitative, estimates at best.***

2 Methods - Analytical and Preparatory

2.1 Methods

Analysis was completed following 3M Global EHS Laboratory method ETS-8-044.5 "Method of Analysis for the Determination of Perfluorinated Compounds in Water by LC/MS/MS; Direct Injection Analysis".

Table 1. Target Analytes.

Target Analytes	Acronym	CAS No
Perfluropropionic acid	PFPA	378-76-7
2,2,3,3-Tetrafluoropropionic Acid	2233-TFPA	71592-16-0
2,3,3,3-Tetrafluoropropionic Acid	2333-TFPA	359-49-9
1,1,2,2,3,3,4,4,4-Nonafluorobutane-1-sulfonamide	FBSA	30334-69-1
N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6
Nonafluorobutane-1-sulfinic acid	PFBSi	34642-43-8
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-N-methylbutane-1-sulfonamide	MeFBSE	34454-97-2
1,1,2,2,3,3,4,4,4-Nonafluoro-N-(2-hydroxyethyl)-1-butanesulfonamide	FBSE	34454-99-4
1,1,2,2,3,3,4,4,4-Nonafluoro-N,N-bis(2-hydroxyethyl)butane-1-sulfonamide	FBSEE Diol	34455-00-0
[(Nonafluorobutane-1-sulfonyl)-carboxymethylamino]acetic acid	FBSEE-DA	1268835-43-3
Perfluorobutyl sulfonamido acetic acid	FBSAA	347872-22-4
Perfluorobutyl-methyl sulfonamido acetic acid	MeFBSAA	159381-10-9
Bis(Nonafluorobutanesulfonyl)imide	DBI	129135-87-1
Perfluoro-4-ethylcyclohexanesulfonate	PECHS	335-24-0
Phenol,4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-	BPAF	1478-61-1
1,1,2,2,3,3,4,4,5,5,6,6,6-Tridecafluorohexane-1-sulfonamide; perfluorohexanesulfonamide	PFHxSA	41997-13-1
Phosphonium, triphenyl(phenylmethyl)-, salt with 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-1 butanesulfonamide (1:1)	C4 Curative	332350-93-3
N-[3-(dimethylamino)propyl]-1,1,2,2,3,3,4,4-nonafluoro-butane-1-sulfonamide	PBSA	68555-77-1
3-((N-(3-(dimethylamino)propyl)-perfluorobutyl)sulfonamido)propanoic acid	PBSA-C1	172616-04-5
1,1,2,2,3,3,4,4-octafluoro-4-[(trifluoroethenyl)oxy]-1-butanesulfonyl fluoride	MV-4S [1]	88190-28-7

[1] This compound has been shown in method development studies to hydrolyze in water (t1/2 ≈ 5 hrs) to form a sulfonic acid. Over time further hydrolysis occurs and a diacid is formed with a carboxylic acid on one side of molecule and a sulfonic acid on the other end. Measurement of the hydrolysis products in water requires 3M Env Lab SOP ETS-8-044.5 (LC/MS).

2.2 Sample Collection

Samples were collected in 125 mL Nalgene™ (high-density polyethylene) bottles prepared at the 3M Global EHS Laboratory. The sample bottles were spiked with a mixture of mass-labeled internal standards at a nominal concentration of 1 ng/mL. A travel blank set was sent with the bottle order and included a travel blank and a travel blank matrix spike. The travel blank sample containers were filled with laboratory reagent water before being sent out. The field matrix spike containers were spiked with all target analytes prior to filling with laboratory reagent water. Sample collection dates are included in Table 1. Samples were received on ice by the 3M Global EHS Laboratory on April 9, 2021, May 11, 2021, June 15, 2021 or May 25, 2021.

2.3 Sample Preparation

Each sample preparation batch included the preparation of a minimum of three method blanks, which were aliquots of laboratory reagent water diluted in the same manner as the project samples. Each preparation batch included laboratory control samples, prepared at a minimum of three levels in triplicate, with one set prepared at the low end of the calibration curve, one set near the mid-range and one set at the upper end of the curve. The laboratory control samples were prepared by fortifying laboratory reagent water and diluting in the same manner as the project samples.

Samples were prepared as follows:

- PFPA / 2,2,3,3-TFPA / 2,3,3,3-TPFA / PFSA Monomer hydrolysis product 1 and 2: Samples were prepared by diluting the project sample 1:1 with acetonitrile.

- All other target analytes: To the sample container, which was marked and filled to the 50 mL fill line, a 100 mL "fill line" was added to the sample container. Then methanol was added to the sample container to the 100-mL line and vortex mixed. The sample container, which now contained the aqueous sample (50mL) and methanol (50mL) for a 2-fold dilution of the sample, was placed on an orbital shaker for approximately 30 minutes at approximately 100 rpm at room temperature. The resulting sample/methanol container was mixed well before removing an aliquot for analysis.

2.4 Analysis

All samples and quality control samples were analyzed for the target analytes using high performance liquid chromatography/tandem mass spectrometry (HPLC/MS/MS). Pertinent instrument parameters, the liquid chromatography gradient program, and the specific mass transitions analyzed are included with the raw data.

Due to the nature of the samples, the wide range of concentrations found in the samples, and the environmental occurrence of multiple isomers of the laboratory's analytes of interest, the software used for processing the analytical results is not able to consistently integrate the analytical peaks, manual integration of the analytical peak is necessary. All manual integrations are performed following the procedures outlined in method ETS-12-010.3. The consistency of the laboratory's integration is ensured through the training of laboratory personnel, the peer review process required for all manual integrations, the review of manual integrations by the QAU, and where necessary the review of manual integrations by laboratory management.

3 Data Analysis

3.1 Calibration

Internal or external, where an appropriate internal standard was not available, calibration was used for the analyses. The calibration curves contained a minimum of six standards. Each curve point was quantitated using the overall calibration curve and reviewed for accuracy. Method calibration accuracy requirements of 100±25% (100±30% for the lowest curve point) were met for all analytes. The correlation coefficient (r) was greater than 0.995 for all analytes.

3.2 System Suitability

A calibration standard was analyzed three or four times at the beginning of the analytical sequence to demonstrate overall system suitability. The acceptance criteria for system suitability samples of less than or equal to 5% relative standard deviation (RSD) for peak area ratio (or area counts for external standard analysis) and retention time criteria of less than or equal to 2% RSD were met for all analytes except noted below:

- 6/10/21 Analysis [t210610a]: The area count RSD was 7% for FBSE, 13% for FBSAA, and 7% for PFHxSA.

Other QC elements were used to determine the reportability of the sample results, including continuing calibration verification (CCV) standards, laboratory control samples (LCSs) and field matrix spikes (FMSs). These other QC elements are discussed in sections 3.4, 3.6 and 4 of the report.

3.3 Limit of Quantitation (LOQ)

The LOQ as defined in method ETS-8-044 is the lowest non-zero calibration standard in the curve that meets linearity and accuracy requirements and for which the area counts are at least twice those of the appropriate blanks. The LOQs associated with the sample analysis are in Table 1 when at least one sample fell below LOQ. All LOQs can be found with the raw data.

3.4 Continuing Calibration

During the course of the analytical sequence, several continuing calibration verification samples (CCVs) were analyzed to confirm that the instrument response and the initial calibration curve were still in control. The method acceptance criteria of 100% ± 25% was met for all samples.

3.5 Blanks

Three types of blanks were prepared and analyzed with the samples; method blanks, solvent blanks and field/trip blanks. Each blank result was reviewed and used to evaluate method performance. Method blank results were reviewed and used to evaluate method performance to determine the LOQ for each analyte.

3.6 Lab Control Spikes (LCSs)

The lab control spikes were prepared at a minimum of three levels for the target analytes and analyzed in triplicate. LCSs were prepared by spiking known amounts of the analytes into laboratory reagent water to produce the desired concentration. LCS spiking concentrations can be found with the raw data. The LCSs were then diluted with solvent in the same manner as the samples.

The ETS-8-044.5 method acceptance criteria states that at least 67% of LCS samples must be within 20% of their respective nominal value at each LCS spike level.

When low or high calibration standards are disabled, the low level LCSs may quantitate below the limit of quantitation when spiked below the resulting LOQ, and high level LCSs may quantitate above the upper limit of quantitation when spiked above the resulting ULOQ.

The method acceptance criteria were met for all analytes except noted below:

- 6/10/21 Analysis [t210610a]: Two low-level LCSs had recoveries outside the acceptance criteria for PFBSi (75.0% and 78.9%) and FBSEE-DA (74.6% and 78.9%). One mid-level LCS had a recovery of 64.3% for FBSEE-DA. Since more than 67% of the LCSs fail to meet acceptance criteria for PFBSi and FBSEE-DA, a method deviation is included in the raw data.

- 6/15/21 Analysis [t210615a]: One mid-level LCS had a recovery of 77.9% for MeFBSE.

The batch LCS recovery results were reviewed when evaluating the analytical method uncertainty in section 3.8 of the report.

3.7 Target Analyte Concentration Calculations

3.7.1 C4 Curative, CAS No. 332350-93-3

The C4 Curative concentration, which is a 1:1 mixture of Phosphonium, triphenyl(phenylmethyl)-, (TPBP) salt with 1,1,2,2,3,3,4,4,4-nonafluoro-N-methyl-1 butanesulfonamide (MeFBSA) was calculated based on the amount of TPBP detected in the sample, as there are other processes at the 3M Decatur facility that may discharge MeFBSA.

The molecular weight for the C4 Curative (C30H25F9NO2PS) was calculated as 665.5494.
Using the molecular weight of the TPBP cation (C25H22P+) at 353.4154 and correcting for the salt, the ratio of TPBP in the C4 curative is 0.5310 (i.e. molecular weight of TPBP at 353.41534 / molecular weight of C4 Curative at 665.5494). Using the molecular weight of the MeFBSA anion (C5H3F9NO2S-) at 312.1340, the ratio of MeFBSA in the C4 Curative is 0.4690 (i.e. molecular weight of MeFBSA at 312.1340 / molecular weight of C4 Curative at 665.5494).

The concentration of MeFBSA associated with the C4 Curative was calculated based on the concentration of TPBP in the sample, as follows:

Calculated MeFBSA, µg/L = (TPBP conc. µg/L) X (MeFBSA ratio 0.4690 / TPBP ratio 0.5310)
C4 Curative, µg/L = TPBP concentration, µg/L + calculated MeFBSA concentration, µg/L

3.7.2 PFSA Monomer (MV-4S), CAS No. 88190-28-7

The PFSA Monomer has been shown in method development[1] studies to hydrolyze in water (t1/2 ≈ 5 hrs) to form a sulfonic acid. The sulfonic acid has been identified as; 1,1,2,2,3,3,4,4-octafluoro-4-[(trifluoroethenyl)oxy]butane-1-sulfonic acid, CAS No. 913556-89-5, and is identified as hydrolysis product 1 in this report. Over time further hydrolysis occurs and a diacid is formed with a carboxylic acid on one side of molecule and a sulfonic acid on the other end. This hydrolysis product has been identified as 2,2,3,3,4,4-hexafluoro-4-sulfobutanoic acid, CAS No. 83071-25-4, and is identified as hydrolysis product 2 in this report.

Measurement of the unreacted compound in water is performed using 3M Env Lab SOP ETS-8-182 (Purge and Trap GC/MS) and reported in the GCMS Sub-Report GEN20-07-10.

[1] Method development work was done under 3M Global EHS Laboratory project number E19-0083.

Measurement of the hydrolysis products in water was is included in this report. The concentration of the PFSA monomer is the sum of the measured results for hydrolysis products 1 and 2. Below are examples of how the results for PFSA Monomer will be reported.

When results for both hydrolysis products are measured below the resulting LOQs, the result will be the sum of both LOQs, reported to three significant figures.

- Both products <LOQ: <0.100 µg/mL + <0.250 µg/mL = <0.350 µg/mL

When results have one hydrolysis product measuring above the resulting LOQ and the other measuring below the resulting LOQ, the result above the LOQ will be added to the LOQ value for the other.

- One product >LOQ, One product <LOQ: <0.100 µg/mL + 0.314 µg/mL = 0.414 µg/mL

When both hydrolysis products are measured above the LOQ, the sum of both will be reported.

- Both products >LOQ: 8.09 µg/mL + 0.257 µg/mL = 8.35 µg/mL

3.8 Analytical Data Uncertainty

Analytical uncertainty is based on historical QC data that is control charted and used to evaluate method accuracy and precision. The method uncertainty is calculated following ETS-12-012.5. The standard deviation is calculated for the set of accuracy results (in %) obtained for the QC samples. For method ETS-8-044, the most recent fifty QC samples were used. However, select target analytes included more than fifty QC samples for this project. The expanded uncertainty is calculated by multiplying the standard deviation by a factor of 2, which corresponds to a confidence level of 95%. When determining the analytical data uncertainty assigned to the sample results in Table 1, in addition to the analytical method uncertainty, the batch LCS samples prepared with the project samples and field QC data are also reviewed. The analytical data uncertainty is listed in **Table 4**.

PFBSi: The method uncertainty calculated using ETS-12-012.5 was ±24%. The non-complaint low-level LCSs analyzed on 6/10/21 had recoveries of 75.0% and 78.9%. The data uncertainty has been expanded to ±25% based on the lowest LCS recovery.

FBSEE-DA: The method uncertainty calculated using ETS-12-012.5 was ±23%. The noncompliant low-level LCSs analyzed on 6/10/21 had recoveries of 74.6% and 78.9%. The data uncertainty has been expanded to ±25% based on the lowest LCS recovery.

Uncertainty adjustments made to a sample based on FMS recovery can be found in section 4.

Table 3. Analytical Data Uncertainty.

Analyte	Calibration Method	Standard Deviation (%)	Analytical Data Uncertainty
PFPA	External	7.52	±15%
2233-TFPA	External	6.13	±12%
2333-TFPA	External	6.93	±14%
FBSA	External	6.95	±14%
N-MeFOSAA	Internal	10.0	±20%
N-EtFOSAA	Internal	8.44	±17%
PFBSi	External	NA	±25% (1)
MeFBSE	External	11.2	±22%
FBSE	External	8.72	±17%
FBSEE Diol	External	8.98	±18%
FBSEE-DA	External	NA	±25% (1)
FBSAA	External	11.1	±22%
MeFBSAA	External	8.64	±17%
DBI	External	7.25	±15%
PECHS	External	8.15	±16%
BPAF	External	12.5	±25%
PFHxSA	External	8.12	±16%
C4 Curative	External	9.06	±18%
PBSA	External	5.28	±11%
PBSA-C1	External	6.06	±12%
PFSA Monomer Hydrolysis Product 1	External	6.09	±12%
PFSA Monomer Hydrolysis Product 1	External	5.45	±11%

NA = Not Applicable
(1) Uncertainty adjusted based on QC data.

3.9 Field Matrix Spikes (FMS)

A field matrix spike sample was collected to verify that the analytical method is applicable for the collected matrix. A target analyte matrix spike for the travel blank and one sample location was provided bi-weekly with each bottle order. Matrix spikes are generated by adding a measured volume of field sample to a container spiked by the laboratory with the target analytes prior to shipping sample containers for sample collection. Field matrix spikes must be at least 0.5 times the analyte concentration to be considered an appropriate spike level. Field matrix spike recoveries within method acceptance criteria of ±30% confirm that the sample matrix does not significantly interfere with the extraction and analysis of the analytes of interest. The standards used for the preparation of the field matrix spiking solutions contained reference materials comprised of linear and branched isomers for N-MeFOSAA and N-EtFOSAA. Field matrix spike sample results are listed in section 4.

4 Data Summary and Discussion

Field matrix spikes meeting the method acceptance criteria of ±30% demonstrate that the method is appropriate for the given matrix. The method indicates that the target analyte FMS samples should be spiked at approximately 0.5-10 times the expected analyte concentration in the sample. The field matrix spike concentrations were selected to bracket the expected concentrations of the target analytes, based on previous results for these sampling locations. The spike level, at times, exceeded the recommended upper limit of 10 times the analyte concentration.

All field matrix spikes meet ±30% recovery method acceptance criteria with the following exceptions:

- **DSN001-1 L:** FMS recovery was outside the acceptance criteria of 100±30% for BPAF (134%) and PECHS (141%). The sample has been flagged in Table 1 as having an uncertainty that is expanded further to ±34% for BPAF and ±41% for PECHS. FMS recovery was outside the acceptance criteria of 100±50% for FBSAA (304%), FBSE (NA, <0.0206), MeFBSAA (253%), and MeFBSE (19.5%). The sample results have been flagged in Table 1 as qualitative, estimates at best.

- **TFD manhole:** FMS recovery was outside the acceptance criteria of 100±30% for DBI (132%). The sample has been flagged in Table 1 as having an uncertainty that is expanded further to ±32% for DBI.

Table 4. DSN001-1 L Field Matrix Spike Results.

Sample ID	Sample Description	Analyte	Calculated Concentration (ng/mL)	Spike True Value (ng/mL)	FMS %Recovery
E21-0193-001-FMS	DSN001-1 L - FMS	2233-TFPA	5.82	5.00	116
E21-0193-001-FMS	DSN001-1 L - FMS	2333-TFPA	5.72	5.00	114
E21-0193-001-FMS	DSN001-1 L - FMS	BPAF	0.672	0.500	134 (1)
E21-0193-001-FMS	DSN001-1 L - FMS	DBI	0.624	0.500	125
E21-0193-001-FMS	DSN001-1 L - FMS	FBSA	0.640	0.510	123
E21-0193-001-FMS	DSN001-1 L - FMS	FBSAA	1.52	0.500	304 (2)
E21-0193-001-FMS	DSN001-1 L - FMS	FBSE	<0.0206	0.515	NA (2)
E21-0193-001-FMS	DSN001-1 L - FMS	FBSEE Diol	0.402	0.505	79.6
E21-0193-001-FMS	DSN001-1 L - FMS	FBSEE-DA	0.644	0.500	129
E21-0193-001-FMS	DSN001-1 L - FMS	MeFBSAA	1.34	0.500	253 (2)
E21-0193-001-FMS	DSN001-1 L - FMS	MeFBSE	0.0984	0.505	19.5 (2)
E21-0193-001-FMS	DSN001-1 L - FMS	N-EtFOSAA	0.510	0.499	92.5
E21-0193-001-FMS	DSN001-1 L - FMS	N-MeFOSAA	0.454	0.499	91.0
E21-0193-001-FMS	DSN001-1 L - FMS	PBSA	0.400	0.500	80.0
E21-0193-001-FMS	DSN001-1 L - FMS	PBSA-C1	0.462	0.500	92.4
E21-0193-001-FMS	DSN001-1 L - FMS	PECHS	0.652	0.461	141 (1)
E21-0193-001-FMS	DSN001-1 L - FMS	PFBSi	0.590	0.500	118
E21-0193-001-FMS	DSN001-1 L - FMS	PFHxSA	0.530	0.500	106
E21-0193-001-FMS	DSN001-1 L - FMS	PFPA	5.90	5.00	117
E21-0193-001-FMS	DSN001-1 L - FMS	TPBP	0.512	0.500	102
E21-0193-001-FMS	DSN001-1 L - FMS	PFSA Monomer Hydrolysis Product 1	0.769	0.500	75.0
E21-0193-001-FMS	DSN001-1 L - FMS	PFSA Monomer Hydrolysis Product 2	0.475	0.500	95.0

NA = Not Applicable; FMS calculated concentration was below the LOQ
(1) FMS did not meet acceptance criteria of 100 ± 30%. The analytical data uncertainty has been expanded further.
(2) FMS did not meet acceptance criteria of 100 ± 50% and ***should be considered qualitative estimates at best.***

Table 5. TFD Manhole Field Matrix Spike Results.

Sample ID	Sample Description	Analyte	Calculated Concentration (ng/mL)	Spike True Value (ng/mL)	FMS %Recovery
E21-0193-006-FMS	TFD manhole - FMS	2233-TFPA	5.48	5.00	110
E21-0193-006-FMS	TFD manhole - FMS	2333-TFPA	5.08	5.00	102
E21-0193-006-FMS	TFD manhole - FMS	BPAF	0.598	0.500	108
E21-0193-006-FMS	TFD manhole - FMS	DBI	0.660	0.500	132 (1)
E21-0193-006-FMS	TFD manhole - FMS	FBSA	0.602	0.510	113
E21-0193-006-FMS	TFD manhole - FMS	FBSAA	0.520	0.500	104
E21-0193-006-FMS	TFD manhole - FMS	FBSE	0.648	0.515	126
E21-0193-006-FMS	TFD manhole - FMS	FBSEE Diol	0.602	0.505	119
E21-0193-006-FMS	TFD manhole - FMS	FBSEE-DA	0.454	0.500	90.8
E21-0193-006-FMS	TFD manhole - FMS	MeFBSAA	0.670	0.500	129
E21-0193-006-FMS	TFD manhole - FMS	MeFBSE	0.454	0.505	89.9
E21-0193-006-FMS	TFD manhole - FMS	N-EtFOSAA	0.466	0.499	88.0
E21-0193-006-FMS	TFD manhole - FMS	N-MeFOSAA	0.420	0.499	84.2
E21-0193-006-FMS	TFD manhole - FMS	PBSA	0.416	0.500	83.2
E21-0193-006-FMS	TFD manhole - FMS	PBSA-C1	0.446	0.500	89.2
E21-0193-006-FMS	TFD manhole - FMS	PECHS	0.578	0.461	125
E21-0193-006-FMS	TFD manhole - FMS	PFBSi	0.560	0.500	112
E21-0193-006-FMS	TFD manhole - FMS	PFHxSA	0.654	0.500	91.2
E21-0193-006-FMS	TFD manhole - FMS	PFPA	5.56	5.00	110
E21-0193-006-FMS	TFD manhole - FMS	TPBP	0.606	0.500	121
E21-0193-006-FMS	TFD manhole - FMS	PFSA Monomer Hydrolysis Product 1	0.585	0.500	91.2
E21-0193-006-FMS	TFD manhole - FMS	PFSA Monomer Hydrolysis Product 2	0.440	0.500	88.0

(1) FMS did not meet acceptance criteria of 100 ± 30%. The analytical data uncertainty has been expanded further.

Table 6. Travel Blank Field Matrix Spike Results.

Sample ID	Sample Description	Analyte	Calculated Concentration (ng/mL)	Spike True Value (ng/mL)	FMS %Recovery
E21-0193-007-FMS	Travel Blank FMS	2233-TFPA	5.94	5.00	119
E21-0193-007-FMS	Travel Blank FMS	2333-TFPA	6.04	5.00	121
E21-0193-007-FMS	Travel Blank FMS	BPAF	0.590	0.500	118
E21-0193-007-FMS	Travel Blank FMS	DBI	0.558	0.500	112
E21-0193-007-FMS	Travel Blank FMS	FBSA	0.540	0.510	106
E21-0193-007-FMS	Travel Blank FMS	FBSAA	0.502	0.500	100
E21-0193-007-FMS	Travel Blank FMS	FBSE	0.652	0.515	127
E21-0193-007-FMS	Travel Blank FMS	FBSEE Diol	0.572	0.505	113
E21-0193-007-FMS	Travel Blank FMS	FBSEE-DA	0.536	0.500	107
E21-0193-007-FMS	Travel Blank FMS	MeFBSAA	0.616	0.500	123
E21-0193-007-FMS	Travel Blank FMS	MeFBSE	0.566	0.505	112
E21-0193-007-FMS	Travel Blank FMS	N-EtFOSAA	0.430	0.499	86.2
E21-0193-007-FMS	Travel Blank FMS	N-MeFOSAA	0.420	0.499	84.2
E21-0193-007-FMS	Travel Blank FMS	PBSA	0.450	0.500	90.0
E21-0193-007-FMS	Travel Blank FMS	PBSA-C1	0.484	0.500	96.8
E21-0193-007-FMS	Travel Blank FMS	PECHS	0.552	0.461	120
E21-0193-007-FMS	Travel Blank FMS	PFBSi	0.514	0.500	103
E21-0193-007-FMS	Travel Blank FMS	PFHxSA	0.520	0.500	104
E21-0193-007-FMS	Travel Blank FMS	PFPA	5.74	5.00	115
E21-0193-007-FMS	Travel Blank FMS	TPBP	0.550	0.500	110
E21-0193-007-FMS	Travel Blank FMS	PFSA Monomer Hydrolysis Product 1	0.530	0.500	106
E21-0193-007-FMS	Travel Blank FMS	PFSA Monomer Hydrolysis Product 2	0.484	0.500	96.8

5 Conclusion

Laboratory control spikes were used to determine the analytical method accuracy and precision for all analytes. The accuracy and precision were then used to estimate the method uncertainty for the results. Field matrix spike recoveries demonstrated that the analytical method was appropriate for the given sample matrix. Analysis was completed using 3M Global EHS Laboratory methods ETS-8-044 "Method of Analysis for the Determination of Perfluorinated Compounds in Water by LC/MS/MS; Direct Injection Analysis". Analytical results are reported in Tables 1 and 4-6.

6 Data / Sample Retention

All remaining sample and associated project data (hardcopy and electronic) will be archived according to 3M Global EHS Laboratory standard operating procedures.

7 Attachments

None

8 Signatures

Chelsie Grochow

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The 3M EHS Laboratory's Quality Assurance Unit has audited the data and report for this project.

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