Quality Engineering | Valued Relationships

Waste Connections of Canada Inc.

IWMF Prairie Green Cell No.15
Composite Liner Construction Monitoring Program

Prepared for:

Waste Connections of Canada Inc.
Prairie Green Landfill
Rosser, MB
Attention: Cliff Lechow

Distribution:

Cliff Lechow, District Manager

Project Number:
0366 001 00 400

Date:
October 4, 2018
Final Report

www.trekgeotechnical.ca
1712 St. James Street | Winnipeg, Manitoba R3H 0L3 | Tel 1.204.975.9433 | Fax 1.204.975.9435

TREK GEOTECHNICAL Quality Engineering | Valued Relationships

October 4, 2018 Our File No. 0366 001 00 400

Cliff Lechow, District Manager
Waste Connections of Canada Inc.
Prairie Green Landfill
Rosser, MB

RE: Composite Liner Construction Monitoring Report for IWMF Cell No.15 Construction

TREK Geotechnical Inc. is pleased to submit our report for the Quality Assurance inspection and testing services for Cell No.15.

Please contact the undersigned if you have any questions. Thank you for the opportunity to serve you on this assignment.

Sincerely,

TREK Geotechnical Inc.
Per:

Nelson John Ferreira, Ph.D., P. Eng.
Geotechnical Engineer, Principal
Tel: 204.975.9433 ext. 103

cc: Angela Fidler-Kliewer C. Tech. (TREK Geotechnical)

Revision History

Revision No.	Author	Issue Date	Description
0	AFK	September 27, 2018	Draft Report
1	AFK	October 4, 2018	Final Report

Authorization Signatures

Prepared By:

Angela Fidler-Kliewer C. Tech.
Manager of Laboratory and Field Services

Reviewed By:

PROVINCE OF MANITOBA
N. O. FERREIRA
Member
22892
REGISTERED PROFESSIONAL ENGINEER
Oct 4/2018

Nelson Ferreira, Ph.D., P.Eng.
Geotechnical Engineer, Principal

ENGINEERS GEOSCIENTISTS MANITOBA
Certificate of Authorization
TREK GEOTECHNICAL INC.
No. 4877 Date: Oct. 4, 2018

Table of Contents

List of Tables

List of Drawings

List of Appendices

1.0 Introduction

1.1 Background

The Prairie Green Integrated Waste Management Facility is located approximately 1.6 km north of PTH 101 in the Rural Municipality of Rosser, Township 12, Range 2 East of the Principal Meridian, and north of Winnipeg, Manitoba. Waste Connections of Canada Inc. (WCC) is the owner and operates the facility.

This report summarizes the Quality Assurance (QA) inspections and testing services associated with the construction of the composite (GCL/geosynthetic) liner and leachate collection system in Cell No.15. The constructed works are shown on Sheets 1 to 8 of Drawing No.M-17-A included in this report. Construction Quality Assurance was conducted in accordance with the Contract Documents and Project Specifications as provided by Dillon Consulting Ltd. The construction of Cell No.15 commenced on January 22, 2018 and was completed on August 27, 2018.

1.2 Companies Involved in the Construction of Cell No.15

The following sections summarize the roles and responsibilities of the companies involved, on behalf of Waste Connections of Canada Inc. (WCC) in the design, construction, supervision, review, coordination and quality assurance services associated with the construction of Cell No.15.

Dillon Consulting Ltd. (Designer):

- Cell No.15 design, excluding geotechnical design; and
- Construction documents, project specifications and tender preparation and review.

Edie Construction Ltd. (Prime Contractor) with Titan Environmental Containment Ltd. (Sub-Contractor):

- The prime contractor for the construction of Cell No.15 was Edie Construction Ltd. (Edie) from Winnipeg, Manitoba. They performed the earthworks, including excavation, and placement of the compacted clay and re-compaction of the clay subgrade;
- Titan Environmental Containment Ltd (Titan) was responsible for the installation of the Geosynthetic Clay Liner (GCL), 1.5 mm (60 mil) thick High Density Polyethylene (HDPE) membrane, 7 mm (275 mil) thick Geocomposite and the non-woven Geotextile cushion;
- Edie installed all elements of the leachate collection system;
- Edie installed the sand drainage layer which consisting of a 300 mm thick sand layer placed above the leachate collection system; and cell floor;

- Edie Construction also carried out quality control surveying of the constructed compacted clay lifts and base grade elevations.

Edie completed on site works with the equipment shown below.

Equipment Make and Model	**On Site Tasks**
CAT 345 CL Excavator	Excavations
CAT Excavators (320 CL, 330 C)	Compacted Clay Backfill Placement
CAT Rock Trucks (2-730's, 735)	Excavations
CAT 300 Rock Truck	Excavations, Compacted Clay Backfill Placement
CAT Rock Trucks (2-250's)	Compacted Clay Backfill Placement
CAT D6H LGP Dozer	Excavations, Compacted Clay Backfill Placement, Leveling Loose Compacted Clay Backfill Lifts, Final Clay Subgrade Grading Leachate Collection, Blanket and Sand Drainage Spreading and Grading
CAT D6R Dozer	Compacted Clay Backfill Placement, Leveling Loose Compacted Clay Backfill Lifts
CAT D6N XL Dozer	Final Clay Subgrade Grading
CAT D8 Dozer with Ripper	Excavations
CAT CP563E Padfoot	Proof rolling and Clay Backfill Compaction
835 Versatile Tractor with Sheepsfoot Roller	Proof rolling and Clay Backfill Compaction
835 Versatile Tractor with 0.6 m Rome Plow Disc Harrow	Break up Clay Lumps, Dry Loose Lifts of Compacted Clay

TREK Geotechnical Inc. (Contract Administration and Engineering Services):

- Overall review of the construction of Cell No.15;
- Field density testing on clay backfill subgrade and berm construction to confirm compliance with the design and the project Environmental Standards.
- QA inspection, testing and approval of the Geosynthetic Clay Liner and the 1.5 mm (60 mil) HDPE membrane liner materials, including review of manufacturer's factory quality control and materials testing, field liner sheet installation, non-destructive seam testing, destructive sampling and testing of field seams, repairs and vacuum box testing;
- QA inspection, testing and approval of the leachate collection system and ancillary works;
- Laboratory and field testing, and evaluation of test results, which are presented in this report;
- Verification of specification conformance for the compacted clay backfill, leachate collection stone, sand drainage layer, record surveying services including as-built HDPE liner and leachate collection system locations, quantity measurements and contractor payment certification;
- Geotechnical review and approval of QA inspection and testing results completed on natural materials and quality control procedures for earthworks, including construction of the recompacted clay base and berms;
- QA inspection of the Geosynthetic Clay liner and the 1.5 mm (60 mil) HDPE membrane liner materials;
- Gradation testing following ASTM standards on the sand drainage layer, sub-liner sample stone and leachate collection blanket;
- Laboratory testing of Clay backfill material; and
- Confirmation of testing results on earthworks and liner construction are in accordance with project specifications.

2.0 General Ancillary Construction Activities

2.1 South Perimeter Drainage Ditch

The permanent perimeter drainage ditch running parallel to the south haul road was constructed to divert surface water runoff from the landfill area to the west.

3.0 Cell No.15 Excavation

3.1 Topsoil

The majority of the topsoil in Cell No.15 was removed in 2015, prior to general construction. However, some additional topsoil was stripped along the west side of the Cell No.15 and stockpiled to west for future use.

3.2 Upper Clay

Stripping of the upper weathered clay and general excavation of Cell No.15 commenced on January 22, 2018. The weathered clay is silty, brown and contains silt inclusions and rootlets. This soil stratum was approximately 0.4 m to 0.6 m thick and variable in composition throughout the excavation. The upper clay was removed using an excavator and hauled and stockpiled outside the west limits of Cell No.15 construction. The upper clay was later used to construct the haul road entering Cell No.15.

3.3 Silt Layer

A distinct light brown silt layer was encountered at a depth of between 0.6 m and 0.8 m below ground surface with its thickness varying between 0.9 m and 1.5 m. The silt layer was sub-cut and transported to and placed in an area adjacent to PTH 7, creating a new screening berm.

3.4 Lower Clay

A grey-brown, highly plastic clay was encountered below the silt and this soil was selected for use in the South Perimeter Berm, as well for use as clay backfill for the Cell No.15 base, and West Separation Berm.

4.0 Permanent South Berm Construction

Construction of the South Berm commenced in May 2018 and was completed in August 2018. It was constructed primarily of the lower clay backfill from the excavation of Cell No.15.

The clay was placed in loose lifts of about 200 mm to 250 mm thick and compacted using a single drum ride on Padfoot compactor and a Sheepsfoot compactor being pulled by a tractor. Quality control testing was performed on each lift during the construction of the berm by field density testing according to ASTM-D2922. The results of the final acceptance testing of the permanent berm are discussed in Section 8.1 of this report and are presented in Appendix A-2.

5.0 West Separation Berm

A west separation berm was constructed on the west limit of the Cell No.15 construction area. This berm was constructed primarily of lower clay obtained from the excavation of Cell No.15. The berm serves as a surface water control berm.

6.0 Recompacted Clay Base Construction Procedures

6.1 Recompacted Clay Base

Cell No.15 was excavated to design base grades. Lower clay backfill was used along the east tie-in that was previously excavated below design base grades. TREK Geotechnical Inc (TREK). provided survey control and certification (refer to Table 1).

Lower clay backfill was used to raise the low area up to design grades within the base of the cell. Standard Proctor test results (samples L18-082, L18-090 and L18-109) were performed on the clay backfill along with field density testing which is included in Appendix
A-1 and A-2. The lower clay backfill was placed in one to three lifts.

Prior to compacting the clay subgrade, moisture conditioning was undertaken using a plow disc harrow pulled by a tractor to dry the soil in. Specifications required the clay subgrade achieve a density of at least 95% of its Standard Proctor maximum dry density. Field density testing was performed on the clay subgrade. The field density testing results are discussed in Section 8.1 and included in Appendix A-2. All final field density tests met the project specification.

6.2 Survey Control

The Contractor carried out quality control surveying of all of the earthworks. TREK provided quality assurance surveying through various checks using control points on the subgrade and top of the sand drainage layer to verify that the grades and thicknesses were consistent with the Contract Drawings and Specifications. TREK. also verified by survey excavated material quantities claimed by the contractor. The final base elevations of Cell No.15 are presented in Table 1 in the Appendices.

6.3 Final Grading and Preparation of Top of Recompacted Clay Base

Once the compaction of the base of the cell was completed, it was graded as per the contract drawings (+/- 30 mm of design grade). The top of the recompacted clay subgrade was then inspected for angular stones which may cause damage to the GCL and HDPE membrane liners. The angular stones were removed and the small holes were filled with clay. The surface of the recompacted clay base was rolled using a smooth drum roller prior to being covered with the GCL and 1.5 mm (60 mil) high density polyethylene (HDPE) membrane liners.

7.0 Soil Testing Procedures and Results

7.1 Field Density Testing

The project specifications require that construction using clay materials (the Permanent South Berm, West Berm, base of the cell) be compacted to a minimum of 95% of the Standard Proctor maximum dry density (SPMDD) with no specified requirement for water content. Field density tests (ASTM D2922 and D3017) were performed, using a Troxler 3430 nuclear density gauge.

For the Permanent South Berm, a total of 89 field density tests were performed with an additional two re-tests. Moisture corrections (oven dry-backs) were completed on each field density test and the corrected percent proctor value was reported. Field density test results ranged between 95% to greater than 100% of the SPMDD, while moisture contents ranged between 20.9% and 42.7%, as summarized in Field Density Test Reports presented in Appendix A-2. The field density test results meet the specifications for compaction.

For the West Berm, 38 field density tests were performed with an additional two re-tests. Field density test results ranged between 95% to greater than 100% of the SPMDD, while moisture contents ranged between 27.4% and 44.8%, as summarized in Field Density Test Reports presented in Appendix A-2. The test results meet the project field specifications for compaction.

For the subgrade at the base of the cell, a total of 43 field density tests were performed with an additional three re-tests. Field density test results ranged between 95% to greater than 100% of the SPMDD, with moisture contents ranging between 26.4% and 43.9%, as summarized in Field Density Test Reports presented in Appendix A-2. These results meet the project field specifications for compaction.

7.2 Clay Laboratory Testing

7.2.1 Standard Proctor Tests

Standard Proctor tests (ASTM D698) were performed on both upper and lower clay material from the site to determine the required density levels for construction. During placement of approximately 7000 m^3 of compacted clay for Cell No.15, three Standard Proctor were performed by TREK. The Standard Proctor test results are presented in Appendix A-1.

8.0 Geosynthetic Clay Liner (GCL) Installation

The following section summarizes the installation of the GCL system. All materials utilized, as well as the installation process, met specifications within the Contract Documents and the Project Drawings, and were inspected as per the Construction Quality Assurance Plan. The Contract Documents were received and reviewed by all parties prior the beginning of the construction of Cell No.15.

8.1 Cell Base

Prior to the secondary and primary GCL deployment, the subgrade was inspected by the Geosynthetics Installer, the Contractor and the CQA Inspector and was formally accepted by the Geosynthetics Installer, Titan. Copies of the soil surface acceptance certificates are presented in Appendix B-3.

8.2 GCL Liner Materials

The geosynthetic clay liner (GCL) used on this project consisted of Bentofix NSL provided by TAG Environmental Inc. A total of 38 rolls of existing GCL from 2016 were inventoried, and 140 rolls of GCL were delivered and inventoried on site, comprising of 4.27 m wide and 45.72 m long panels. The GCL was installed on the prepared subgrade under the clay liner along the leachate collection trenches, and over the primary HDPE membrane in the sump and covered by HDPE membrane under the leachate extraction pipes. TREK monitored the installation of the liners including, overlaps, tears, defects and subsequent repairs to the material. A list of the GCL material delivered to site is presented in Appendix B-1.

8.3 GCL Panel Deployment

Panel deployment for the secondary and primary liner was carried out between June 12, 2018 and July 22, 2018. Approximately 30,892 m^2 of GCL material was placed.

Placement of the GCL was accomplished using an ATV and manual labour. A minimum overlap of 150 mm was typically maintained between adjoining panels. Powdered bentonite was placed and spread manually in the overlap.

During deployment of the secondary and primary GCL panels, TREK personnel carried out the following inspection and testing:

- measurements of the panel length;
- confirmation of panel overlap and bentonite placement in the seams;
- visual observations of overall material quality; and
- assignment of a unique identification number for each panel placed.

Upon completion of the GCL installation, the works were inspected by the Geosynthetics Installer (Titan) and the liner CQA Inspector (TREK), prior to HDPE Membrane liner installation.

9.0 HDPE Membrane Liner Installation

The following section summarizes the installation of the HDPE membrane liner system. All materials utilized, as well as the installation process, met specifications within the Technical Specification Manual and the Project Drawings, and were inspected as per the Construction Quality Assurance Plan.

9.1 Membrane Liner Materials

The membrane (liner) material used on this contract consisted of 1.5 mm thick, smooth and textured high-density polyethylene (HDPE) installed by Titan. The textured material was used only on the South slope of Cell No.15.

A total of 33 rolls of 7.5 m wide and 130 m long panels of smooth membrane were delivered and five rolls of 6.8 m wide and 164.6 m long panels of textured membrane were delivered and inventoried on site for this project. The HDPE liner materials were manufactured and supplied by Sotrafa. The Inventory Summary Logs for the 1.5 mm thick membrane is provided in Appendix B-1. The manufacturer's Quality Control (QC) documentation for the membrane materials was provided by Sotrafa and indicates that all membrane used in Cell No.15 is in compliance with the project specifications.

9.2 HDPE Liner Panel Deployment

Panel deployment for the primary liner was carried out between July 12, 2018 and July 22, 2018. Repair operations on Cell No.15 took place until July 26, 2018. Approximately 27,988 m^2 of primary HDPE liner material was placed.

During deployment of the secondary and primary HDPE liner panels, TREK personnel carried out the following inspection and testing:

- measurements of the panel thickness;
- confirmation of panel overlap;
- visual observations of overall sheet quality; and
- assignment of a unique identification number for each panel placed.

Placement of the HDPE membrane was accomplished using an ATV and manual labour. A minimum overlap of 150 mm was typically maintained between adjoining panels. The average panel thickness was determined by averaging the measurements made along each of the leading, two sides and trailing edges utilizing a Starret Micrometer.

Panel numbers were assigned according to the order in which they were installed. Deployment of the secondary and primary HDPE liner consisted of panels S1 to S31 and P1 to P69, respectively. The arrangement and designation of the various panels for the HDPE liner are presented on Drawing 2. The deployment Inspection Logs are provided in Appendix B-5.

Upon completion of the HDPE liner installation, the works were inspected by Titan and TREK personnel.

9.3 Trial Seams

The welding equipment used by Titan. included double hot wedge fusion welders (production welding along panel seams and cap repairs) and hand-held extrusion fillet welders (for detailing, liner repairs, and reconstruction of failed fusion and/or extrusion seam lengths).

TREK personnel monitored trial seams during daily start-up, and at approximately every five hours during continuous operation of each welding apparatus. Six sample coupons were cut from each test sample for tensile strength testing as follows:

- Four coupons were tested in the peel mode in accordance with ASTM D 4437, and
- Two coupons were tested in the shear mode in accordance with ASTM D 4437.

A summary of the daily trial seaming for the equipment used during each workday is provided in Appendix B-6. All trial seams test results met the project specifications.

9.4 Production Seams

The HDPE liner seaming process proceeded in conjunction with the panel deployment. The majority of the seams were welded using a double hot wedge fusion welder. Repairs and short seams were made using a hand-held extrusion welding apparatus. All seams (including repairs) welds were observed and documented by TREK personnel. A summary of the panel fusion and extrusion seaming are provided in Appendix B-5. The results of the non-destructive testing on the seams by the air pressure testing method, are provided in Appendix B-8.

9.5 Non-Destructive Testing

All non-destructive seam testing was performed by Titan. personnel and observed by TREK personnel on a full-time basis. Two types of non-destructive testing were used on this project:

- Air pressure tests on fusion seams; and
- Vacuum box tests on extrusion seams, patches and beads.

Air pressure testing comprised of the following procedure:

- Sealing off the air channel between the inside and outside tracks of the double fusion weld;
- Inserting a pressure gauge into the air channel;
- Using a portable compressor or pump to pressurize the air channel to a minimum pressure of 210 kPa (30 psi);
- Inspecting the seam along its entire length to confirm that entire seam was pressurized;
- Observing the pressure gauge over a five-minute period. The test is considered a pass (successful) if the pressure drop is less than 21 kPa (3 psi) over this period; and
- Making an incision into the air channel, at the end of the test seam to release the pressurized air.

Vacuum box testing comprised of the following procedure:

- Applying a soapy water solution to the area to be tested;
- Placing a rigid-walled box over the area to be tested. The box was constructed with a clear Plexi-glass top and/or sides with a neoprene gasket around the bottom of the box to facilitate a seal between the box and the HDPE liner;
- Applying a vacuum of 21 kPa to 35 kPa (3 psi to 5 psi) to the inside of the box for a minimum of ten seconds using a portable vacuum pump; and
- Observing for air bubbles, which, if they occur, are indicative of defects or discontinuities of the welding procedure.

Any leaks or discontinuities observed and detected during either testing method were considered a failure (non-conformance). The failed areas were marked and subsequently repaired in accordance with the project specifications and were retested using the procedures described above. All repaired areas were then re-tested and met the acceptance criteria.

Results of the non-destructive testing are provided in Appendix B-8 for the air pressure testing and in Appendix B-11 for the vacuum box testing. All non-destructive testing completed on both fusion and extrusion seaming comply with project specifications.

9.6 Destructive Testing

Destructive test samples of panel fusion welded seams were taken at an average of approximately one for every 201 m length in accordance with project specifications. Extrusion destructive samples were taken randomly or in areas of concern. TREK personnel selected all test locations.

For each destructive sample, ten coupons were cut from the seam and tested in the field by TREK. Waste Connections of Canada retained the remaining part of sample as an archive sample. The destructive coupons that were tested in the field consisted of five coupons tested for peel adhesion strength (peel test mode ASTM D4437) as well as Film Tear Bond (FTB) and five tested for seam strength at yield (shear test mode ASTM D4437)

The specified acceptance criteria for destructive tests are as follows:

- Fusion and extrusion seam under peel mode:
  - Failure by FTB, NSF Standard 54, Definition 2.16;
  - Yield strength for the seam is not to be less than 78 psi;
  - No greater than 10 % of the seam width peels (separates) at any point; and
  - For extrusion seams, the separation that occurs from the edge of the sheet is not to be greater than 3.0 mm (0.12 inch).
- Fusion and extrusion seam under shear mode:
  - Failure by FTB, NSF Standard 54, Definition 2.16; and
  - Yield strength for the seam is not to be less than 120 psi.

Four out of five coupons were required to meet or exceed the acceptance criteria for peel and shear strength failure modes.

A total of 15 fusion destructive tests (DSF designation) and one extrusion test (DSE designation) were conducted of the HDPE liner. The destructive testing results are provided in Appendix B-7. All destructive tests met or exceeded the acceptance criteria for peel and shear strength.

9.7 Repair of Installation Defects

All defects observed on the HDPE liner were assigned a unique identification number and marked by TREK personnel for repair. The defects were repaired by either fusion or extrusion welding methods. The repairs were then tested (non-destructive) by Titan personnel by either the air pressure or vacuum box test method depending on the nature of the repair. Once a noted defect was repaired and tested, it was documented as a "pass" and no other testing was required.

Defect repair locations are shown on Drawing 2 for the HDPE cell liner. The documentation (repairs made and non-destructive testing) of defects and repairs to the seams and panels are included in Appendices B-9 and B-10 for the HDPE liner within the cell and in Appendix B-12 for the HDPE liner within the sump and double composite liner.

10.0 Leachate Collection System Construction

The leachate collection system consists of a HDPE membrane liner, a layer of Geocomposite, and a sand drainage layer. Details of the construction of the system are presented below.

10.1 Drainage Geocomposite Materials and Installation

The installed Geocomposite consists of a HDPE geonet encapsulated in geotextile manufactured by Intermas Group. The approximate quantity of Geocomposite placed in the sump of Cell No.15 was 27,948 m^2, using 3.8 m wide and 60 m long rolls. The Geocomposite inventory list can be found in Appendix B-1. The Manufacturer's Quality Control documentation for the materials that was provided by Intermas indicates that all Geocomposite used in Cell No.15 complies with the project specifications. The Geocomposite Quality Control documentation can be found in Appendix B-2.

Prior to placing the Geocomposite, the HDPE membrane liner was swept clean of soil and debris. The Geocomposite was placed by Titan personnel and during installation of the Geocomposite, adjacent panels were connected with cable ties spaced every 1.5m. The Geocomposite was heat seamed with a minimum 150 mm overlap, taking care not to damage the geonet within the Geocomposite or the underlying HDPE membranes.

10.2 Sand Drainage Layer

The Sand Drainage Layer specifications are as follows:

- The sand drainage layer to consist of uniform coarse or medium sand meeting the following requirements:

Medium Sand

- Sand to be fee of organic matter (i.e. Roots, leaves, wood, etc.);
- Permeability at least 10^{-3} cm/s or greater at 90% Standard Proctor Maximum Dry Density, as determined by ASTM D2434 test method;
- Minimum porosity of 0.37; and
- Meet the following gradation:

Gradation Sieve Opening Size	% Passing (by Weight)
1 mm	60 %
No. 200	10 %

The sand drainage layer was supplied by Glacial Aggregates Limited. The sand was hauled into the cell on a temporary haul road, made of the sand drainage layer with a minimum thickness of approximately 1.5 m over the geocomposite layer. The sand was dumped and spread using two CAT D6N LGP bulldozers to the minimum required thickness of 300 mm. TREK personnel monitored the transportation and spreading operations for the placement of the sand for compliance with the project specifications.

Nine sand samples were obtained for gradation analyses and one sample was tested for hydraulic conductivity. The test results, presented in Table 2, indicate that the gradation of the sand meets the project requirements.

As previously noted, hydraulic conductivity testing (Rigid Wall Constant Head Method) was completed on one sample following ASTM D2438-68 procedures. The results of the laboratory hydraulic conductivity test are summarized in Table 3 and Appendix A-3. The tested specimen exhibited a hydraulic conductivity greater than the specified maximum of 1 x10^{-3} cm/s. The measured value was 4.37 x 10^{-3} cm/s.

11.0 Cell No.15 Leachate Collection Trenches and Sump Construction

Excavation of the sump and the leachate collection trenches was carried out by Edie. Excavation of the leachate collection trench for Cell No.15 progressed from the North limit of the central collection trench, South to the Cell No.15 permanent sump. An anchor trench was cut on the South, East and West side of the sump for embedment of the geosynthetic clay liner (GCL) and secondary HDPE membrane.

Along the leachate collection trenches, the GCL was placed on the prepared subgrade. There was no indication of seepage during the excavation for the sump in Cell No.15. The GCL was placed on the approved subgrade and the secondary HDPE (60 mil) membrane covered the GCL. In the sump, the ends of the GCL and secondary HDPE membrane were placed in the anchor trench. Subsequently, the sub-liner granular blanket (comprised of 19 mm clean stone) and the HDPE sampler pipe (refer to Section 11.3) were placed on a geotextile. The geotextile which was placed under the granular blanket overlapped to completely encapsulate the granular blanket.

11.1 Sub-liner Sampler Collection System Installation for Cell No.15

Edie excavated the trench for the sub-liner sampling pipe, which is located in the Permanent South Berm in Cell No.15. The sub-liner sampling pipe, consisting of 219 mm O.D. SDR 11.0 HDPE continued up the slope of the berm within the trench and terminated beyond the South crest of the berm. A sub-liner granular blanket, comprised of 19 mm clean stone, was placed in the base of the sump and extended up the 4H:1V slope, approximately 6.0 m, to the bentonite seal. A protective sand layer extended from the bentonite seal to approximately 2 m from the top of the berm, where another 500 mm bentonite seal was placed. One additional 500 mm long bentonite seal was placed in the specified locations as per design drawings.

11.2 Leachate Collection Pipe

The leachate collection pipes in the Cell No.15 trench consist of 219 mm O.D. SDR 11.0 HDPE. The collection pipe for Cell No. 14 was perforated for the entire length of the trench up to the Permanent North Berm and then was solid (non-perforated) up the slope of the berm. TREK personnel observed the pipe fusion process, and verified the pipe orientation, pipe type, perforation size, and location in the trench. The granular leachate collection blanket was placed in both trenches, surrounding the pipes.

11.3 Leachate Extraction Pipes for Cell No.15

The leachate extraction piping consisted of 610 mm O.D. SDR 11.0 HDPE, which was assembled on-site. Perforated end caps were butt-fused to the bottom ends of each of the two leachate extraction pipes. The horizontal perforated section was fusion welded to a prefabricated bend at an angle to accommodate the 4H:1V slope. The angled sections were then butt-fused to the non-perforated sections, which were terminated with a HDPE blind flange. A 60 mil HDPE rub sheet was placed on the slope in the location of the leachate extraction pipes and extended to the top of the Permanent South Berm slope. The pipes were placed on the HDPE rub sheet and the preassembled pipes were lowered from the top of the berm to the sump. The granular leachate collection blanket was placed over the pipe. TREK supervised installation and verified the location of the piping.

11.4 Granular Leachate Collection Blanket

The Granular Leachate Collection Blanket specifications are shown below:

Gradation Sieve Opening Size	% Passing (by Weight)
50 mm	100%
37.5 mm	90 – 100%
19.5 mm	0 – 10 %
12.5 mm	0 – 5 %

- The granular material is to comprise of sound, hard durable dolomite and/or dolomitic limestone and will be free of organic matter (i.e. roots, leaves, wood, etc.) soft, thin elongated or laminated particles, or other deleterious substances, concrete, metals and construction debris; and
- The crushed dolomitic limestone shall not contain greater than 40 % calcite (CaC03) as measured by gasometric and/or x-ray diffraction analysis. The granular must not contain organic material (e.g. roots, leaves, wood, etc.) and/or debris such as metal, plastic and concrete.

The aggregate supplied for the granular leachate collection blanket was manufactured from crushed and screened quarry rock and supplied by Glacial Aggregates. Three gradation tests were performed on the leachate granular. The results of the gradation testing indicated that the sampled material was acceptable for the intended use as leachate granular and met the specifications. The test results are summarized in Table 2.

The leachate collection blanket installation entailed controlled transport of the material over the sand drainage layer and carefully spreading the materials. Trucks transported the aggregate into the cell on a temporary haul road that was made of the sand drainage layer and maintained at a minimum thickness of 1.0 m over the geotextile cushion layer. In general, Edie constructed two main haul roads from the west, heading east. After the haul road was completed, the aggregate was placed with a CAT 330 excavator at the beginning of the trench and when the trench was wide enough, the stone was spread using a CAT D6N LGP dozer. TREK personnel monitored the truck transport and spreading operations for the placement of the minimum required thickness of 300 mm**.**

11.5 Geotextile Cushion Materials and Installation

The geotextile cushion placed consists of a non-woven, needle punched polyester (500 g/m^2 weight) manufactured by SKAPS Industries. The approximate quantity of geotextile cushion placed in the sump of Cell No.15 was 1,045 m^2, using 4.57 m wide and 91.5 m long rolls. The geotextile cushion inventory list can be found in Appendix B-1. The Manufacturer's Quality Control documentation for the geotextile materials that was provided by SKAPS Industries indicates that all geotextile cushion material used in Cell No.15 complies with the project specifications. The geotextile cushion Quality Control documentation can be found in Appendix B-2.

Prior to placing the geotextile cushion, the HDPE membrane liner was swept clean of soil and debris. The cushion was placed by Titan personnel. During installation of the cushion in the sump, adjacent panels were sewn using a J stitch with a minimum 50 mm overlap, taking care not to damage the underlying HDPE membranes

11.6 Separator Geotextile Materials and Installation

The separator geotextile consists of a non-woven needle punched polyester GE160-15 (203.4 g/m^2 or approximately 6 oz/yd^2). Approximately 3,244 m^2 of geotextile separator material was placed over the granular leachate collection blanket using 4.57 m wide and 183 m long rolls. The geotextile separator inventory list is provided in Appendix B-1. The manufacturer's Quality Control documentation provided by SKAPS Industries indicates that the geotextile separator used complies with the project specifications. The Quality Control documentation can be found in Appendix B-2.

The installation of the separator geotextile over the Cell No.15 granular leachate collection blanket in the trench and sump and was inspected by TREK personnel. The leachate collection blanket was graded with a CAT 330 Excavator and a CAT D6N LGP dozer and the separator geotextile was placed manually over the gravel and continuously sewn with a minimum 50 mm overlap.

12.0 Summary

TREK personnel provided full time Construction Quality Assurance, resident inspection and Construction Assurance services. The following activities and components were observed, monitored, inspected and/or reviewed for approval and conformance with specifications:

- Subgrade preparation and berm construction;
- Geosynthetic clay liner installation, placement and seaming procedures;
- Secondary and primary 1.5 mm (60 mil) HDPE membrane installation, placement, seaming, non-destructive and destructive seam testing and repairs;
- Leachate collection system construction, including seaming operations of the geotextile cushion and separator material, and observations of trench excavation operations; and
- North perimeter drainage ditches and the permanent and temporary haul roads.

Based on the results of the field monitoring, observations, inspections and testing, the Cell No.15 recompacted clay base, the geosynthetic clay liner, the 1.5 mm HDPE membrane liner, the leachate drainage layer components, the composite liner system and associated leachate collection system were constructed/installed in accordance with the project specifications and to current accepted industry standards.

13.0 Closure

The geotechnical information provided in this report is in accordance with current engineering principles and practices (Standard of Practice). The information and findings of this report were based on the tests, measurements, and observations made by TREK during construction and are only applicable to those elements. TREK is not responsible for conformance of any elements that were not observed or tested.

All information provided in this report is subject to our standard terms and conditions for engineering services, a copy of which is provided to each of our clients with the original scope of work, or a mutually executed standard engineering services agreement. If these conditions are not attached, and you are not already in possession of such terms and conditions, contact our office and you will be promptly provided with a copy.

This report has been prepared by TREK Geotechnical Inc. (the Consultant) for the exclusive use of Waste Connections of Canada Inc. (the Client) and their agents for the work product presented in the report. Any findings or recommendations provided in this report are not to be used or relied upon by any third parties, except as agreed to in writing by the Client and Consultant prior to use.

Tables

TABLE 1
CELL 15 SURVEY CONTROL POINTS

POINT	NORTHING	EASTING	Design Base Excavation	As-built Base Excavation	Design Drainage Sand (m)	As-built Drainage Sand (m)	Drainage Sand Thickness (m)
1	12371.250	11470.630	230.436	230.447	230.736	230.755	0.308
2	12400.000	11470.630	230.436	230.434	230.736	N/A	N/A
3	12430.000	11470.630	230.436	230.428	230.736	230.734	0.306
4	12460.000	11470.630	230.436	230.432	230.736	230.752	0.320
5	12490.000	11470.630	230.436	230.436	230.736	230.754	0.318
6	12520.000	11470.630	230.436	230.447	230.736	230.765	0.318
7	12550.000	11470.630	230.436	230.424	230.736	N/A	N/A
8	12580.000	11470.630	230.436	230.427	230.736	230.741	0.314
9	12610.000	11470.630	230.436	230.422	230.736	230.766	0.344
10	12640.000	11470.630	230.436	230.460	230.736	230.800	0.340
11	12640.000	11490.000	230.184	230.172	230.484	230.495	0.323
12	12610.000	11490.000	230.184	230.165	230.484	230.476	0.311
13	12580.000	11490.000	230.184	230.186	230.484	230.492	0.306
14	12550.000	11490.000	230.184	230.188	230.484	230.517	0.329
15	12520.000	11490.000	230.184	230.156	230.484	230.500	0.344
16	12490.000	11490.000	230.184	230.172	230.484	230.514	0.342
17	12460.000	11490.000	230.184	230.169	230.484	230.484	0.315
18	12430.000	11490.000	230.184	230.199	230.484	230.500	0.301
19	12400.000	11490.000	230.184	230.201	230.484	230.504	0.303
20	12372.170	11490.000	230.184	230.206	230.484	230.509	0.303
21	12372.560	11550.000	230.062	230.066	230.362	230.370	0.304
23	12430.000	11550.000	230.062	230.04	230.362	230.363	0.323
24	12460.000	11550.000	230.062	230.037	230.362	230.377	0.340
25	12490.000	11550.000	230.062	230.056	230.362	230.375	0.319

** survey based on local GPS datum

TABLE 1
CELL 15 SURVEY CONTROL POINTS

POINT	NORTHING	EASTING	Design Base Excavation	As-built Base Excavation	Design Drainage Sand (m)	As-built Drainage Sand (m)	Drainage Sand Thickness (m)
26	12520.000	11550.000	230.062	230.053	230.389	230.389	0.336
27	12550.000	11550.000	230.062	230.052	230.362	230.362	0.310
28	12580.000	11550.000	230.062	230.048	230.376	230.376	0.328
29	12610.000	11550.000	230.062	230.046	230.364	230.364	0.318
30	12640.000	11550.000	230.062	230.038	230.373	230.373	0.335
31	12640.000	11569.710	230.453	230.359	230.670	230.670	0.311
32	12610.000	11569.710	230.456	230.364	230.683	230.683	0.319
33	12580.000	11569.710	230.456	230.364	230.366	230.366	0.002
34	12550.000	11569.710	230.456	230.368	230.678	230.677	0.309
35	12520.000	11569.710	230.456	230.364	230.686	230.686	0.322
36	12490.000	11569.710	230.456	230.338	230.651	230.651	0.313
37	12460.000	11569.710	230.456	230.341	230.661	230.661	0.320
38	12430.000	11569.710	230.456	230.345	230.662	230.662	0.317
39	12400.000	11569.710	230.456	230.344	230.678	230.678	0.334
40	12370.950	11569.710	230.456	230.340	230.649	230.649	0.309
41	12360.850	11550.000	236.000	232.978	233.312	233.312	0.334
42	12348.810	11550.000	233.000	235.974	N/A	N/A	N/A
43	12348.860	11520.000	236.000	236.010	N/A	N/A	N/A
44	12360.900	11520.000	233.000	232.993	233.313	233.312	0.319
45	12360.950	11490.000	233.000	232.973	233.320	233.320	0.347
46	12348.900	11490.000	236.000	235.991	N/A	N/A	N/A
47	12348.930	11470.630	236.000	236.009	N/A	N/A	N/A
48	12360.970	11470.630	233.000	232.991	233.328	233.328	0.337

SUMP

POINT	NORTHING	EASTING	Design Base Excavation	As-built Base Excavation
A'	12373.281	11541.178	229.886	229.911
B'	12404.230	11541.178	229.886	229.902
C'	12404.230	11504.967	229.886	229.906
D'	12373.351	11504.967	229.886	229.906
E'	12382.372	11525.326	227.622	227.624
F'	12388.372	11525.326	227.620	227.635
G'	12388.372	11520.826	227.620	227.644
H'	12382.372	11520.826	227.620	227.646
I'	12402.721	11530.398	229.670	229.686
J'	12402.721	11515.747	229.670	229.670
K'	13374.771	11523.072	229.520	229.532
L'	12389.241	11523.072	227.744	227.783

** surveyed based on local GPS datum

TABLE 1
CELL 15 SURVEY CONTROL POINTS

Trench

POINT	NORTHING	EASTING	Design Base Excavation	As-built Base Excavation	Design Drainage Sand (m)	Abuilt Base Drainage Sand
1C	12642.930	11523.060	229.524	229.537	N/A	N/A
2W	12620.000	11522.360	229.537	229.511	230.137	230.150
2C	12620.000	11523.070	229.359	229.329	N/A	N/A
2E	12620.000	11523.790	229.538	229.521	N/A	N/A
3W	12600.000	11521.750	229.550	229.527	230.150	230.159
3C	12600.000	11523.070	229.219	229.206	N/A	N/A
3E	12600.000	11524.390	229.550	229.55	N/A	N/A
4W	12580.000	11521.140	229.562	229.559	230.162	230.165
4C	12580.000	11523.070	229.079	229.067	N/A	N/A
4E	12580.000	11525.000	229.562	229.548	N/A	N/A
5W	12560.000	11520.530	229.547	229.55	230.147	230.183
5C	12560.000	11523.070	228.939	228.923	N/A	N/A
5E	12560.000	11525.610	229.574	229.572	N/A	N/A
6W	12540.000	11519.250	229.586	229.588	230.186	230.218
6C	12540.000	11523.070	228.799	228.81	N/A	N/A
6E	12540.000	11526.220	229.586	229.61	N/A	N/A
7W	12520.000	11519.320	229.599	229.621	230.199	230.200
7C	12520.000	11523.070	228.659	228.686	N/A	N/A
7E	12520.000	11526.830	229.599	229.587	N/A	N/A
8W	12500.000	11518.710	229.611	229.612	230.211	230.240
8C	12500.000	11523.070	228.519	228.537	N/A	N/A
8E	12500.000	11527.440	229.611	229.626	N/A	N/A
9W	12480.000	11518.100	229.623	229.608	230.223	230.225
9C	12480.000	11523.070	228.379	228.386	N/A	N/A
9E	12480.000	11528.050	229.623	229.614	N/A	N/A
10W	12460.000	11517.470	229.635	229.636	230.235	230.244
10C	12460.000	11523.070	228.239	228.219	N/A	N/A
10E	12460.000	11528.650	229.635	229.627	N/A	N/A
11W	12440.000	11516.880	229.647	229.622	230.247	230.286
11C	12440.000	11523.070	228.099	228.073	N/A	N/A
11E	12440.000	11529.260	22.647	229.638	N/A	N/A
12W	12420.000	11516.270	229.659	229.641	230.259	230.272
12C	12420.000	11523.070	227.959	227.962	N/A	N/A
12E	12420.000	11529.870	229.659	229.652	N/A	N/A

** survey based on local GPS datum

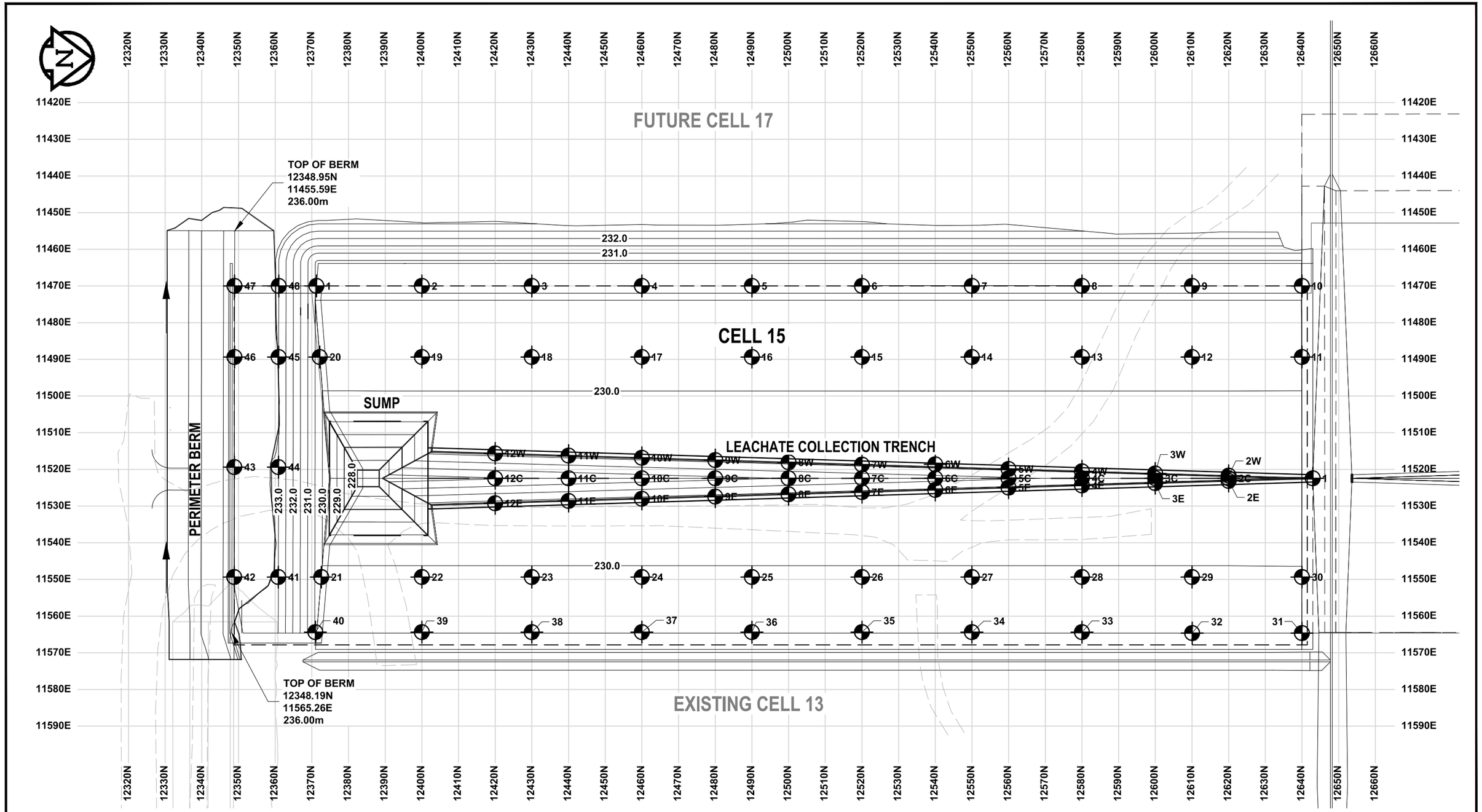
Figures

TREK GEOTECHNICAL

0366 001 00
Waste Connection of Canada Prairie Green IWMF
Cell 15 Construction - Certification Control Points

ANSI full bleed B (11.00 x 17.00 Inches)

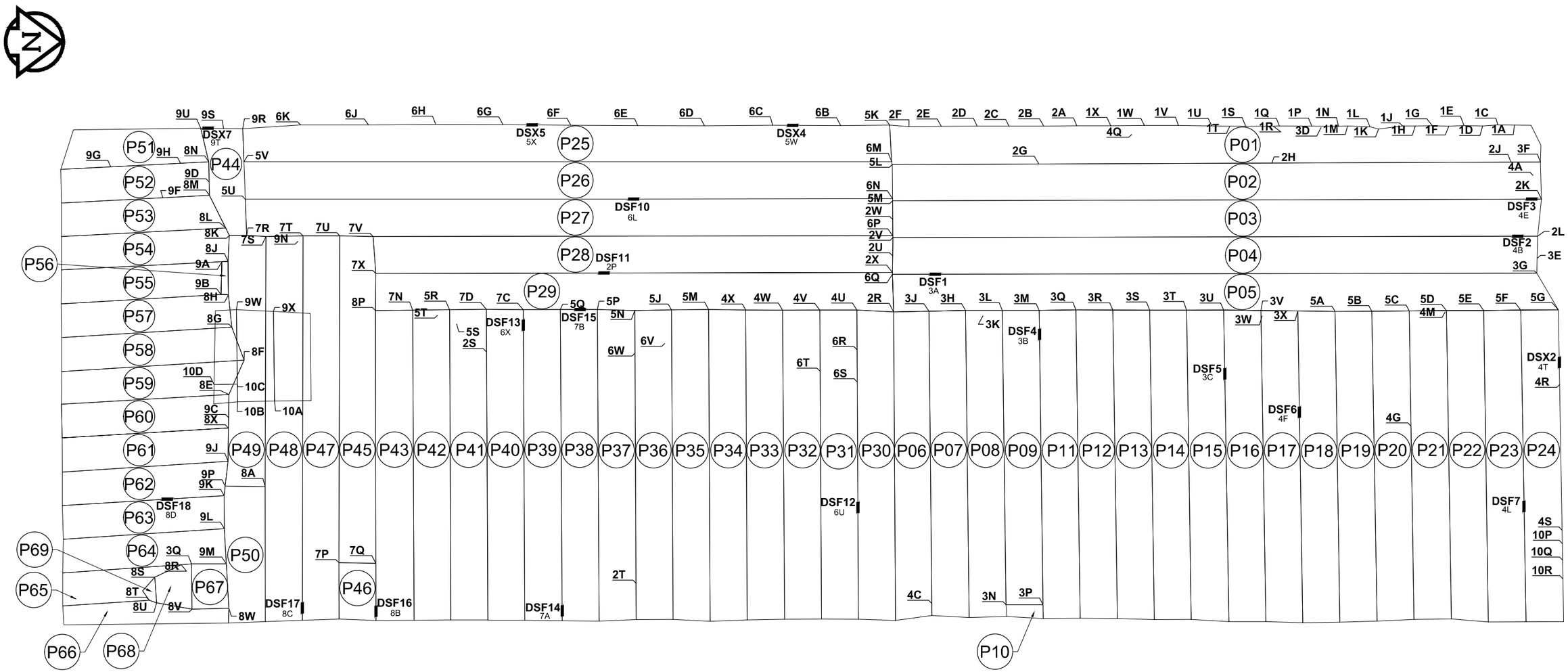
Z:\Projects\0366 Waste Connections of Canada\0366 001 00 Prairie Green IWMF Cell 15\3 Survey and Dwg\3.4 CAD\3.4.3 Working Folder, 9/27/2018 9:01:27 AM



0 10 20 30 40 50 m
SCALE = 1 : 1 000 (279 mm x 432 mm)

LEGEND: CERTIFICATION POINTS

Figure 01



SCALE: NTS

LEGEND:
- 4C / DSF12 6U — UNIQUE DEFECT IDENTIFICATION NUMBER / DESTRUCTIVE LOCATION AND DESIGNATION
- (P10) — PANEL DESIGNATION NUMBER
- —— FUSION SEAM

NOTES:
1. PANEL LOCATIONS ARE BASED ON SURVEY COMPLETED BY TREK GEOTECHNICAL Inc.
2. ALL ELEVATIONS ARE REFERENCED TO GEODETIC DATUM.
3. THE DRAWING IS TO BE READ IN CONJUNCTION WITH THE ACCOMPANYING REPORT.

Figure 02

Appendix A-1

Summary of Clay Backfill Laboratory Results

Standard Proctor

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

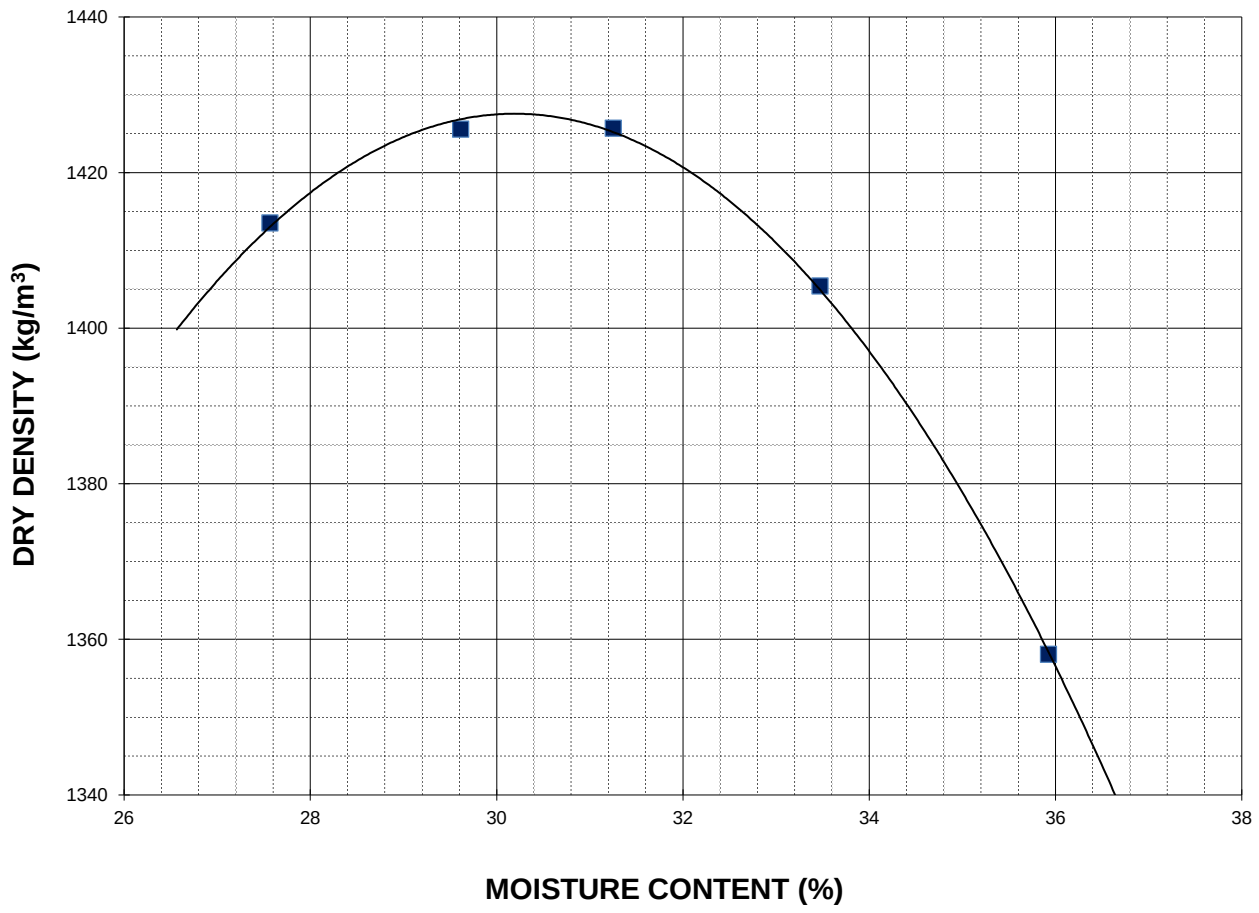
Standard Proctor Compaction Test

ASTM D698-12e2

Project No.	0366-001-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-082
Source	On Site
Material	Clay
Sample Date	07-May-18
Test Date	09-May-18
Technician	LI/SC

Maximum Dry Density (kg/m3)	1428
Optimum Moisture (%)	30.2

Trial Number	1	2	3	4	5
Wet Density (kg/m^3)	1803	1848	1871	1876	1846
Dry Density (kg/m^3)	1414	1426	1426	1405	1358
Moisture Content (%)	27.6	29.6	31.3	33.5	35.9



www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

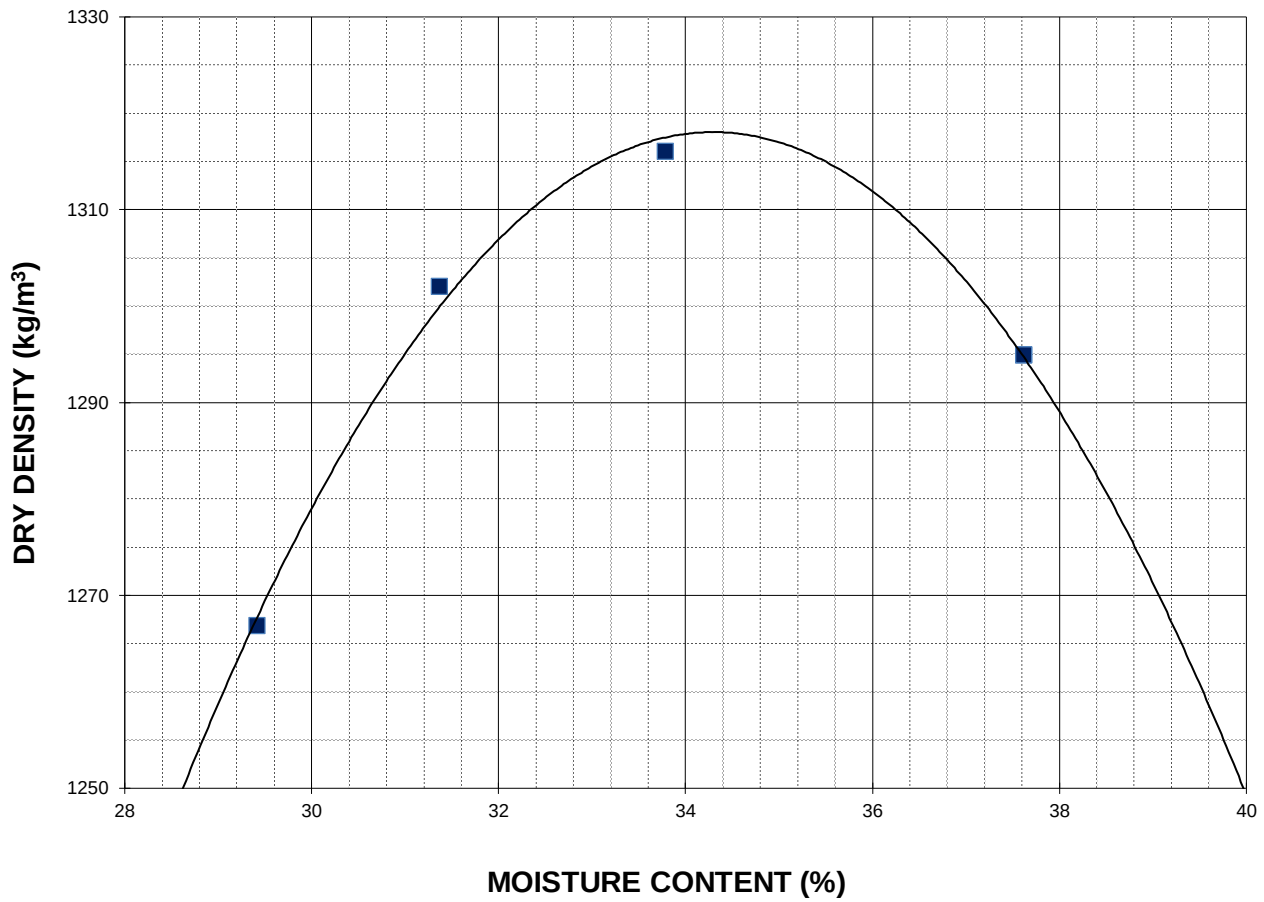
Standard Proctor Compaction Test

ASTM D698-12e2

Project No.	0366-001-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-090-1
Source	On Site
Material	Clay
Sample Date	16-May-18
Test Date	18-May-18
Technician	HS

Maximum Dry Density (kg/m3)	1318
Optimum Moisture (%)	34.3

Trial Number	1	2	3	4	
Wet Density (kg/m^3)	1640	1710	1761	1782	
Dry Density (kg/m^3)	1267	1302	1316	1295	
Moisture Content (%)	29.4	31.4	33.8	37.6	



www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

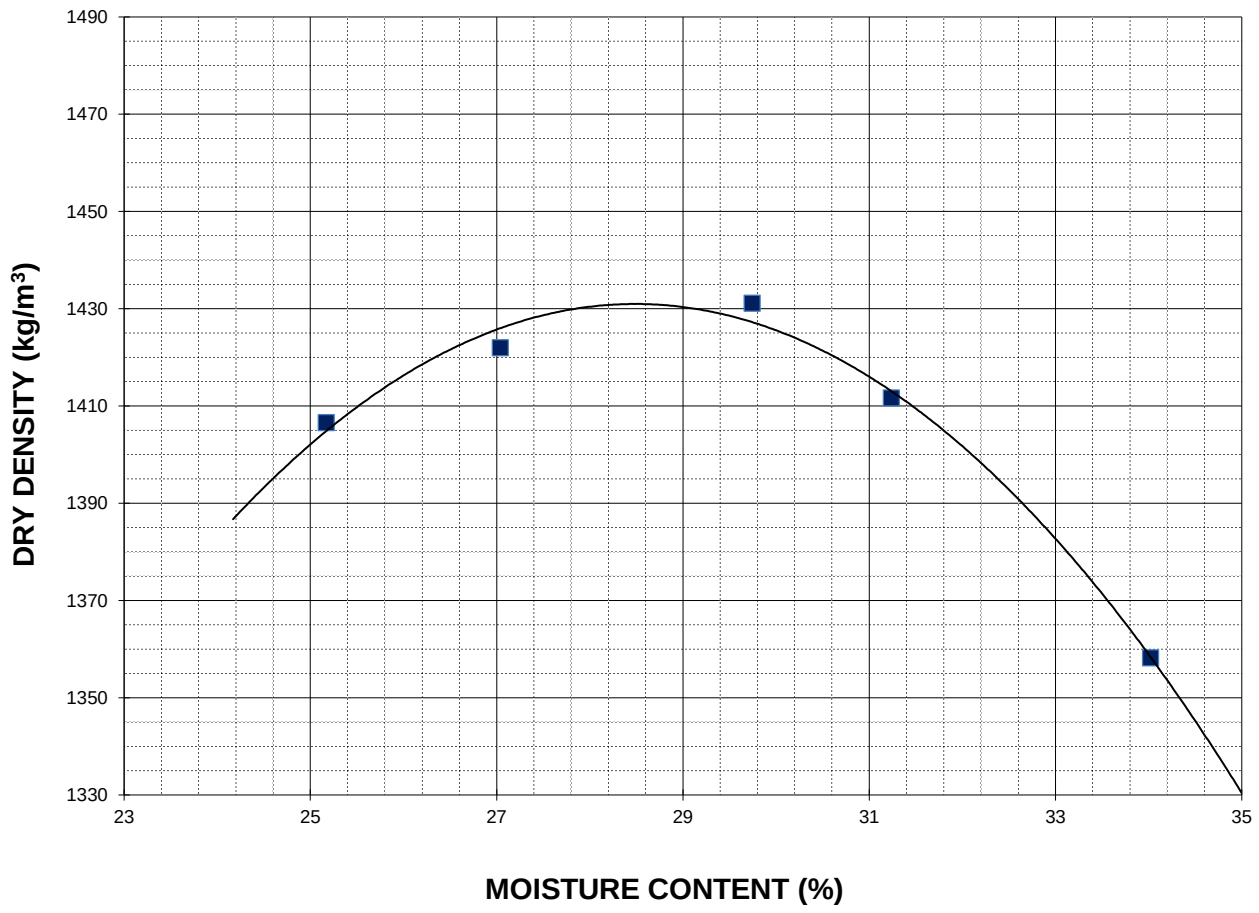
Standard Proctor Compaction Test

ASTM D698-12e2

Project No.	0366-001-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-109
Source	On Site
Material	Clay
Sample Date	June 4 2018
Test Date	June 7 2018
Technician	KM

Maximum Dry Density (kg/m3)	1431
Optimum Moisture (%)	28.5

Trial Number	1	2	3	4	5
Wet Density (kg/m^3)	1761	1806	1857	1853	1820
Dry Density (kg/m^3)	1407	1422	1431	1412	1358
Moisture Content (%)	25.2	27.0	29.7	31.2	34.0



Appendix A-2

Field Density Test Reports

- Recompacted Subgrade
- South Perimeter Berm
- West Separation Berm

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1424
Date Tested	24/05/2018	**Optimum Moisture %**	30.2
Time Tested	9:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF1	Lift 1, 12531 N, 11557 E	150	1819	1456	1357	25.0%	34.0%	95.3%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	28/05/2018	**Optimum Moisture %**	34.3
Time Tested	14:00 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF2	Lift 1, 12385 N, 11472 E	150	1755	1380	1320	27.2%	33.0%	100+%
SF3	Lift 1, 12427 N, 11472 E	150	1777	1353	1293	31.4%	37.5%	98.1%
SF4	Lift 1, 12482 N, 11471 E	150	1769	1340	1274	32.0%	38.9%	96.6%
SF5	Lift 1, 12553 N, 11471 E	150	1732	1323	1201	31.0%	44.2%	91.1%
SF6	Lift 1, 12613 N, 11472 E	150	1743	1344	1266	29.7%	37.7%	96.1%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	28/05/2018	**Optimum Moisture %**	30.2
Time Tested	16:45 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF7	Lift 2, 12512 N, 11558 E	150	1810	1424	1366	27.1%	32.5%	95.6%
SF8	Lift 1 12573 N, 11550 E	150	1827	1467	1379	24.6%	32.5%	96.6%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	28/05/2018	**Optimum Moisture %**	34.3
Time Tested	4:45 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF9	Lift 1 12590 N, 11543 E	150	1728	1360	1324	27.1%	30.5%	100+%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	30/05/2018	**Optimum Moisture %**	34.3
Time Tested	9:30 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF10	Lift 1, Retest of SF5	150	1810	1380	1331	31.1%	36.0%	100+%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	04/06/2018	**Optimum Moisture %**	34.3
Time Tested	17:00 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF11	Lift 1, 12636 N, 11502 E	150	1739	1315	1311	32.2%	32.6%	99.5%
SF12	Lift 1, 12605 N, 11539 E	150	1834	1379	1382	33.0%	32.7%	100+%
SF13	Lift 1, 12604 N, 11508 E	150	1814	1330	1269	36.3%	43.0%	96.3%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	04/06/2018	**Optimum Moisture %**	34.3
Time Tested	17:30 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF14	Lift 2, 12588 N, 11549 E	150	1710	1324	1282	29.2%	33.4%	97.3%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	05/06/2018	**Optimum Moisture %**	30.2
Time Tested	13:05 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF15	Lift 3, 12517 N, 11563 E	150	1894	1465	1424	29.3%	33.0%	99.8%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	05/06/2018	**Optimum Moisture %**	34.3
Time Tested	13:19 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF16	Lift 2, 12574 N, 11559 E	150	1850	1390	1324	33.1%	39.7%	100+%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	06/06/2018	**Optimum Moisture %**	34.3
Time Tested	8:45 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF17	Lift 1, 12632 N, 11528 E	150	1758	1357	1317	29.6%	33.5%	99.9%
SF18	Lift 1, 12633 N, 11557 E	150	1818	1390	1355	30.8%	34.2%	100+%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	13/06/2018	**Optimum Moisture %**	34.3
Time Tested	8:45 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS/EH	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF19	Lift 1, 12579 N, 11558 E	150	1812	1369	1326	32.4%	36.6%	100+%
SF24	Lift 1, 12505 N, 11536 E	150	1725	1242	1141	38.9%	51.2%	86.6%
SF25	Lift 1, 12488 N, 11562 E	150	1823	1349	1311	35.1%	39.0%	99.5%
SF26	Lift 1, 12583 N, 11495 E	150	1824	1396	1268	30.7%	43.9%	96.2%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	13/06/2018	**Optimum Moisture %**	30.2
Time Tested	8:45 hrs	**Proctor Sample Number**	L18-082
Technician	DS/EH	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF20	Lift 1, 12576 N, 11528 E	150	1825	1498	1444	21.8%	26.4%	100+%
SF21	Lift 1, 12544 N, 11532 E	150	1830	1453	1430	26.0%	28.0%	100+%
SF22	Lift 1, 12549 N, 11557 E	150	1861	1408	1335	32.2%	39.4%	93.5%
SF23	Lift 1, 12518 N, 11554 E	150	1885	1446	1403	30.3%	34.3%	98.3%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	14/06/2018	**Optimum Moisture %**	34.3
Time Tested	3:30 PM	**Proctor Sample Number**	L18-090-1
Technician	EH	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF27	Lift 1, 12552N, 11505 E	150	1855	1442	1386	28.6%	33.8%	100+%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green / WMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	26/06/2018	**Optimum Moisture %**	30.2
Time Tested	17:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF28	Retest of SF22	150	1931	1524	1492	26.7%	29.5%	100+%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green / WMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	26/06/2018	**Optimum Moisture %**	34.3
Time Tested	17:00 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF29	Lift 1, 12530 N, 11486 E	150	1851	1404	1349	31.8%	37.2%	100+%
SF30	Lift 1, 12502 N,11487 E	150	1798	1340	1332	34.2%	35.0%	100+%
SF31	Lift 1, 12527 N, 11516 E	150	1804	1346	1341	34.0%	34.5%	100+%
SF32	Lift1, 12494 N, 11509 E	150	1813	1376	1327	31.8%	36.6%	100+%
SF33	Retest of SF24	150	1814	1360	1320	33.4%	37.5%	100+%
SF34	Lift 1, 12456 N, 11556 E	150	1798	1356	1346	32.6%	33.6%	100+%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green / WMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	26/06/2018	**Optimum Moisture %**	30.2
Time Tested	17:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF35	Lift 1, 12422 N, 11569 E	150	1973	1528	1493	29.1%	32.2%	100+%
SF36	Lift 1, 12394 N, 11554 E	150	1863	1442	1408	29.2%	32.3%	98.6%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green / WMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	09/07/2018	**Optimum Moisture %**	30.3
Time Tested	17:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF37	Lift 1, 12465 N, 11507 E	150	1798	1379	1420	30.4%	26.6%	99.4%

Notes: All tests completed on 150 mm recompacted subgrade.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	10/07/2018	**Optimum Moisture %**	30.2
Time Tested	8:43 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF38	Lift 1, 12458 N, 11484 E	150	1910	1523	1478	25.4%	29.3%	100+%

Notes: All tests completed on 150 mm recompacted subgrade .

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	10/07/2018	**Optimum Moisture %**	34.3
Time Tested	8:43 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF39	Lift 1, 12473 N, 11534 E	150	1821	1396	1372	30.4%	32.7%	100+%

Notes: All tests completed on 150 mm recompacted subgrade .

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	10/07/2018	**Optimum Moisture %**	30.2
Time Tested	18:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF40	Lift 1, 12445 N, 11535 E	150	1877	1495	1459	25.6%	28.7%	100+%
SF41	Lift 1, 12417 N, 11534 E	150	1880	1480	1460	27.0%	28.8%	100+%
SF42	Lift 1, 12434 N, 11500 E	150	1864	1442	1398	29.2%	33.4%	97.9%

Notes: All tests completed on 150 mm recompacted subgrade .

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	10/07/2018	**Optimum Moisture %**	34.3
Time Tested	18:30 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF43	Lift 1, 12399 N, 11498 E	150	1831	1420	1368	28.9%	33.9%	100+%
SF44	Lift 1, 12419 N, 11509 E	150	1852	1411	1388	31.2%	33.4%	100+%

Notes: All tests completed on 150 mm recompacted subgrade .

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Insitu Clay
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	17/07/2018	**Optimum Moisture %**	30.2
Time Tested	8:15 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
SF45	Lift 1, 12386 N, 11507 E	150	1850	1449	1431	27.6%	29.2%	100+%
SF46	Lift 1, 12387 N, 11536 E	150	1800	1509	1465	19.3%	22.9%	100+%

Notes: All tests completed on 150 mm recompacted subgrade .

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	10/05/2018	**Optimum Moisture %**	30.2
Time Tested	18.00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB1	Lift 1, 12363 N, 11464 E	150	1844	1458	1457	26.5%	26.6%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1585
Date Tested	10/05/2018	**Optimum Moisture %**	25.1
Time Tested	18:20 hrs	**Proctor Sample Number**	
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB2	Lift 1, 12354 N, 11473 E	150	1997	1643	1576	21.6%	26.7%	99.4%
PB3	Lift 1, 12341 N, 11521 E	150	1988	1649	1568	20.6%	26.8%	99.0%
PB4	Lift 1, 12351 N, 11543 E	150	1994	1665	1637	19.7%	21.8%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	11/05/2018	**Optimum Moisture %**	30.2
Time Tested	12:00 & 15:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB5	Lift 2, 12363 N, 11560 E	150	1813	1414	1373	28.2%	32.1%	96.1%
PB6	Lift 1, 12361 N, 11523 E	150	1801	1440	1390	25.1%	29.6%	97.3%
PB7	Lift 1, 12364 N, 11480 E	150	1835	1426	1373	28.7%	33.7%	96.1%
PB8	Lift 3, 12364 N, 11558 E	150	1814	1366	1311	32.8%	38.3%	91.8%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	14/05/2018	**Optimum Moisture %**	30.2
Time Tested	8:50 & 11:00 & 18:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB9	Retest PB8, Lift 3, 12364 N, 11558 E	150	1875	1458	1424	28.6%	31.7%	99.7%
PB10	Lift 4, 12363 N,11556 E	150	1795	1427	1381	25.6%	29.9%	96.7%
PB11	Lift 2, 12365 N, 11551 E	150	1845	1474	1391	25.2%	32.7%	97.4%
PB12	Lift 2, 12365 N, 11517 E	150	1856	1490	1433	24.6%	29.5%	100+%
PB13	Lift 2, 12363 N, 11487 E	150	1809	1505	1379	20.2%	31.2%	96.6%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	16/05/2018	**Optimum Moisture %**	30.2
Time Tested	11:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB14	Lift 3, 12364 N, 11558 E	150	1939	1521	1457	27.4%	33.0%	100+%
PB15	Lift 3, 12361 N,11519 E	150	1887	1483	1429	27.2%	32.0%	100+%
PB16	Lift 3, 12365 N, 11477 E	150	1870	1471	1430	27.2%	30.8%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	17/05/2018	**Optimum Moisture %**	30.2
Time Tested	7:35 & 8:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB17	Lift 4, 12360 N, 11553 E	150	1878	1469	1416	27.9%	32.6%	99.2%
PB18	Lift 4, 12361 N,11521 E	150	1874	1453	1431	29.0%	30.9%	100+%
PB19	Lift 4, 12364 N, 11471 E	150	1883	1466	1410	28.4%	33.6%	98.7%
PB20	Lift 2, 12352 N, 11544 E	150	1807	1433	1386	26.1%	30.4%	97.1%
PB21	Lift 2, 12347 N, 11509 E	150	1831	1433	1378	27.7%	32.9%	96.5%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Praire Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	22/05/2018	**Optimum Moisture %**	30.2
Time Tested	8:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB22	Lift 5, 12361 N, 11550 E	150	1885	1484	1440	27.0%	30.9%	100+%
PB23	Lift 5, 12365 N, 11518 E	150	1874	1449	1410	29.0%	32.9%	98.8%
PB24	Lift 5, 12365 N 11471 E	150	1870	1442	1399	29.7%	33.7%	98.0%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	23/05/2018	**Optimum Moisture %**	30.2
Time Tested	8:50 & 11:00 & 18:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB25	Lift 6, 12365 N, 11550 E	150	1900	1478	1427	28.5%	33.2%	99.9%
PB26	Lift 6, 12363 N, 11518 E	150	1856	1451	1363	27.9%	36.1%	95.5%
PB27	Lift 6, 12361 N, 11478 E	150	1818	1429	1366	27.2%	33.1%	95.7%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	23/05/2018	**Optimum Moisture %**	34.3
Time Tested	8:50 & 11:00 & 18:00 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB28	Lift 3, 12344 N, 11537 E	150	1794	1369	1337	31.0%	34.2%	100+%
PB29	Lift 3, 12353 N, 11504 E	150	1797	1334	1304	34.7%	37.8%	98.9%
PB30	Lift 2, 12347 N,11470 E	150	1812	1371	1320	32.1%	37.3%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	24/05/2018	**Optimum Moisture %**	30.2
Time Tested	8:30 & 17:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB31	Lift 7, 12362 N, 11555 E	150	1889	1481	1448	27.6%	30.5%	100+%
PB32	Lift 7, 12363 N, 11511 E	150	1846	1445	1381	27.7%	33.7%	96.7%
PB33	Lift 7, 12362 N, 11473 E	150	1853	1429	1357	29.7%	36.5%	95.0%
PB34	Lift 8, 12363 N, 11551 E	150	1803	1456	1417	23.8%	27.2%	99.2%
PB35	Lift 8, 12362 N, 11509 E	150	1868	1479	1362	26.3%	37.1%	95.4%
PB36	Lift 8, 12362 N, 11473 E	150	1862	1470	1386	26.7%	34.4%	97.0%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Praiire Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	25/05/2018	**Optimum Moisture %**	30.2
Time Tested	11:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB37	Lift 9, 12360 N, 11545 E	150	1932	1568	1408	23.2%	37.2%	98.6%
PB38	Lift 9, 12361 N, 11511 E	150	1814	1495	1358	21.3%	33.6%	95.1%
PB39	Lift 9, 12362 N, 11476 E	150	1956	1553	1451	25.9%	34.8%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	28/05/2018	**Optimum Moisture %**	30.2
Time Tested	11:15 & 16:45 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB40	Lift 4, 12349 N, 11542 E	150	1791	1440	1385	24.4%	29.3%	97.0%
PB41	Lift 4, 12347 N, 11504 E	150	1872	1449	1411	29.2%	32.7%	98.8%
PB42	Lift 3, 12348 N, 11465 E	150	1803	1444	1372	24.9%	31.4%	96.1%
PB43	Lift 10, 12361 N, 11556 E	150	1839	1424	1353	29.2%	35.9%	94.8%
PB44	Lift 10, 12362 N, 11516 E	150	1782	1479	1327	20.5%	34.3%	92.9%
PB45	Lift 10, 12361 N, 11474 E	150	1874	1442	1421	29.9%	31.9%	99.5%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	29/05/2018	**Optimum Moisture %**	30.2
Time Tested	10:00 & 17:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB46	Lift 10, Retest of PB43	150	1789	1456	1399	22.9%	27.9%	98.0%
PB47	Lift 10, Retest of PB44	150	1784	1446	1398	23.4%	27.6%	97.9%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	29/05/2018	**Optimum Moisture %**	34.3
Time Tested	17:00 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB48	Lift 5, 12344 N, 11547 E	150	1803	1367	1333	31.9%	35.3%	100+%
PB49	Lift 5, 12351 N, 11497 E	150	1786	1331	1333	34.1%	34.0%	100+%
PB50	Lift 4, 12346 N, 11465 E	150	1823	1343	1312	35.7%	38.9%	99.6%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	30/05/2018	**Optimum Moisture %**	34.3
Time Tested	12:30 & 16:30 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB51	Lift 11, 12361 N, 11549 E	150	1835	1382	1286	32.8%	42.7%	97.6%
PB52	Lift 11, 12360 N, 11514 E	150	1801	1315	1184	37.0%	52.1%	89.9%
PB53	Lift 11, 12361 N, 11473 E	150	1799	1346	1271	33.7%	41.5%	96.4%
PB54	Lift 6, 12351 N, 11553 E	150	1842	1366	1312	34.8%	40.4%	99.5%
PB55	Lift 6, 12349 N, 11517 E	150	1779	1305	1211	36.3%	46.9%	91.9%
PB56	Lift 5, 12346 N, 11465 E	150	1736	1221	1100	42.1%	57.8%	83.5%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	04/06/2018	**Optimum Moisture %**	30.2
Time Tested	15:45 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB57	Lift 11, Retest of PB52	150	1869	1440	1414	29.8%	32.2%	99.0%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	04/06/2018	**Optimum Moisture %**	34.3
Time Tested	19:07 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB58	Lift 6, Retest of PB55	150	1849	1351	1341	36.9%	37.9%	100+%
PB59	Lift 5, Retest of PB56	150	1833	1373	1383	33.5%	32.5%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	05/06/2018	**Optimum Moisture %**	30.2
Time Tested	10:24 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB60	Lift 12, 12357 N, 11558 E	150	1869	1494	1427	25.1%	31.0%	99.9%
PB61	Lift 12, 12357 N, 11523 E	150	1840	1505	1409	22.3%	30.6%	98.7%
PB62	Lift 12, 12358 N, 11478 E	150	1820	1474	1351	23.4%	34.7%	94.6%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	06/06/2018	**Optimum Moisture %**	30.2
Time Tested	12:00 & 17:55 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB63	Lift 7, 12344 N, 11554 E	150	1764	1424	1410	23.9%	25.1%	98.8%
PB64	Lift 7, 12352 N, 11516 E	150	1825	1510	1474	20.8%	23.8%	100+%
PB65	Lift 6, 12347 N, 11467 E	150	1793	1409	1367	27.2%	31.1%	95.7%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	07/06/2018	**Optimum Moisture %**	30.2
Time Tested	15:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB66	Lift 8, 12353 N, 11550 E	150	1841	1523	1472	20.9%	25.1%	100+%
PB67	Lift 8, 12344 N, 11507 E	150	1796	1463	1372	22.7%	30.9%	96.1%
PB68	Lift 7, 12359 N, 11466 E	150	1781	1519	1376	17.3%	29.4%	96.4%

Notes: All tests were complete on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	14/06/2018	**Optimum Moisture %**	30.2
Time Tested	10:30 AM	**Proctor Sample Number**	L18-082
Technician	EH	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB69	Lift 9, 12343 N, 11468 E	150	1815	1450	1385	25.2%	31.0%	97.0%
PB70	Lift 9, 12352 N, 11508 E	150	1881	1511	1457	24.5%	29.1%	100+%
PB71	Lift 9, 12346 N, 11556 E	150	1879	1521	1484	23.5%	26.6%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	19/06/2018	**Optimum Moisture %**	30.2
Time Tested	11:30:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB72	Lift 10, 12349 N, 11556 E	150	1911	1536	1498	24.4%	27.5%	100+%
PB73	Lift 10, 12348 N, 11508 E	150	1825	1471	1368	24.1%	33.4%	95.8%
PB74	Lift 10, 12346 N, 11478 E	150	1846	1457	1422	26.6%	29.8%	99.6%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	21/06/2018	**Optimum Moisture %**	30.2
Time Tested	8:15 AM	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB75	Lift 11, 12350 N, 11556 E	150	1851	1541	1429	20.2%	29.5%	100+%
PB76	Lift 11, 12347 N, 11513 E	150	1921	1520	1453	26.4%	32.2%	100+%
PB77	Lift 11, 12351 N, 11472 E	150	1862	1550	1360	20.1%	36.9%	95.2%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	22/06/2018	**Optimum Moisture %**	30.2
Time Tested	14:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB78	Lift 12, 12348 N, 11555 E	150	1858	1450	1430	28.2%	30.0%	100+%
PB79	Lift 12, 12349 N, 11510 E	150	1793	1427	1377	25.7%	30.2%	96.4%
PB80	Lift 12, 12350 N, 11472 E	150	1747	1489	1382	17.3%	26.4%	96.8%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	21/08/2018	**Optimum Moisture %**	30.2
Time Tested	10:30, 15:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB81	Lift 13, 12348 N, 11563 E	150	1739	1490	1439	16.7%	20.9%	100+%
PB82	Lift 13, 12347 N, 11518 E	150	1786	1495	1467	19.5%	21.8%	100+%
PB83	Lift 13, 12348 N, 11474 E	150	1751	1477	1413	18.5%	24.0%	98.9%
PB84	Lift 14, 12349 N, 11490 E	150	1738	1454	1409	19.5%	23.4%	98.7%
PB85	Lift 14,12348 N, 11524 E	150	1746	1453	1388	20.2%	25.8%	97.2%
PB86	Lift 14,12347 N, 11490 E	150	1692	1437	1356	17.8%	24.7%	95.0%

Notes: All tests completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	21/08/2018	**Optimum Moisture %**	30.2
Time Tested	10:30, 15:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
PB87	Lift 15, 12347 N, 11560 E	150	1649	1453	1405	13.5%	17.4%	98.4%
PB88	Lift 15, 12347 N, 11524 E	150	1715	1497	1437	14.5%	19.3%	100+%
PB89	Lift 15, 12349 N, 11484 E	150	1645	1455	1365	13.0%	20.5%	95.6%

Notes: All tests completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No. 0366-001-00-400
Client Waste Connections
Project Cell 15
Location Prairie Green IWMF
Contractor Edie Construction

Material Clay Backfill
Source On site

Maximum Dry Density 1428
Optimum Moisture % 30.2
Proctor Sample Number L18-082
Required Density % 95

Date Tested 06/05/2018
Time Tested 9:00 hrs
Technician DS

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB1	Lift 1, 12624 N, 11473 E	150	1855	1461	1410	27.0%	31.5%	98.8%
WB2	Lift 1, 12567 N, 11472 E	150	1860	1480	1368	25.7%	36.0%	95.8%
WB3	Lift 1, 12513 N, 11473 E	150	1857	1429	1364	29.9%	36.1%	95.5%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	06/05/2018	**Optimum Moisture %**	34.3
Time Tested	9:00 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB4	Lift 1, 12468 N, 11473 E	150	1862	1405	1342	32.5%	38.7%	100+%
WB5	Lift 1, 12427 N, 11472 E	150	1837	1387	1269	32.5%	44.8%	96.2%
WB6	Lift 1, 12388 N, 11473 E	150	1811	1377	1294	31.5%	40.0%	98.1%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	07/06/2018	**Optimum Moisture %**	34.3
Time Tested	11:10 hrs	**Proctor Sample Number**	L18-090-1
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB7	Lift 2, 12594 N, 11474 E	150	1775	1317	1293	34.8%	37.3%	98.1%
WB8	Lift 2, 12531 N, 11474 E	150	1807	1372	1275	31.7%	41.7%	96.8%
WB9	Lift 2, 12496 N, 11472 E	150	1767	1333	1265	32.6%	39.7%	96.0%
WB10	Lift 2, 12448 N, 11473 E	150	1789	1331	1282	34.4%	39.5%	97.3%
WB11	Lift 2, 12401 N, 11474 E	150	1814	1388	1316	30.7%	37.8%	99.9%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	13/06/2018	**Optimum Moisture %**	34.3
Time Tested	17:10 hrs	**Proctor Sample Number**	L18-090-1
Technician	EH	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB12	Lift 3, 12631 N, 11472 E	150	1858	1408	1339	32.0%	38.8%	100+%
WB14	Lift 3, 12542 N, 11472 E	150	1812	1397	1359	29.7%	33.4%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	13/06/2018	**Optimum Moisture %**	30.2
Time Tested	17:10 hrs	**Proctor Sample Number**	L18-082
Technician	EH	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB13	Lift 3, 12582 N, 11472 E	150	1851	1477	1453	25.4%	27.4%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	14/06/2018	**Optimum Moisture %**	30.2
Time Tested	9:20 AM	**Proctor Sample Number**	L18-082
Technician	EH	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB15	Lift 3, 12482 N, 11472 E	150	1886	1465	1382	28.7%	36.5%	96.8%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1318
Date Tested	14/06/2018	**Optimum Moisture %**	34.3
Time Tested	9:20 AM	**Proctor Sample Number**	L18-090-1
Technician	EH	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB16	Lift 3, 12380N, 11472 E	150	1863	1462	1384	27.4%	34.6%	100+%
WB17	Lift 3, 12428 N, 11472 E	150	1841	1424	1317	29.3%	39.8%	99.9%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	19/06/2018	**Optimum Moisture %**	30.2
Time Tested	14:45 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB18	Lift 4, 12608 N, 11473 E	150	1886	1464	1403	28.9%	34.5%	98.2%
WB19	Lift 4, 12563 N, 11472 E	150	1893	1494	1436	26.7%	31.8%	100+%
WB20	Lift 4, 12508 N, 11472 E	150	1873	1452	1394	29.0%	34.4%	97.6%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	20/06/2018	**Optimum Moisture %**	30.2
Time Tested	18:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB21	Lift 4, 12457 N, 11472 E	150	1911	1499	1439	27.4%	32.8%	100+%
WB22	Lift 4, 12403 N, 11473 E	150	1941	1528	1471	27.0%	31.9%	100+%
WB23	Lift 5, 12535 N, 11473 E	150	1874	1430	1398	31.1%	34.1%	97.9%
WB24	Lift 5, 12583 N, 11472 E	150	1882	1427	1391	31.9%	35.3%	97.4%
WB25	Lift 5, 12624 N, 11472 E	150	1882	1418	1433	32.9%	31.4%	100+%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	22/06/2018	**Optimum Moisture %**	30.2
Time Tested	13:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB26	Lift 6, 12611 N, 11473 E	150	1866	1468	1458	27.1%	28.0%	100+%
WB27	Lift 6, 12557 N, 11473 E	150	1853	1449	1417	27.9%	30.8%	99.2%
WB28	Lift 6, 12503 N, 11472 E	150	1917	1487	1443	28.9%	32.9%	100+%
WB29	Lift 5, 12487 N, 11472 E	150	1884	1441	1387	30.7%	35.8%	97.2%
WB30	Lift 5, 12435 N, 11472 E	150	1915	1454	1362	31.7%	40.6%	95.4%
WB31	Lift 5, 12386 N, 11472 E	150	1897	1473	1413	28.7%	34.3%	98.9%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green IWMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	25/06/2018	**Optimum Moisture %**	30.2
Time Tested	17:30 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB32	Lift 7, 12625 N, 11472 E	150	1880	1473	1417	27.6%	32.7%	99.2%
WB33	Lift 7, 12573 N, 11472 E	150	1820	1442	1352	26.2%	34.6%	94.7%
WB34	Lift 7, 12520 N, 11473 E	150	1830	1488	1415	23.0%	29.3%	99.1%
WB35	Lift 6, 12450 N, 11473 E	150	1866	1467	1398	27.2%	33.5%	97.9%
WB36	Lift 6, 12397 N, 11472 E	150	1818	1334	1310	36.3%	38.8%	91.7%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No.	0366-001-00-400		
Client	Waste Connections		
Project	Cell 15	**Material**	Clay Backfill
Location	Prairie Green / WMF	**Source**	On site
Contractor	Edie Construction		
		Maximum Dry Density	1428
Date Tested	26/06/2018	**Optimum Moisture %**	30.2
Time Tested	10:00 hrs	**Proctor Sample Number**	L18-082
Technician	DS	**Required Density %**	95

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB37	Retest of WB33	150	1886	1484	1446	27.0%	30.5%	100+%
WB38	Retest of WB36	150	1866	1473	1402	26.6%	33.1%	98.2%

Notes: All tests were preformed on 150 mm compacted of Clay Backfill.

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Field Density Report

ASTM D6938-15

Project No. 0366-001-00-400
Client Waste Connections
Project Cell 15
Location Prairie Green IWMF
Contractor Edie Construction

Material Clay Backfill
Source On site

Maximum Dry Density 1428
Optimum Moisture % 30.2
Proctor Sample Number L18-082
Required Density % 95

Date Tested 06/07/2018
Time Tested 17:00 hrs
Technician DS

Test Number	Test Location	Probe Depth (mm)	Wet Density (kg/m^3)	Dry Density (kg/m^3)		Moisture Content		Percent Proctor
				Field	Corrected	Field	Dry-Back	
WB38	Lift 7, 12427 N, 11473 E	150	1864	1482	1425	25.7%	30.8%	99.8%
WB39	Lift 7, 12474 N, 11472 E	150	1783	1446	1361	23.3%	31.0%	95.3%
WB40	Lift 7, 12384 N, 11473 E	150	1818	1450	1379	25.4%	31.8%	96.6%

Notes: All tests were completed on 150 mm thick lift of Clay Backfill.

Appendix A-3

Laboratory Hydraulic Conductivity Test Results

- Sand Drainage Layer

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Permeability of Granular Soils (Constant Head)
ASTM D2438-68

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Material	Sand Drainage Layer
Sample No.	L18-176
Date sampled	27-Jul-18
Date tested	3-Aug-18
Technician	SX

Water temp (°C)	22
Area (cm^2)	80
Correction factor	0.95

Drainage sand conditioned to 90% compaction

			Trial #1	**Trial #2**
L (cm)			11.3	11.3
A (cm^2)			80	80
h (cm)			112.5	108
T (s)			280	280
Q (cm^3) @ 33°C			1098.7	1070.3
k (cm/s)			4.70E-03	4.77E-03

average k (cm/s) 4.73E-03

Appendix A-4

Grain Size Analysis

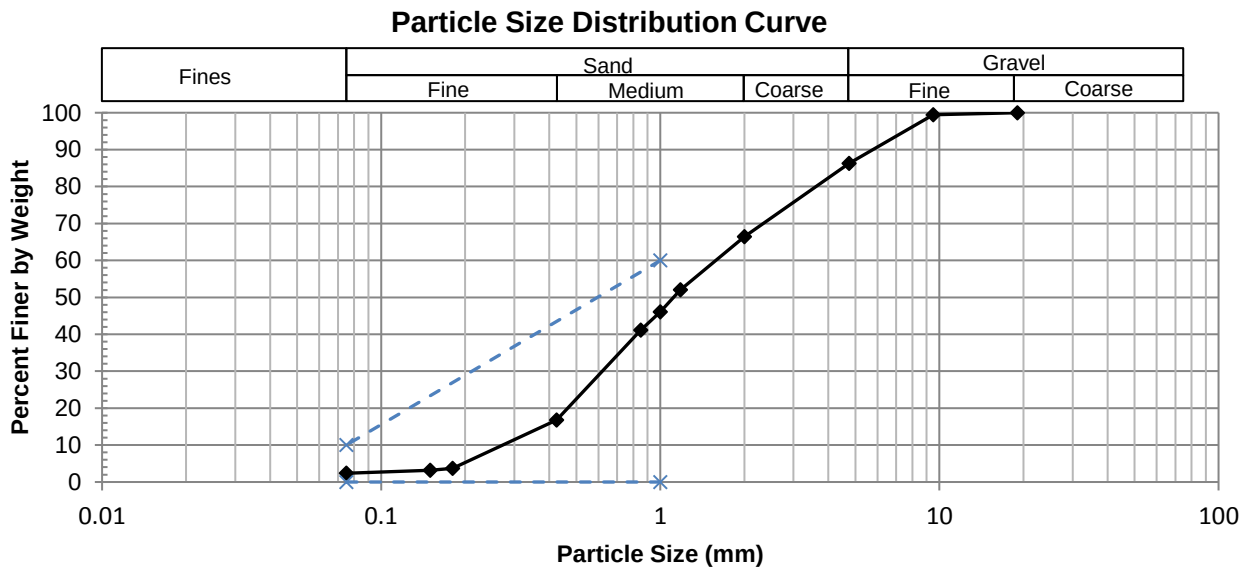
- Sand Drainage Layer
- Sub-Liner Sampler Blanket
- Leachate Collection Stone

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-06

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-171-1
Source	Glacial Aggregates
Soil Desc.	Sand Drainage
Date Sampled	25-Jul-18
Date Tested	25-Jul-18
Technician	NM

Total Weight (g)	11010
Gravel %	13.7
Sand %	83.9
Fines %	2.4



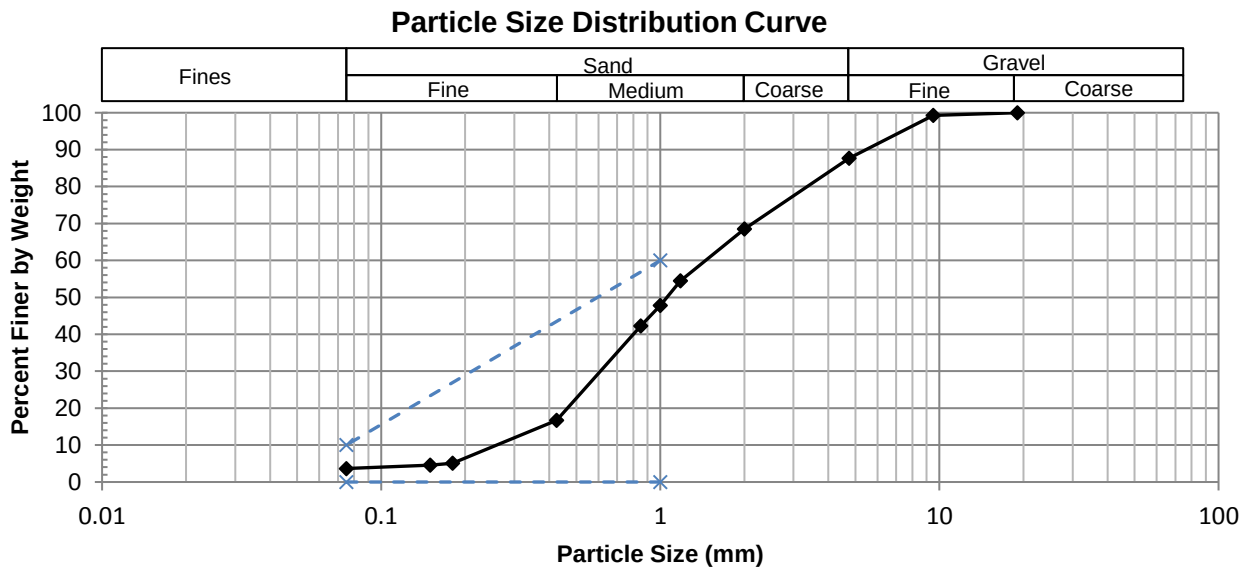
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Section 2.1
			Sand Drainage Layer
3/8"	9.5	100	
no. 4	4.75	86	
no. 10	2.00	66	
no. 16	1.18	52	
no. 18	1.00	46	0-60
no.20	0.850	41	
no. 40	0.425	17	
no. 80	0.180	3.7	
no. 100	0.150	3.2	
no. 200	0.075	2.4	0-10

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-06

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-174
Source	Glacial Aggregates
Soil Desc.	Sand Drainage
Date Sampled	25-Jul-18
Date Tested	26-Jul-18
Technician	KM

Total Weight (g)	2161
Gravel %	12.4
Sand %	84.0
Fines %	3.6



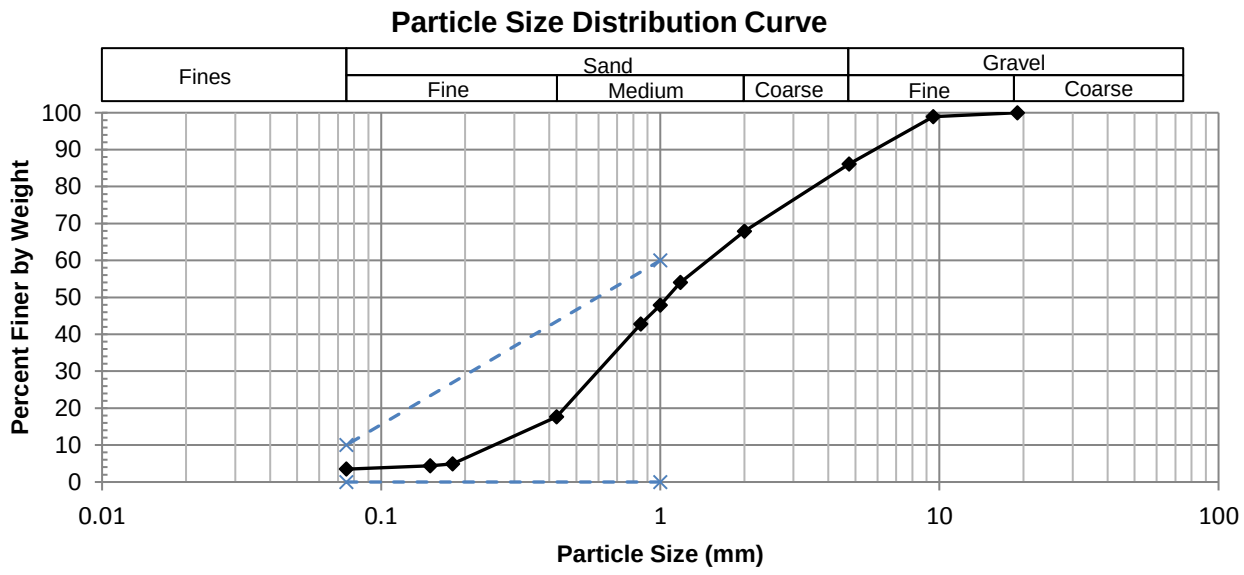
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Section 2.1
			Sand Drainage Layer
3/8"	9.5	100	
no. 4	4.75	88	
no. 10	2.00	69	
no. 16	1.18	54	
no. 18	1.00	48	0-60
no.20	0.850	42	
no. 40	0.425	17	
no. 80	0.180	5.1	
no. 100	0.150	4.5	
no. 200	0.075	3.6	0-10

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-06

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-176
Source	Glacial Aggregates
Soil Desc.	Sand Drainage
Date Sampled	27-Jul-18
Date Tested	30-Jul-18
Technician	NM

Total Weight (g)	2831
Gravel %	13.9
Sand %	82.6
Fines %	3.5



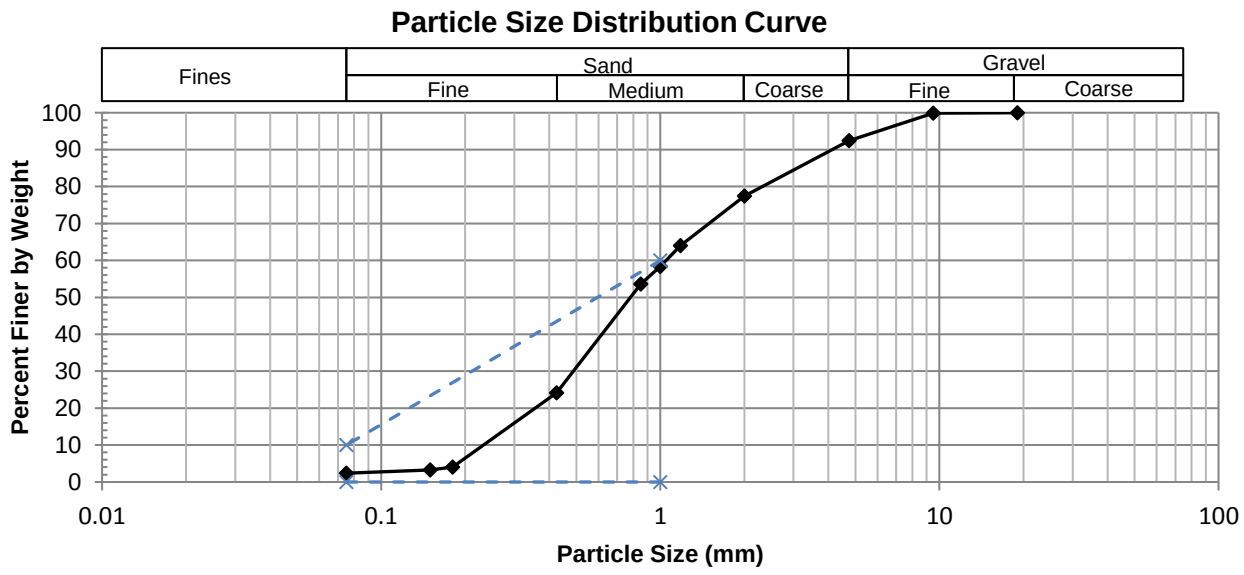
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Section 2.1
			Sand Drainage Layer
3/8"	9.5	100	
no. 4	4.75	86	
no. 10	2.00	68	
no. 16	1.18	54	
no. 18	1.00	48	0-60
no.20	0.850	43	
no. 40	0.425	18	
no. 80	0.180	4.9	
no. 100	0.150	4.4	
no. 200	0.075	3.5	0-10

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-06

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-182
Source	Glacial Aggregates
Soil Desc.	Sand Drainage
Date Sampled	27-Jul-18
Date Tested	1-Aug-18
Technician	NM

Total Weight (g)	2740
Gravel %	7.5
Sand %	90.1
Fines %	2.4



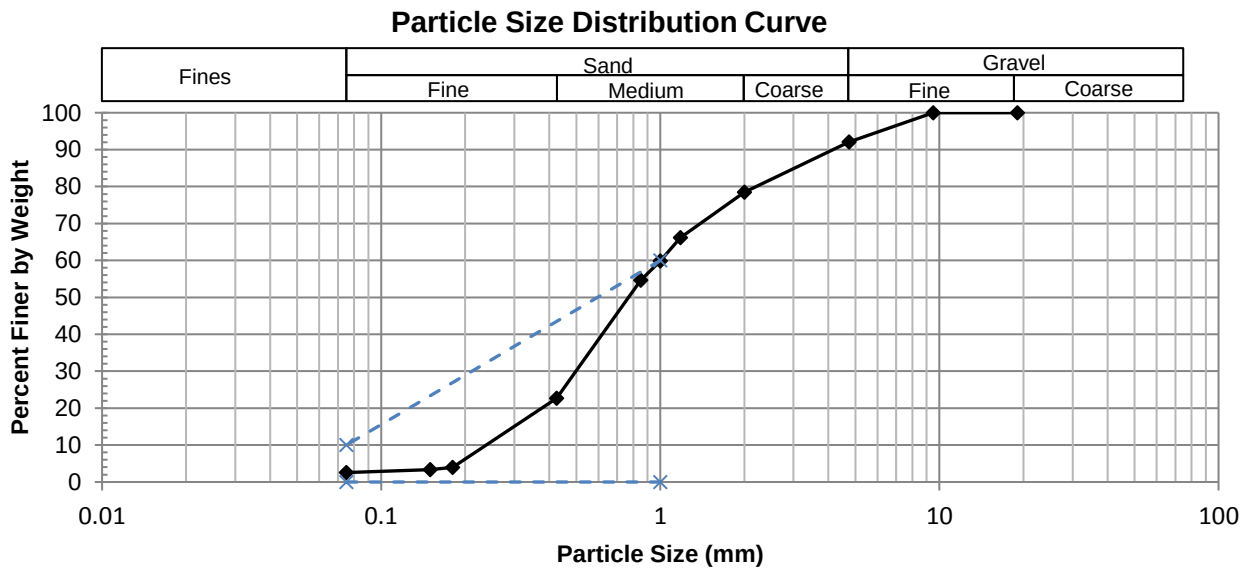
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Section 2.1
			Sand Drainage Layer
3/8"	9.5	100	
no. 4	4.75	92	
no. 10	2.00	77	
no. 16	1.18	64	
no. 18	1.00	58	0-60
no.20	0.850	54	
no. 40	0.425	24	
no. 80	0.180	4.0	
no. 100	0.150	3.2	
no. 200	0.075	2.4	0-10

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-06

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-189-2
Source	Glacial Aggregates
Soil Desc.	Sand Drainage
Date Sampled	7-Aug-18
Date Tested	8-Aug-18
Technician	NM

Total Weight (g)	2415
Gravel %	7.9
Sand %	89.5
Fines %	2.6



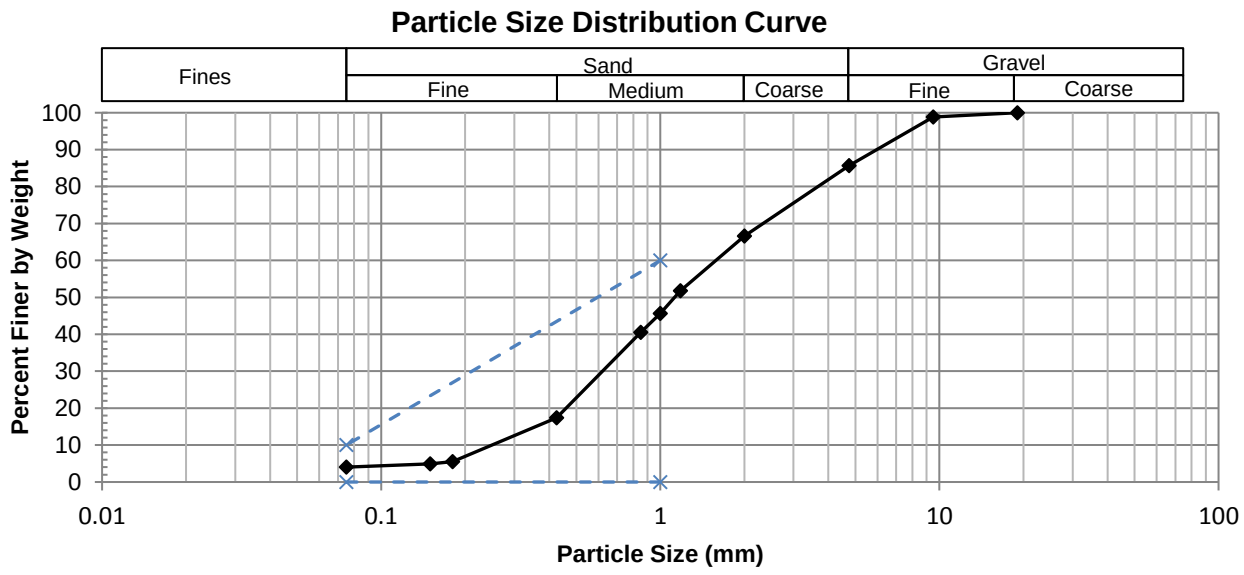
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Section 2.1
			Sand Drainage Layer
3/8"	9.5	100	
no. 4	4.75	92	
no. 10	2.00	78	
no. 16	1.18	66	
no. 18	1.00	60	0-60
no.20	0.850	55	
no. 40	0.425	23	
no. 80	0.180	3.9	
no. 100	0.150	3.3	
no. 200	0.075	2.6	0-10

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-06

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-191-1
Source	Glacial Aggregates
Soil Desc.	Sand Drainage
Date Sampled	8-Aug-18
Date Tested	9-Aug-18
Technician	NM

Total Weight (g)	2457
Gravel %	14.3
Sand %	81.7
Fines %	4.0



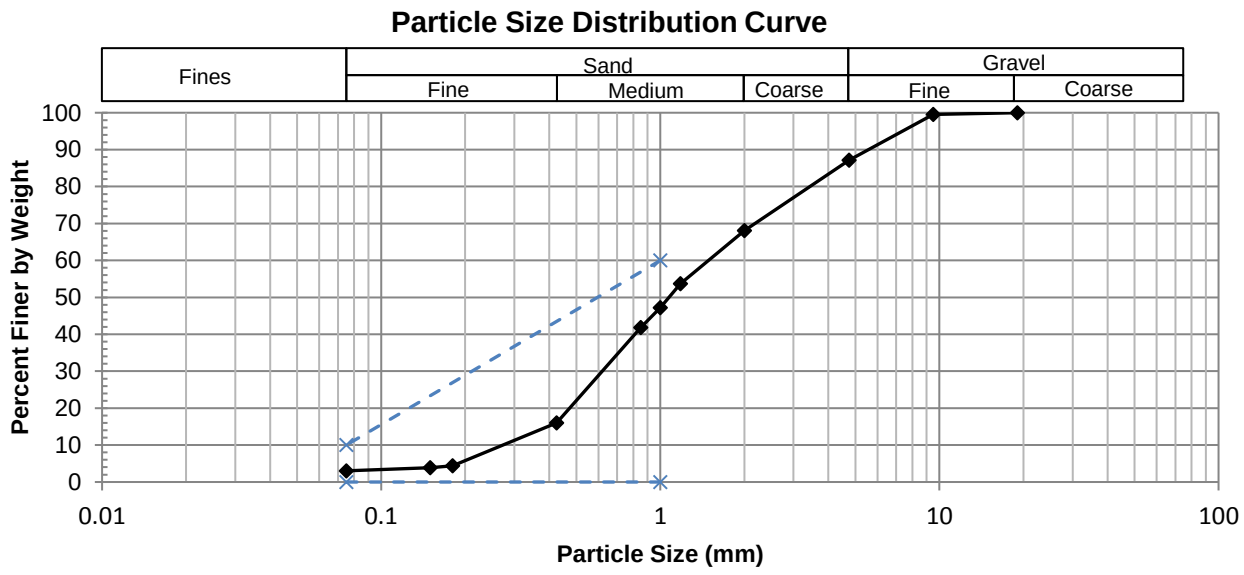
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Section 2.1
			Sand Drainage Layer
3/8"	9.5	100	
no. 4	4.75	86	
no. 10	2.00	67	
no. 16	1.18	52	
no. 18	1.00	46	0-60
no.20	0.850	41	
no. 40	0.425	17	
no. 80	0.180	5.5	
no. 100	0.150	4.9	
no. 200	0.075	4.0	0-10

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-06

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-191-2
Source	Glacial Aggregates
Soil Desc.	Sand Drainage
Date Sampled	8-Aug-18
Date Tested	9-Aug-18
Technician	NM

Total Weight (g)	2403
Gravel %	12.9
Sand %	84.1
Fines %	3.0



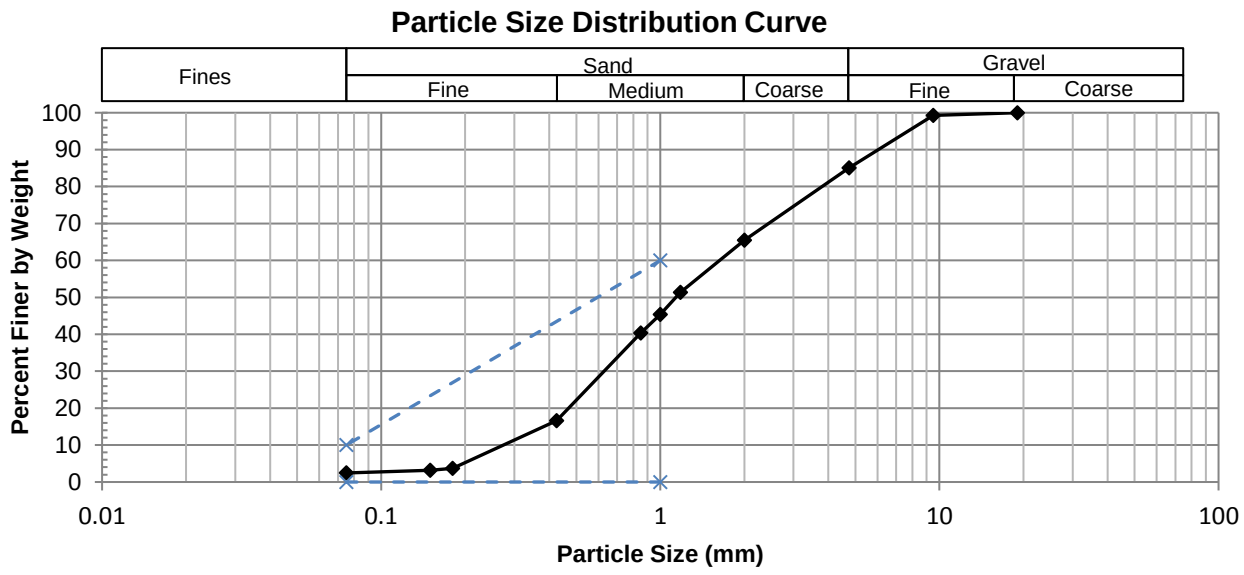
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Section 2.1
			Sand Drainage Layer
3/8"	9.5	100	
no. 4	4.75	87	
no. 10	2.00	68	
no. 16	1.18	54	
no. 18	1.00	47	0-60
no.20	0.850	42	
no. 40	0.425	16	
no. 80	0.180	4.4	
no. 100	0.150	3.8	
no. 200	0.075	3.0	0-10

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-06

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-194-1
Source	Glacial Aggregates
Soil Desc.	Sand Drainage
Date Sampled	9-Aug-18
Date Tested	10-Aug-18
Technician	NM

Total Weight (g)	2323
Gravel %	14.9
Sand %	82.6
Fines %	2.4



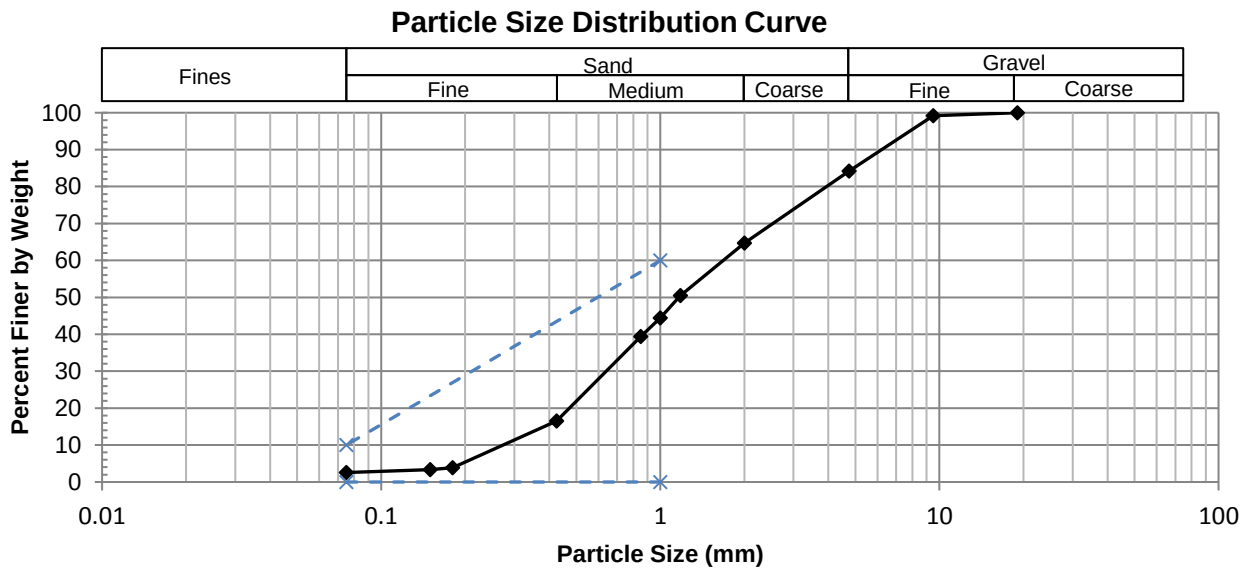
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Section 2.1
			Sand Drainage Layer
3/8"	9.5	100	
no. 4	4.75	85	
no. 10	2.00	65	
no. 16	1.18	51	
no. 18	1.00	45	0-60
no.20	0.850	40	
no. 40	0.425	17	
no. 80	0.180	3.7	
no. 100	0.150	3.1	
no. 200	0.075	2.4	0-10

www.trekgeotechnical.ca
1712 St. James Street
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax: 204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-06

Project No.	0366-000-00-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-194-2
Source	Glacial Aggregates
Soil Desc.	Sand Drainage
Date Sampled	9-Aug-18
Date Tested	10-Aug-18
Technician	NM

Total Weight (g)	2480
Gravel %	15.8
Sand %	81.6
Fines %	2.6



Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Section 2.1
			Sand Drainage Layer
3/8"	9.5	100	
no. 4	4.75	84	
no. 10	2.00	65	
no. 16	1.18	51	
no. 18	1.00	44	0-60
no.20	0.850	39	
no. 40	0.425	17	
no. 80	0.180	3.9	
no. 100	0.150	3.3	
no. 200	0.075	2.6	0-10

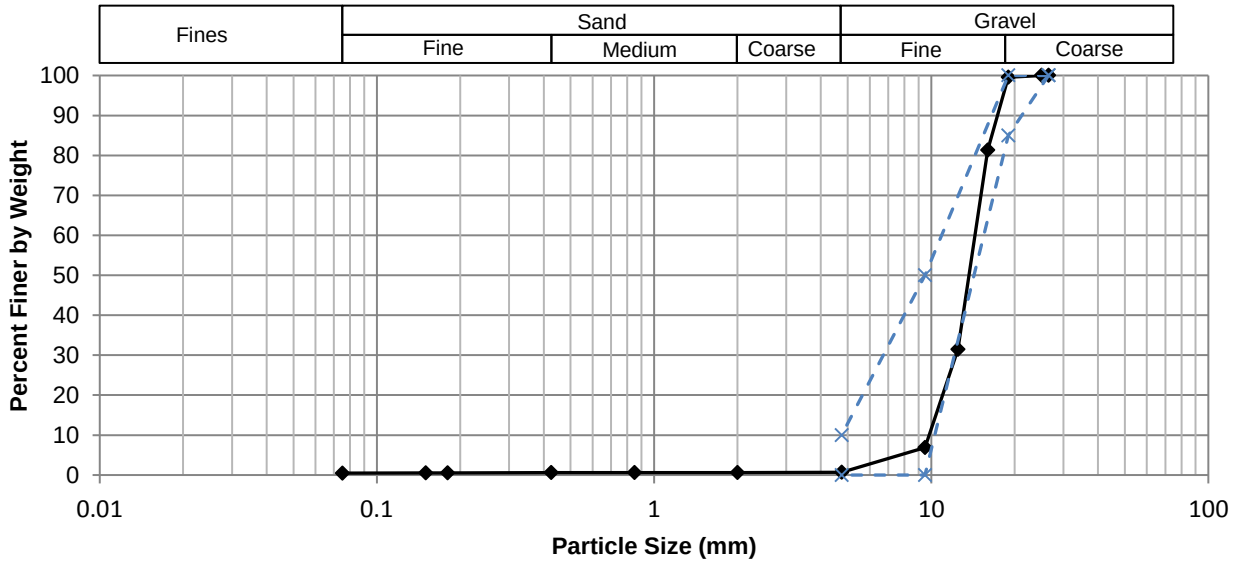
www.trekgeotechnical.ca
1712 St James St.
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax:204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-14

Project No.	1000-077-01
Client	Edie Construction Ltd.
Project	Cell 15
Sample #	L18-163-1
Source	Glacial Aggregates
Soil Desc.	19 mm clean limestone
Date Sampled	18-Jul-18
Date Tested	18-Jul-18
Technician	KM

Gravel %	99.3
Sand %	0.2
Fines %	0.5

Particle Size Distribution Curve



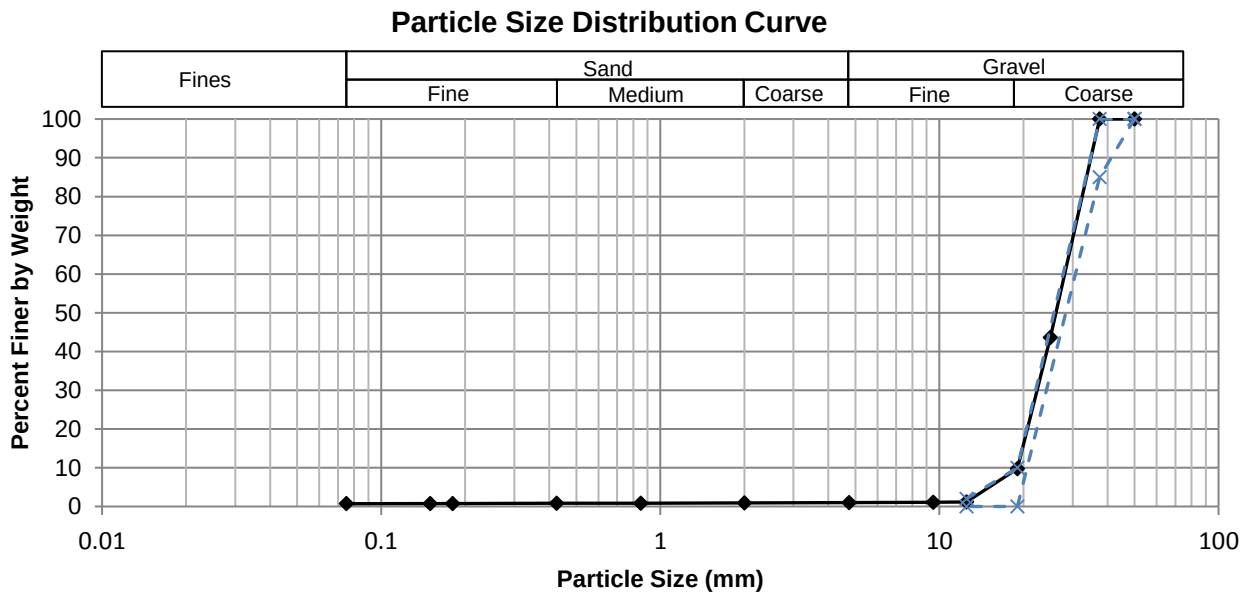
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
-	26.5	100	100-100
1"	25.0	100	
3/4"	19.0	100	85-100
5/8"	16.0	81	
1/2"	12.5	31	
3/8"	9.50	6.9	0-50
no. 4	4.75	0.7	0-10
no. 10	2.00	0.6	
no. 20	0.850	0.6	
no. 40	0.425	0.6	
no. 80	0.180	0.5	
no. 100	0.150	0.5	
no. 200	0.075	0.5	

www.trekgeotechnical.ca
1712 St James St.
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax:204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-14

Project No.	0366-000-01-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-184-1
Source	Glacial Aggregates
Soil Desc.	50mm Leachate Stone
Date Sampled	2-Aug-18
Date Tested	2-Aug-18
Technician	NM

Gravel %	99.0
Sand %	0.3
Fines %	0.7



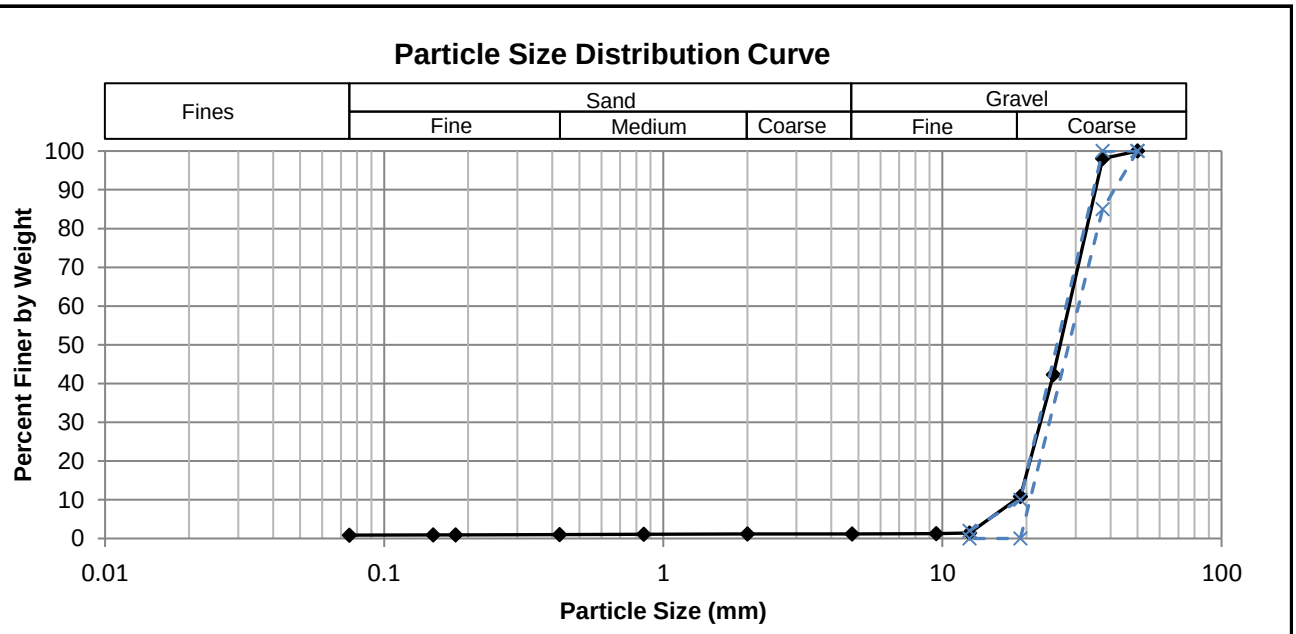
Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Granular Leachate
			Collection Stone
			Specification
2"	50.0	100	100-100
1 1/2"	37.5	100	85-100
1"	25.0	44	
3/4"	19.0	10	0-10
1/2"	12.5	1.2	0-2
3/8"	9.50	1.1	
no. 4	4.75	1.0	
no. 10	2.00	0.9	
no. 20	0.850	0.9	
no. 40	0.425	0.8	
no. 80	0.180	0.8	
no. 100	0.150	0.8	
no. 200	0.075	0.7	

www.trekgeotechnical.ca
1712 St James St.
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax:204.975.9435

Grain Size Analysis (Sieve Method)
ASTM C136-14

Project No.	0366-000-01-400
Client	Waste Connections
Project	Cell 15
Sample #	L18-198
Source	Glacial Aggregates
Soil Desc.	50mm Leachate Stone
Date Sampled	10-Aug-18
Date Tested	13-Aug-18
Technician	NM

Gravel %	98.8
Sand %	0.3
Fines %	0.9



Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Granular Leachate
			Collection Stone
			Specification
2"	50.0	100	100-100
1 1/2"	37.5	98	85-100
1"	25.0	42	
3/4"	19.0	11	0-10
1/2"	12.5	1.4	0-2
3/8"	9.50	1.3	
no. 4	4.75	1.2	
no. 10	2.00	1.1	
no. 20	0.850	1.1	
no. 40	0.425	1.0	
no. 80	0.180	0.9	
no. 100	0.150	0.9	
no. 200	0.075	0.9	

www.trekgeotechnical.ca
1712 St James St.
Winnipeg, MB R3H 0L3
Tel: 204.975.9433 Fax:204.975.9435

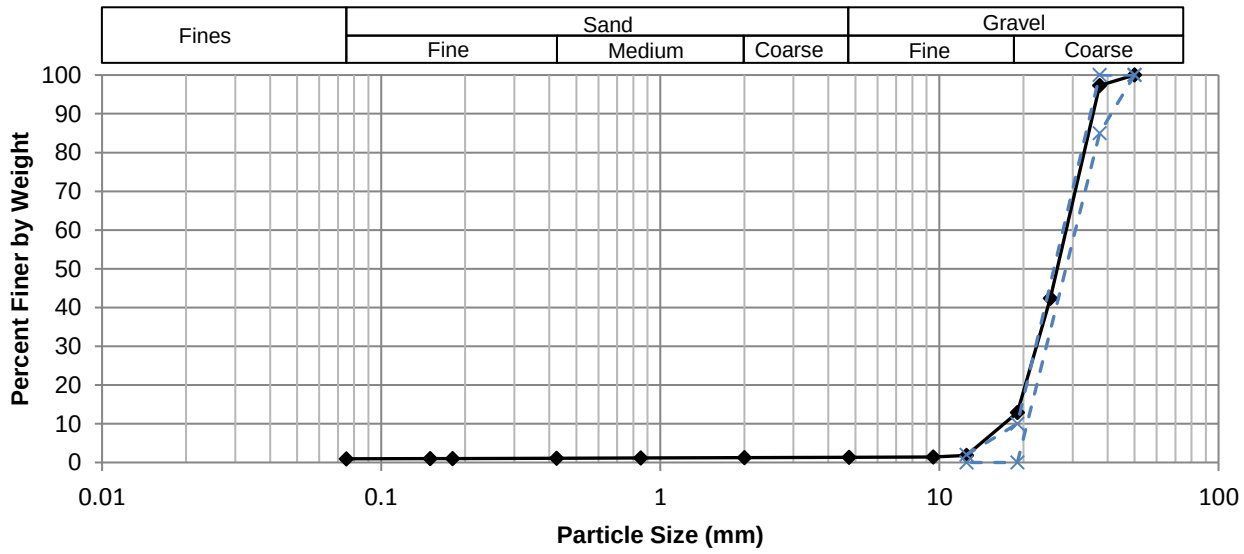
Grain Size Analysis (Sieve Method)
ASTM C136-14

Project No. 0366-000-01-400
Client Waste Connections
Project Cell 15

Sample # L18-200
Source Glacial Aggregates
Soil Desc. 50mm Leachate Stone
Date Sampled 13-Aug-18
Date Tested 13-Aug-18
Technician NM

Gravel %	98.7
Sand %	0.4
Fines %	1.0

Particle Size Distribution Curve



Sieve Number	Sieve Opening (mm)	Percent Passing	Specification (Min-Max)
			Granular Leachate
			Collection Stone
			Specification
2"	50.0	100	100-100
1 1/2"	37.5	97	85-100
1"	25.0	42	
3/4"	19.0	13	0-10
1/2"	12.5	1.8	0-2
3/8"	9.50	1.5	
no. 4	4.75	1.3	
no. 10	2.00	1.3	
no. 20	0.850	1.2	
no. 40	0.425	1.1	
no. 80	0.180	1.0	
no. 100	0.150	1.0	
no. 200	0.075	1.0	

Appendix B-1

Geosynthetic Inventory Control Record

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environment
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	240599	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
2	240582	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
3	240592	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
4	240585	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
5	240584	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
6	240595	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
7	240611	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
8	240618	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
9	240607	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
10	240591	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
11	240593	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
12	240590	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
13	240594	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
14	240596	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
15	unreadable	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
16	240597	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
17	240593	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
18	240587	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
19	240600	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
20	240606	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
21	240612	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
22	240594	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
23	unreadable	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
24	2400616	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
25	240621	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

Trek Form

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Enivornmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 2

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	240615	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
2	240603	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
3	240605	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
4	240604	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
5	240601	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
6	240602	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
7	240613	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
8	240260	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
9	240617	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
10	240614	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
11	240619	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
12	240623	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
13	240951	26040102	GCL	6/6/2016	45.72	4.72	N/A	Y
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

Trek Form

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Evironmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	1981	3059	GCL	07/11/16	45.72	4.572	N/A	Y
2	1989	3059	GCL	07/11/16	45.72	4.572	N/A	Y
3	1990	3059	GCL	07/11/16	45.72	4.572	N/A	Y
4	1991	3059	GCL	07/11/16	45.72	4.572	N/A	Y
5	2002	3059	GCL	07/11/16	45.72	4.572	N/A	Y
6	2003	3059	GCL	07/11/16	45.72	4.572	N/A	Y
7	1929	3059	GCL	07/11/16	45.72	4.572	N/A	Y
8	1949	3059	GCL	07/11/16	45.72	4.572	N/A	Y
9	1958	3059	GCL	07/11/16	45.72	4.572	N/A	Y
10	1962	3059	GCL	07/11/16	45.72	4.572	N/A	Y
11	1963	3059	GCL	07/11/16	45.72	4.572	N/A	Y
12	1964	3059	GCL	07/11/16	45.72	4.572	N/A	Y
13	1970	3059	GCL	07/11/16	45.72	4.572	N/A	Y
14	1971	3059	GCL	07/11/16	45.72	4.572	N/A	Y
15	1972	3059	GCL	07/11/16	45.72	4.572	N/A	Y
16	1980	3059	GCL	07/11/16	45.72	4.572	N/A	Y
17	2007	3059	GCL	07/11/16	45.72	4.572	N/A	Y
18	1837	3059	GCL	07/11/16	45.72	4.572	N/A	Y
19	1838	3059	GCL	07/11/16	45.72	4.572	N/A	Y
20	1854	3059	GCL	07/11/16	45.72	4.572	N/A	Y
21	1974	3059	GCL	07/11/16	45.72	4.572	N/A	Y
22	1982	3059	GCL	07/11/16	45.72	4.572	N/A	Y
23	1983	3059	GCL	07/11/16	45.72	4.572	N/A	Y
24	1984	3059	GCL	07/11/16	45.72	4.572	N/A	Y
25	1985	3059	GCL	07/11/16	45.72	4.572	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Evironmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 2

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	1992	3059	GCL	07/11/16	45.72	4.572	N/A	Y
2	1993	3059	GCL	07/11/16	45.72	4.572	N/A	Y
3	1994	3059	GCL	07/11/16	45.72	4.572	N/A	Y
4	1995	3059	GCL	07/11/16	45.72	4.572	N/A	Y
5	1996	3059	GCL	07/11/16	45.72	4.572	N/A	Y
6	1997	3059	GCL	07/11/16	45.72	4.572	N/A	Y
7	2004	3059	GCL	07/11/16	45.72	4.572	N/A	Y
8	1961	3059	GCL	07/11/16	45.72	4.572	N/A	Y
9	2013	3059	GCL	07/11/16	45.72	4.572	N/A	Y
10	2008	3059	GCL	07/11/16	45.72	4.572	N/A	Y
11	1977	3059	GCL	07/11/16	45.72	4.572	N/A	Y
12	1978	3059	GCL	07/11/16	45.72	4.572	N/A	Y
13	1999	3059	GCL	07/11/16	45.72	4.572	N/A	Y
14	1832	3059	GCL	07/11/16	45.72	4.572	N/A	Y
15	2012	3059	GCL	07/11/16	45.72	4.572	N/A	Y
16	1976	3059	GCL	07/11/16	45.72	4.572	N/A	Y
17	2011	3059	GCL	07/11/16	45.72	4.572	N/A	Y
18	2009	3059	GCL	07/11/16	45.72	4.572	N/A	Y
19	2010	3059	GCL	07/11/16	45.72	4.572	N/A	Y
20	2001	3059	GCL	07/11/16	45.72	4.572	N/A	Y
21	1824	3059	GCL	07/11/16	45.72	4.572	N/A	Y
22	1998	3059	GCL	07/11/16	45.72	4.572	N/A	Y
23	2005	3059	GCL	07/11/16	45.72	4.572	N/A	Y
24	1955	3059	GCL	07/11/16	45.72	4.572	N/A	Y
25	1956	3059	GCL	07/11/16	45.72	4.572	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Evironmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 3

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	1959	3059	GCL	07/11/16	45.72	4.572	N/A	Y
2	1960	3059	GCL	07/11/16	45.72	4.572	N/A	Y
3	1965	3059	GCL	07/11/16	45.72	4.572	N/A	Y
4	1966	3059	GCL	07/11/16	45.72	4.572	N/A	Y
5	1967	3059	GCL	07/11/16	45.72	4.572	N/A	Y
6	1968	3059	GCL	07/11/16	45.72	4.572	N/A	Y
7	1969	3059	GCL	07/11/16	45.72	4.572	N/A	Y
8	1973	3059	GCL	07/11/16	45.72	4.572	N/A	Y
9	1975	3059	GCL	07/11/16	45.72	4.572	N/A	Y
10	1979	3059	GCL	07/11/16	45.72	4.572	N/A	Y
11	1986	3059	GCL	07/11/16	45.72	4.572	N/A	Y
12	1987	3059	GCL	07/11/16	45.72	4.572	N/A	Y
13	1988	3059	GCL	07/11/16	45.72	4.572	N/A	Y
14	2000	3059	GCL	07/11/16	45.72	4.572	N/A	Y
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Evironmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	1928	3059	GCL	07/12/16	45.72	4.572	N/A	Y
2	1957	3059	GCL	07/12/16	45.72	4.572	N/A	Y
3	1923	3059	GCL	07/12/16	45.72	4.572	N/A	Y
4	1904	3059	GCL	07/12/16	45.72	4.572	N/A	Y
5	1920	3059	GCL	07/12/16	45.72	4.572	N/A	Y
6	1921	3059	GCL	07/12/16	45.72	4.572	N/A	Y
7	1922	3059	GCL	07/12/16	45.72	4.572	N/A	Y
8	1930	3059	GCL	07/12/16	45.72	4.572	N/A	Y
9	1931	3059	GCL	07/12/16	45.72	4.572	N/A	Y
10	1932	3059	GCL	07/12/16	45.72	4.572	N/A	Y
11	1934	3059	GCL	07/12/16	45.72	4.572	N/A	Y
12	1935	3059	GCL	07/12/16	45.72	4.572	N/A	Y
13	1936	3059	GCL	07/12/16	45.72	4.572	N/A	Y
14	1937	3059	GCL	07/12/16	45.72	4.572	N/A	Y
15	1939	3059	GCL	07/12/16	45.72	4.572	N/A	Y
16	1925	3059	GCL	07/12/16	45.72	4.572	N/A	Y
17	1926	3059	GCL	07/12/16	45.72	4.572	N/A	Y
18	1938	3059	GCL	07/12/16	45.72	4.572	N/A	Y
19	1940	3059	GCL	07/12/16	45.72	4.572	N/A	Y
20	1941	3059	GCL	07/12/16	45.72	4.572	N/A	Y
21	1942	3059	GCL	07/12/16	45.72	4.572	N/A	Y
22	1943	3059	GCL	07/12/16	45.72	4.572	N/A	Y
23	1944	3059	GCL	07/12/16	45.72	4.572	N/A	Y
24	1945	3059	GCL	07/12/16	45.72	4.572	N/A	Y
25	1946	3059	GCL	07/12/16	45.72	4.572	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Evironmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 2

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	1947	3059	GCL	07/12/16	45.72	4.572	N/A	Y
2	1948	3059	GCL	07/12/16	45.72	4.572	N/A	Y
3	1950	3059	GCL	07/12/16	45.72	4.572	N/A	Y
4	1951	3059	GCL	07/12/16	45.72	4.572	N/A	Y
5	1952	3059	GCL	07/12/16	45.72	4.572	N/A	Y
6	1953	3059	GCL	07/12/16	45.72	4.572	N/A	Y
7	1954	3059	GCL	07/12/16	45.72	4.572	N/A	Y
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Evironmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	1839	3059	GCL	07/13/16	45.72	4.572	N/A	Y
2	1878	3059	GCL	07/13/16	45.72	4.572	N/A	Y
3	1879	3059	GCL	07/13/16	45.72	4.572	N/A	Y
4	1888	3059	GCL	07/13/16	45.72	4.572	N/A	Y
5	1891	3059	GCL	07/13/16	45.72	4.572	N/A	Y
6	1892	3059	GCL	07/13/16	45.72	4.572	N/A	Y
7	1893	3059	GCL	07/13/16	45.72	4.572	N/A	Y
8	1895	3059	GCL	07/13/16	45.72	4.572	N/A	Y
9	1896	3059	GCL	07/13/16	45.72	4.572	N/A	Y
10	1897	3059	GCL	07/13/16	45.72	4.572	N/A	Y
11	1898	3059	GCL	07/13/16	45.72	4.572	N/A	Y
12	1900	3059	GCL	07/13/16	45.72	4.572	N/A	Y
13	1902	3059	GCL	07/13/16	45.72	4.572	N/A	Y
14	1908	3059	GCL	07/13/16	45.72	4.572	N/A	Y
15	1909	3059	GCL	07/13/16	45.72	4.572	N/A	Y
16	1916	3059	GCL	07/13/16	45.72	4.572	N/A	Y
17	1857	3059	GCL	07/13/16	45.72	4.572	N/A	Y
18	1871	3059	GCL	07/13/16	45.72	4.572	N/A	Y
19	1872	3059	GCL	07/13/16	45.72	4.572	N/A	Y
20	1873	3059	GCL	07/13/16	45.72	4.572	N/A	Y
21	1907	3059	GCL	07/13/16	45.72	4.572	N/A	Y
22	1876	3059	GCL	07/13/16	45.72	4.572	N/A	Y
23	1885	3059	GCL	07/13/16	45.72	4.572	N/A	Y
24	1886	3059	GCL	07/13/16	45.72	4.572	N/A	Y
25	1887	3059	GCL	07/13/16	45.72	4.572	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Evironmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 2

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	1889	3059	GCL	07/13/16	45.72	4.572	N/A	Y
2	1852	3059	GCL	07/13/16	45.72	4.572	N/A	Y
3	1874	3059	GCL	07/13/16	45.72	4.572	N/A	Y
4	1950	3059	GCL	07/13/16	45.72	4.572	N/A	Y
5	1948	3059	GCL	07/13/16	45.72	4.572	N/A	Y
6	1940	3059	GCL	07/13/16	45.72	4.572	N/A	Y
7	1952	3059	GCL	07/13/16	45.72	4.572	N/A	Y
8	1938	3059	GCL	07/13/16	45.72	4.572	N/A	Y
9	1951	3059	GCL	07/13/16	45.72	4.572	N/A	Y
10	1954	3059	GCL	07/13/16	45.72	4.572	N/A	Y
11	1953	3059	GCL	07/13/16	45.72	4.572	N/A	Y
12	1943	3059	GCL	07/13/16	45.72	4.572	N/A	Y
13	1926	3059	GCL	07/13/16	45.72	4.572	N/A	Y
14	1942	3059	GCL	07/13/16	45.72	4.572	N/A	Y
15	1941	3059	GCL	07/13/16	45.72	4.572	N/A	Y
16	1946	3059	GCL	07/13/16	45.72	4.572	N/A	Y
17	1945	3059	GCL	07/13/16	45.72	4.572	N/A	Y
18	1944	3059	GCL	07/13/16	45.72	4.572	N/A	Y
19	1947	3059	GCL	07/13/16	45.72	4.572	N/A	Y
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	11	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
2	16	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
3	31	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
4	14	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
5	29	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
6	21	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
7	30	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
8	22	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
9	27	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
10	24	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
11	23	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
12	26	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
13	32	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
14	25	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
15	15	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
16	28	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
17	13	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
18	38	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
19	8	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
20	39	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
21	42	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
22	12	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
23	43	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
24	9	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
25	48	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
26	10	346.507	GM-13-SM	05/014/18	130	7.5	60	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 2

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mil)	(y/n)
1	36	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
2	37	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
3	20	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
4	19	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
5	3	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
6	17	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
7	40	346.507	GM-13-SM	05/014/18	130	7.5	60	Y
8	5-21396	16B1269	MEM-TX	06/06/16	164.6	6.8	60	Y
9	5-21390	16B1269	MEM-TX	06/06/16	164.6	6.8	60	Y
10	5-21388	16B1269	MEM-TX	06/06/16	164.6	6.8	60	Y
11	5-21392	16B1269	MEM-TX	06/06/16	164.6	6.8	60	Y
12	5-21394	16B1269	MEM-TX	06/06/16	164.6	6.8	60	Y
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	529741.2	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
2	529741.1	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
3	529741.11	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
4	529741.3	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
5	529741.4	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
6	529741.6	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
7	529741.8	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
8	529741.5	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
9	529741.9	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
10	529741.1	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
11	529741.12	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
12	529741.7	N/A	GE116-15	07/06/18	91.5	4.57	N/A	Y
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	52974.7	N/A	GE180-15	07/06/18	183	4.57	N/A	Y
2	52974.1	N/A	GE180-15	07/06/18	183	4.57	N/A	Y
3	52974.3	N/A	GE180-15	07/06/18	183	4.57	N/A	Y
4	52974.2	N/A	GE180-15	07/06/18	183	4.57	N/A	Y
5	52974.5	N/A	GE180-15	07/06/18	183	4.57	N/A	Y
6	52974.6	N/A	GE180-15	07/06/18	183	4.57	N/A	Y
7	52974.8	N/A	GE180-15	07/06/18	183	4.57	N/A	Y
8	52974.4	N/A	GE180-15	07/06/18	183	4.57	N/A	Y
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	99	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
2	107	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
3	141	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
4	118	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
5	124	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
6	110	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
7	108	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
8	121	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
9	129	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
10	125	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
11	139	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
12	122	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
13	123	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
14	96	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
15	106	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
16	101	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
17	120	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
18	112	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
19	130	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
20	128	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
21	135	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
22	98	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
23	113	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
24	97	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
25	95	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 2

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	111	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
2	109	1806475	Geocomposite	05/14/18	60	3.8	N/A	Y
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	76	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
2	42	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
3	90	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
4	92	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
5	68	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
6	43	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
7	44	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
8	79	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
9	75	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
10	85	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
11	67	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
12	80	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
13	78	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
14	93	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
15	74	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
16	55	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
17	54	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
18	56	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
19	65	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
20	64	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
21	66	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
22	83	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
23	73	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
24	72	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
25	61	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 2

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	62	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
2	63	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
3	5	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
4	15	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
5	38	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
6	89	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
7	12	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
8	50	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
9	25	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
10	8	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
11	58	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
12	40	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
13	24	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
14	10	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
15	77	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
16	6	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
17	49	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
18	31	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
19	3	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
20	14	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
21	48	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
22	11	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
23	57	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
24	39	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
25	36	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 3

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	22	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
2	4	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
3	23	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
4	69	1806475	Geocomposite	05/15/18	60	3.8	N/A	Y
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 1

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	9	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
2	13	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
3	21	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
4	18	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
5	41	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
6	28	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
7	2	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
8	20	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
9	19	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
10	59	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
11	29	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
12	27	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
13	26	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
14	37	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
15	1	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
16	87	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
17	32	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
18	33	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
19	51	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
20	30	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
21	16	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
22	70	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
23	34	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
24	17	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
25	7	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 2

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	81	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
2	35	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
3	60	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
4	82	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
5	116	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
6	127	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
7	84	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
8	100	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
9	52	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
10	138	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
11	47	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
12	114	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
13	71	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
14	45	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
15	126	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
16	143	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
17	88	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
18	133	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
19	119	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
20	86	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
21	137	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
22	146	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
23	104	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
24	131	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
25	105	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

GEOMEMBRANE INVENTORY LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections of Canada
CONTRACTOR: Titan Environmental
LOCATION: Winnipeg, Manitoba

SHEET NUMBER: 3

	ROLL NUMBER	LOT NUMBER	MATERIAL TYPE	DATE	ROLL DIMENSIONS			QC Tested
					Length (m)	Width (m)	Thick (mils)	(y/n)
1	102	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
2	132	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
3	134	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
4	145	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
5	140	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
6	103	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
7	136	1806475	Geocomposite	05/16/18	60	3.8	N/A	Y
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

NOTES :

(1) Geomembrane roll length may vary, roll length often established by roll weight

(2) mem = Geomembrane
tex = Geotextile
GCL = Geosynthetic Clay Liner
gec = Geocomposite
cus = Geocushion

(3) Thickness dimensions are minimum values unless otherwise reported

Appendix B-2

Geomembrane, GCL and Geocomposite Manufacturer's Quality Control Documents

CETCO
Colloid Environmental Technologies Company LLC

GRI GEI GSI GII GAI GCI
GAI-LAP accredited

Date: 10-Jul-2018 13:56
Purchase Order: 3635
ORDER NUMBER: 55026407

TITAN ENVIRONMENTAL
CONTAINMENT LTD
777 QUEST BOULEVARD
CANADA,,R0A 0T1

To Whom It May Concern:

Please find the enclosed Manufacturing Quality Assurance/Manufacturing Quality Control (MQA/MQC) test data package for Geosynthetic Clay Liner (GCL) shipments to TITAN ENVIRONMENTAL .

The enclosed data package includes results for all MQC tests required by ASTM D5889, with the exception of index flux/hydraulic conductivity. This test, which is run according to ASTM D5887, is normally performed once every 250,000 sq./ft. of GCL produced, unless a higher frequency is required by the project specifications. Because of the GCL's low permeability, this test can take several weeks to complete. The index flux/hydraulic conductivity results associated with this lot of material will be provided under separate cover as soon as they are available.

Although the index flux/hydraulic conductivity test results are not yet available, CETCO® accepts responsibility for our GCL should the index flux/hydraulic conductivity test produce unacceptable results. If, upon delivery and prior to installation, individual rolls of GCL are found to be nonconforming to accepted project specifications, CETCO® will replace the nonconforming material at no charge.

Questions regarding this information should be directed to CETCO® Technical Services at eptechservices@cetco.com.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO® Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GEOSYNTHETIC CLAY LINER
MANUFACTURING QUALITY ASSURANCE DATA PACKAGE

PROJECT NAME:
CUSTOMER P.O.: 3635
ORDER NUMBER: 55026407
PREPARED FOR: TITAN ENVIRONMENTAL

CONTENTS:

PREPARED BY: NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO®
AMERICAN COLLOID COMPANY
92 HIGHWAY 37
LOVELL, 82431, WY
Telephone: 800-322-1159
Email: Ryan.Nicholls@mineralstech.com

CETCO
Colloid Environmental Technologies Company LLC

PRODUCT CERTIFICATIONS

PROJECT NAME:
CUSTOMER P.O.: 3635
ORDER NUMBER: 55026407
PREPARED FOR: TITAN ENVIRONMENTAL

The GCL Manufactured for the above-referenced order number is certified to meet the values listed in the tables below:

GCL PROPERTY SPECIFICATIONS FOR BENTOMAT ST-SFT

Test Method	Test Method Property	Test Frequency	Certified Value
ASTM D6243	GCL Hydrated Internal Shear Strength	100,000 sq m	24 kPa typ. @ 9.6 kPa
ASTM D6496	GCL Peel Strength	4,000 sq m	610 N/m
ASTM D5993	Bentonite Mass/Area	*2,000 sq m	3.7 kg/sq m
ASTM D5890	Bentonite Free Swell	50 tons	24 - mL/2g
ASTM D5891	Bentonite Fluid Loss	50 tons	18 - mL
ASTM D6768	GCL Grab Strength	20,000 sq m	5.3 kN/m
ASTM D5887	GCL-Hydraulic Conductivity	*10,000 sq m	5x10-9 - cm/s
ASTM D5887	GCL-Index Flux	*10,000 sq m	1x10-8 - m3/m2/s
ASTM D5890	Bentonite Free Swell	*2,000 sq m	24 - mL/2g
ASTM D5891	Bentonite Fluid Loss	*2,000 sq m	18 - mL

All tensile testing is in the machine direction using ASTM D 6768. All peel strength testing is performed using ASTM D 6496. An "*" indicates non-standard testing, frequency, or certified value .

NEEDLE DETECTION AND REMOVAL PROCEDURE

CETCO® hereby affirms that all Bentomat® geosynthetic clay liner material manufactured for this project is continually passed under a magnet for needle removal and then screened with a metal detection device. CETCO® certifies Bentomat® to be essentially free of broken needless and fragments of needles that would negatively affect the performance of the final product.

Sincerely,

NICHOLLS, RYAN J
Quality Assurance Coordinator
CETCO® Lovell Plant

CETCO
Colloid Environmental Technologies Company LLC

GCL PACKING LIST AND MQA TRACKING FORM

Listing of finished and raw materials used to produce certification package number 55026407

GCL								GEOTEXTILE			CLAY
BENTOMAT ST-SFT								01-9514	01-9865		CG 50-BLK
Order	**GCL Lot#**	**GCL Roll#**	**Length (m.)**	**Width (m.)**	**Weight (kg.)**	**Sq. m.**	**Roll # Tested**	**Cap1 Roll #**	**Base1 Roll #**		**Clay Lot #**
55026407	LL-27-2018	1824	45.7	4.57	1342	209	1824	700174132	2025329275		L-180-18-K
55026407	LL-27-2018	1832	45.7	4.57	1360	209	1832	700174143	2025329275		L-180-18-K
55026407	LL-27-2018	1837	45.7	4.57	1342	209	1832	700174098	2025000456		L-180-18-K
55026407	LL-27-2018	1838	45.7	4.57	1315	209	1832	700174098	2025000456		L-180-18-K
55026407	LL-27-2018	1839	45.7	4.57	1319	209	1832	700174098	2025000456		L-180-18-K
55026407	LL-27-2018	1852	45.7	4.57	1333	209	1848	700174144	2025000456		L-180-18-L
55026407	LL-27-2018	1854	45.7	4.57	1392	209	1841	700174144	2025000456		L-180-18-L
55026407	LL-27-2018	1858	45.7	4.57	1342	209	1858	700174128	2025001842		L-180-18-L
55026407	LL-27-2018	1866	45.7	4.57	1324	209	1864	700174142	2025001842		L-180-18-L
55026407	LL-27-2018	1867	45.7	4.57	1329	209	1864	700174142	2025001842		L-180-18-L
55026407	LL-27-2018	1868	45.7	4.57	1315	209	1864	700174122	2025001842		L-180-18-L
55026407	LL-27-2018	1870	45.7	4.57	1308	209	1864	700174122	2025001842		L-180-18-L
55026407	LL-27-2018	1871	45.7	4.57	1335	209	1864	700174122	2025001842		L-180-18-L
55026407	LL-27-2018	1872	45.7	4.57	1338	209	1872	700174122	2025001842		L-180-18-L
55026407	LL-27-2018	1873	45.7	4.57	1331	209	1872	700174122	2025001842		L-180-18-L
55026407	LL-27-2018	1874	45.7	4.57	1322	209	1872	700174122	2025001842		L-180-18-L
55026407	LL-27-2018	1875	45.7	4.57	1310	209	1875	700174102	2025001842		L-180-18-L
55026407	LL-27-2018	1876	45.7	4.57	1324	209	1875	700174102	2025001842		L-180-18-L
55026407	LL-27-2018	1877	45.7	4.57	1329	209	1875	700174102	2025001842		L-180-18-L
55026407	LL-27-2018	1878	45.7	4.57	1315	209	1875	700174102	2025001842		L-180-18-L
55026407	LL-27-2018	1879	45.7	4.57	1331	209	1875	700174102	2025001842		L-180-18-L
55026407	LL-27-2018	1880	45.7	4.57	1329	209	1880	700174102	2025001842		L-180-18-L
55026407	LL-27-2018	1881	45.7	4.57	1335	209	1880	700174150	2025436102		L-180-18-L
55026407	LL-27-2018	1882	45.7	4.57	1313	209	1880	700174150	2025436102		L-180-18-L
55026407	LL-27-2018	1883	45.7	4.57	1335	209	1880	700174150	2025436102		L-180-18-L
55026407	LL-27-2018	1884	45.7	4.57	1308	209	1880	700174150	2025436102		L-180-18-L
55026407	LL-27-2018	1885	45.7	4.57	1324	209	1880	700174150	2025436102		L-180-18-L
55026407	LL-27-2018	1886	45.7	4.57	1329	209	1880	700174150	2025436102		L-180-18-L
55026407	LL-27-2018	1887	45.7	4.57	1313	209	1880	700174127	2025436102		L-180-18-L

55026407	LL-27-2018	1888	45.7	4.57	1310	209	1888	700174127	2025436102		L-180-18-L
55026407	LL-27-2018	1889	45.7	4.57	1306	209	1888	700174127	2025436102		L-180-18-L
55026407	LL-27-2018	1891	45.7	4.57	1338	209	1888	700174127	2025436102		L-180-18-L
55026407	LL-27-2018	1892	45.7	4.57	1308	209	1892	700174127	2025436102		L-180-18-L
55026407	LL-27-2018	1893	45.7	4.57	1290	209	1892	700174140	2025436102		L-180-18-L
55026407	LL-27-2018	1894	45.7	4.57	1307	209	1892	700174140	2025436102		L-180-18-L
55026407	LL-27-2018	1895	45.7	4.57	1310	209	1892	700174140	2025436102		L-180-18-L
55026407	LL-27-2018	1896	45.7	4.57	1308	209	1896	700174140	2025436102		L-180-18-L
55026407	LL-27-2018	1897	45.7	4.57	1299	209	1896	700174140	2025436102		L-183-18-A
55026407	LL-27-2018	1898	45.7	4.57	1319	209	1896	700174140	2025436102		L-183-18-A
55026407	LL-27-2018	1899	45.7	4.57	1324	209	1896	700174140	2025436102		L-183-18-A
55026407	LL-27-2018	1900	45.7	4.57	1308	209	1896	700174139	2025436102		L-183-18-A
55026407	LL-27-2018	1901	45.7	4.57	1319	209	1896	700174139	2025436102		L-183-18-A
55026407	LL-27-2018	1902	45.7	4.57	1319	209	1896	700174139	2025436102		L-183-18-A
55026407	LL-27-2018	1903	45.7	4.57	1295	209	1896	700174139	2025436102		L-183-18-A
55026407	LL-27-2018	1904	45.7	4.57	1322	209	1904	700174139	2025400966		L-183-18-A
55026407	LL-27-2018	1905	45.7	4.57	1301	209	1904	700174134	2025400966		L-183-18-A
55026407	LL-27-2018	1906	45.7	4.57	1301	209	1904	700174134	2025400966		L-183-18-A
55026407	LL-27-2018	1907	45.7	4.57	1306	209	1904	700174134	2025400966		L-183-18-A
55026407	LL-27-2018	1908	45.7	4.57	1319	209	1904	700174134	2025400966		L-183-18-A
55026407	LL-27-2018	1909	45.7	4.57	1342	209	1909	700174134	2025400966		L-183-18-A
55026407	LL-27-2018	1910	45.7	4.57	1347	209	1909	700174134	2025400966		L-183-18-A
55026407	LL-27-2018	1911	45.7	4.57	1347	209	1909	700174134	2025400966		L-183-18-A
55026407	LL-27-2018	1912	45.7	4.57	1344	209	1912	700174137	2025400966		L-183-18-A
55026407	LL-27-2018	1913	45.7	4.57	1353	209	1912	700174137	2025400966		L-183-18-A
55026407	LL-27-2018	1914	45.7	4.57	1340	209	1912	700174137	2025400966		L-183-18-A
55026407	LL-27-2018	1915	45.7	4.57	1344	209	1912	700174137	2025400966		L-183-18-A
55026407	LL-27-2018	1916	45.7	4.57	1360	209	1912	700174137	2025400966		L-183-18-A
55026407	LL-27-2018	1917	45.7	4.57	1347	209	1912	700174137	2025400966		L-183-18-A
55026407	LL-27-2018	1918	45.7	4.57	1331	209	1912	700174137	2025400966		L-183-18-A
55026407	LL-27-2018	1919	45.7	4.57	1344	209	1912	700174130	2025400966		L-183-18-A
55026407	LL-27-2018	1920	45.7	4.57	1347	209	1920	700174130	2025400966		L-183-18-A
55026407	LL-27-2018	1921	45.7	4.57	1331	209	1920	700174130	2025400966		L-183-18-A
55026407	LL-27-2018	1922	45.7	4.57	1331	209	1920	700174130	2025400966		L-183-18-A
55026407	LL-27-2018	1923	45.7	4.57	1406	209	1920	700174130	2025400966		L-183-18-A
55026407	LL-27-2018	1924	45.7	4.57	1349	209	1920	700174130	2025400966		L-183-18-A
55026407	LL-27-2018	1925	45.7	4.57	1329	209	1920	700174148	2025400966		L-183-18-A
55026407	LL-27-2018	1926	45.7	4.57	1331	209	1926	700174148	2025400966		L-183-18-A
55026407	LL-27-2018	1927	45.7	4.57	1342	209	1926	700174148	2025489296		L-183-18-A
55026407	LL-27-2018	1928	45.7	4.57	1319	209	1928	700174148	2025489296		L-183-18-A

55026407	LL-27-2018	1929	45.7	4.57	1338	209	1928	700174148	2025489296		L-183-18-A
55026407	LL-27-2018	1930	45.7	4.57	1324	209	1928	700174148	2025489296		L-183-18-A
55026407	LL-27-2018	1931	45.7	4.57	1324	209	1928	2025575054	2025489296		L-183-18-A
55026407	LL-27-2018	1932	45.7	4.57	1326	209	1928	2025575054	2025489296		L-183-18-A
55026407	LL-27-2018	1933	45.7	4.57	1319	209	1928	2025575054	2025489296		L-183-18-A
55026407	LL-27-2018	1934	45.7	4.57	1315	209	1928	2025575054	2025489296		L-183-18-A
55026407	LL-27-2018	1935	45.7	4.57	1335	209	1928	2025575054	2025489296		L-183-18-A
55026407	LL-27-2018	1936	45.7	4.57	1331	209	1936	2025575054	2025489296		L-183-18-A
55026407	LL-27-2018	1937	45.7	4.57	1322	209	1936	2025575054	2025489296		L-183-18-A
55026407	LL-27-2018	1938	45.7	4.57	1331	209	1936	2025387040	2025489296		L-183-18-A
55026407	LL-27-2018	1939	45.7	4.57	1324	209	1936	2025387040	2025489296		L-183-18-A
55026407	LL-27-2018	1940	45.7	4.57	1329	209	1936	2025387040	2025489296		L-183-18-A
55026407	LL-27-2018	1941	45.7	4.57	1329	209	1936	2025387040	2025489296		L-183-18-A
55026407	LL-27-2018	1942	45.7	4.57	1344	209	1936	2025387040	2025489296		L-183-18-A
55026407	LL-27-2018	1943	45.7	4.57	1324	209	1943	2025387040	2025489296		L-183-18-A
55026407	LL-27-2018	1944	45.7	4.57	1344	209	1944	2025409479	2025489296		L-183-18-A
55026407	LL-27-2018	1945	45.7	4.57	1342	209	1944	2025409479	2025403923		L-183-18-A
55026407	LL-27-2018	1946	45.7	4.57	1324	209	1944	2025409479	2025403923		L-183-18-A
55026407	LL-27-2018	1947	45.7	4.57	1326	209	1944	2025409479	2025403923		L-183-18-A
55026407	LL-27-2018	1948	45.7	4.57	1331	209	1944	2025409479	2025403923		L-183-18-B
55026407	LL-27-2018	1949	45.7	4.57	1317	209	1944	2025409479	2025403923		L-183-18-B
55026407	LL-27-2018	1950	45.7	4.57	1319	209	1944	2025409479	2025403923		L-183-18-B
55026407	LL-27-2018	1951	45.7	4.57	1340	209	1944	2025409479	2025403923		L-183-18-B
55026407	LL-27-2018	1952	45.7	4.57	1385	209	1952	2025507022	2025403923		L-183-18-B
55026407	LL-27-2018	1953	45.7	4.57	1340	209	1952	2025507022	2025403923		L-183-18-B
55026407	LL-27-2018	1954	45.7	4.57	1333	209	1952	2025507022	2025403923		L-183-18-B
55026407	LL-27-2018	1955	45.7	4.57	1358	209	1952	2025507022	2025403923		L-183-18-B
55026407	LL-27-2018	1956	45.7	4.57	1344	209	1952	2025507022	2025403923		L-183-18-B
55026407	LL-27-2018	1957	45.7	4.57	1338	209	1952	2025507022	2025403923		L-183-18-B
55026407	LL-27-2018	1958	45.7	4.57	1347	209	1952	2025507022	2025403923		L-183-18-B
55026407	LL-27-2018	1959	45.7	4.57	1372	209	1952	2025409483	2025403923		L-183-18-B
55026407	LL-27-2018	1960	45.7	4.57	1349	209	1960	2025409483	2025403923		L-183-18-B
55026407	LL-27-2018	1961	45.7	4.57	1340	209	1960	2025409483	2025403923		L-183-18-B
55026407	LL-27-2018	1962	45.7	4.57	1356	209	1960	2025409483	2025403923		L-183-18-B
55026407	LL-27-2018	1963	45.7	4.57	1331	209	1960	2025409483	2025403923		L-183-18-B
55026407	LL-27-2018	1964	45.7	4.57	1326	209	1960	2025409483	2025403923		L-183-18-B
55026407	LL-27-2018	1965	45.7	4.57	1326	209	1960	2025503010	2025403923		L-183-18-B
55026407	LL-27-2018	1966	45.7	4.57	1347	209	1960	2025503010	2025014128		L-183-18-B
55026407	LL-27-2018	1967	45.7	4.57	1338	209	1960	2025503010	2025403923		L-183-18-B
55026407	LL-27-2018	1968	45.7	4.57	1317	209	1968	2025503010	2025014128		L-183-18-B

55026407	LL-27-2018	1969	45.7	4.57	1347	209	1968	2025503010	2025014128		L-183-18-B
55026407	LL-27-2018	1970	45.7	4.57	1344	209	1968	2025503010	2025014128		L-183-18-B
55026407	LL-27-2018	1971	45.7	4.57	1313	209	1968	2025503010	2025014128		L-183-18-B
55026407	LL-27-2018	1972	45.7	4.57	1322	209	1968	2025571822	2025014128		L-183-18-B
55026407	LL-27-2018	1973	45.7	4.57	1310	209	1968	2025571822	2025014128		L-183-18-B
55026407	LL-27-2018	1974	45.7	4.57	1326	209	1968	2025571822	2025014128		L-183-18-B
55026407	LL-27-2018	1975	45.7	4.57	1331	209	1968	2025571822	2025014128		L-183-18-B
55026407	LL-27-2018	1976	45.7	4.57	1319	209	1976	2025571822	2025014128		L-183-18-B
55026407	LL-27-2018	1977	45.7	4.57	1306	209	1977	2025571822	2025014128		L-183-18-B
55026407	LL-27-2018	1978	45.7	4.57	1347	209	1977	2025409474	2025014128		L-183-18-B
55026407	LL-27-2018	1979	45.7	4.57	1315	209	1977	2025409474	2025014128		L-183-18-B
55026407	LL-27-2018	1980	45.7	4.57	1310	209	1977	2025409474	2025014128		L-183-18-B
55026407	LL-27-2018	1981	45.7	4.57	1313	209	1977	2025409474	2025014128		L-183-18-B
55026407	LL-27-2018	1982	45.7	4.57	1310	209	1977	2025409474	2025014128		L-183-18-B
55026407	LL-27-2018	1983	45.7	4.57	1313	209	1977	2025409474	2025014128		L-183-18-B
55026407	LL-27-2018	1984	45.7	4.57	1326	209	1984	2025409474	2025014128		L-183-18-B
55026407	LL-27-2018	1985	45.7	4.57	1319	209	1984	2025531524	2025014128		L-183-18-B
55026407	LL-27-2018	1986	45.7	4.57	1351	209	1984	2025531524	2025014128		L-183-18-B
55026407	LL-27-2018	1987	45.7	4.57	1342	209	1984	2025531524	2025014128		L-183-18-B
55026407	LL-27-2018	1988	45.7	4.57	1324	209	1984	2025531524	2025014128		L-183-18-B
55026407	LL-27-2018	1989	45.7	4.57	1324	209	1984	2025531524	2025014128		L-183-18-B
55026407	LL-27-2018	1990	45.7	4.57	1315	209	1984	2025531524	2025014128		L-183-18-B
55026407	LL-27-2018	1991	45.7	4.57	1301	209	1984	2025531524	2025018875		L-183-18-B
55026407	LL-27-2018	1992	45.7	4.57	1319	209	1992	2025531524	2025018875		L-183-18-B
55026407	LL-27-2018	1993	45.7	4.57	1304	209	1992	2025531513	2025018875		L-183-18-B
55026407	LL-27-2018	1994	45.7	4.57	1292	209	1994	2025531513	2025018875		L-183-18-B
55026407	LL-27-2018	1995	45.7	4.57	1315	209	1994	2025531513	2025018875		L-183-18-B
55026407	LL-27-2018	1996	45.7	4.57	1306	209	1994	2025531513	2025018875		L-183-18-B
55026407	LL-27-2018	1997	45.7	4.57	1283	209	1994	2025531513	2025018875		L-183-18-B
55026407	LL-27-2018	1998	45.7	4.57	1342	209	1994	2025531513	2025018875		L-183-18-B
55026407	LL-27-2018	1999	45.7	4.57	1342	209	1994	2025531513	2025018875		L-183-18-C
55026407	LL-27-2018	2000	45.7	4.57	1297	209	2000	2025574818	2025018875		L-183-18-C
55026407	LL-27-2018	2001	45.7	4.57	1306	209	2000	2025574818	2025018875		L-183-18-C
55026407	LL-27-2018	2002	45.7	4.57	1331	209	2000	2025574818	2025018875		L-183-18-C
55026407	LL-27-2018	2003	45.7	4.57	1299	209	2000	2025574818	2025018875		L-183-18-C
55026407	LL-27-2018	2004	45.7	4.57	1317	209	2000	2025574818	2025018875		L-183-18-C
55026407	LL-27-2018	2005	45.7	4.57	1319	209	2000	2025574818	2025018875		L-183-18-C
55026407	LL-27-2018	2007	45.7	4.57	1299	209	2000	2025579480	2025018875		L-183-18-C
55026407	LL-27-2018	2008	45.7	4.57	1297	209	2008	2025579480	2025018875		L-183-18-C
55026407	LL-27-2018	2009	45.7	4.57	1313	209	2008	2025579480	2025018875		L-183-18-C

55026407	LL-27-2018	2010	45.7	4.57	1395	209	2008	2025579480	2025018875		L-183-18-C
55026407	LL-27-2018	2011	45.7	4.57	1301	209	2011	2025579480	2025018875		L-183-18-C
55026407	LL-27-2018	2012	45.7	4.57	1301	209	2011	2025579480	2025018875		L-183-18-C
55026407	LL-27-2018	2013	45.7	4.57	1315	209	2011	2025579480	2025018875		L-183-18-C
Total Sq Ft:						344250		Total Number of Rolls Certified: 153			

CETCO
Colloid Environmental Technologies Company LLC

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 55026407 have been tested in our production facility lab.

Product	Lot# Tested	Roll# Tested	Mass Area	Grab Strength	Peel Strength	BENTONITE FREE SWELL	BENTONITE FLUID LOSS	
		ASTM Test Method:	ASTM D5993	ASTM D6768	ASTM D6496	ASTM D5890	ASTM D5891	
		Required Value:	3.7 kg/sq m	5.3 kN/m	610 N/m	24 - mL/2g	18 - mL	
BENTOMAT ST-SFT	LL-27-2018	1824	4.34	7.96	1295	29	13.7	
BENTOMAT ST-SFT	LL-27-2018	1832	4.24	7.96	1295	27	13.4	
BENTOMAT ST-SFT	LL-27-2018	1840	4.39	7.96	1295	28	13.6	
BENTOMAT ST-SFT	LL-27-2018	1841	4.54	7.96	1190	28	13.6	
BENTOMAT ST-SFT	LL-27-2018	1848	4.44	7.96	1190	27	13.4	
BENTOMAT ST-SFT	LL-27-2018	1856	4.39	7.96	1190	25	14.0	
BENTOMAT ST-SFT	LL-27-2018	1858	4.39	7.96	1278	25	14.0	
BENTOMAT ST-SFT	LL-27-2018	1864	4.63	7.96	1278	24	13.3	
BENTOMAT ST-SFT	LL-27-2018	1872	4.29	7.96	1278	25	15.4	
BENTOMAT ST-SFT	LL-27-2018	1875	4.29	7.96	1278	25	15.4	
BENTOMAT ST-SFT	LL-27-2018	1880	4.34	7.96	1278	25	12.9	
BENTOMAT ST-SFT	LL-27-2018	1888	4.39	7.96	1278	26	14.0	
BENTOMAT ST-SFT	LL-27-2018	1892	4.34	7.96	1050	26	14.0	
BENTOMAT ST-SFT	LL-27-2018	1896	4.39	7.96	1050	27	14.8	
BENTOMAT ST-SFT	LL-27-2018	1904	4.54	7.96	1050	26	15.0	
BENTOMAT ST-SFT	LL-27-2018	1909	4.54	11.94	1120	26	15.0	
BENTOMAT ST-SFT	LL-27-2018	1912	4.73	11.94	1120	28	15.4	
BENTOMAT ST-SFT	LL-27-2018	1920	4.39	11.94	1120	29	13.0	
BENTOMAT ST-SFT	LL-27-2018	1926	4.24	11.94	1103	29	13.0	
BENTOMAT ST-SFT	LL-27-2018	1928	4.39	11.94	1103	29	14.4	
BENTOMAT ST-SFT	LL-27-2018	1936	4.29	11.94	1103	29	15.0	
BENTOMAT ST-SFT	LL-27-2018	1943	4.54	11.94	1295	29	15.0	
BENTOMAT ST-SFT	LL-27-2018	1944	4.44	11.94	1295	29	14.6	
BENTOMAT ST-SFT	LL-27-2018	1952	4.54	11.94	1295	29	16.1	
BENTOMAT ST-SFT	LL-27-2018	1960	4.54	11.94	840	30	14.0	
BENTOMAT ST-SFT	LL-27-2018	1968	4.34	11.94	840	30	14.9	
BENTOMAT ST-SFT	LL-27-2018	1976	4.39	11.94	840	28	16.4	

CETCO
Colloid Environmental Technologies Company LLC

GCL MANUFACTURING QUALITY CONTROL TEST DATA

The following rolls in GCL certification package number 55026407 have been tested in our production facility lab.

Product	Lot# Tested	Roll# Tested	Mass Area	Grab Strength	Peel Strength	BENTONITE FREE SWELL	BENTONITE FLUID LOSS	
		ASTM Test Method:	ASTM D5993	ASTM D6768	ASTM D6496	ASTM D5890	ASTM D5891	
		Required Value:	3.7 kg/sq m	5.3 kN/m	610 N/m	24 - mL/2g	18 - mL	
BENTOMAT ST-SFT	LL-27-2018	1977	4.15	5.84	665	28	16.4	
BENTOMAT ST-SFT	LL-27-2018	1984	4.19	5.84	665	27	16.2	
BENTOMAT ST-SFT	LL-27-2018	1992	4.24	5.84	665	27	15.2	
BENTOMAT ST-SFT	LL-27-2018	1994	4.19	5.84	928	27	15.2	
BENTOMAT ST-SFT	LL-27-2018	2000	4.34	5.84	665	25	15.2	
BENTOMAT ST-SFT	LL-27-2018	2008	4.34	5.84	665	27	15.4	
BENTOMAT ST-SFT	LL-27-2018	2011	4.49	5.84	1225	27	15.4	

BENTONITE CLAY CERTIFICATION

The Bentonite Clay used to produce package 55026407 was tested in our production facility lab and yielded the following results.

Clay Lot #	Moist	Swell	Fluid Loss
ASTM Test Method:	ASTM D2216	ASTM D5890	ASTM D5891
Required Value:	12 - %	24 - mL/2g	18 - mL
L-180-18-K	9.97	26	15.2
L-180-18-L	10.61	26	14
L-183-18-A	9.58	25	14.2
L-183-18-B	8.35	27	14.3
L-183-18-C	9.4	26	13.4

CETCO
Colloid Environmental Technologies Company LLC

GEOTEXTILE TEST RESULTS FROM MATERIAL SUPPLIERS

The GCL in certification package number 55026407 was manufactured with geotextiles which were tested and yielded the following results.

BASE GEOTEXTILE			
Material	Roll Number	Mass Area g/m2	Grab Strength N
01-9865	2025329275	124	714.3
01-9865	2025000456	115	926.6
01-9865	2025001842	109	873.4
01-9865	2025436102	126	756.1
01-9865	2025400966	124	728.7
01-9865	2025489296	114	726.3
01-9865	2025403923	112	713.1
01-9865	2025014128	115	870.3
01-9865	2025018875	115	929.9

COVER GEOTEXTILE			
Material	Roll Number	Mass Area g/m2	Grab Strength N
01-9514	700174132	213	373.6
01-9514	700174143	243	427.0
01-9514	700174098	241	435.9
01-9514	700174144	235	440.3
01-9514	700174128	220	391.4
01-9514	700174142	243	427.0
01-9514	700174122	227	373.6
01-9514	700174102	237	422.5
01-9514	700174150	244	422.5
01-9514	700174127	220	391.4
01-9514	700174140	213	427.0
01-9514	700174139	213	427.0
01-9514	700174134	213	373.6

01-9514	700174137	210	364.7
01-9514	700174130	214	413.6
01-9514	700174148	248	453.7
01-9514	2025575054	210	697.9
01-9514	2025387040	236	669.2
01-9514	2025409479	231	514.7
01-9514	2025507022	238	614.6
01-9514	2025409483	240	556.3
01-9514	2025503010	220	572.7
01-9514	2025571822	241	763.7
01-9514	2025409474	249	545.3
01-9514	2025531524	242	688.5
01-9514	2025531513	238	681.2
01-9514	2025574818	228	589.0
01-9514	2025579480	224	564.9

Certifications from our suppliers are on file at our production facility.

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	1
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,51**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,15**	kN/m
Yield Strength DT	ASTM D6693	**26,66**	kN/m
Yield Elongation MD	ASTM D6693	**12,03**	%
Yield Elongation DT	ASTM D6693	**12,2**	%
Break Strength MD	ASTM D6693	**46,9**	kN/m
Break Strength DT	ASTM D6693	**50,8**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**909**	%
Tear Resistance MD	ASTM D1004	**225,8**	N
Tear Resistance DT	ASTM D1004	**233,9**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,58**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180784

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	2
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,513**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,36**	kN/m
Yield Strength DT	ASTM D6693	**26,86**	kN/m
Yield Elongation MD	ASTM D6693	**12,34**	%
Yield Elongation DT	ASTM D6693	**12,79**	%
Break Strength MD	ASTM D6693	**47,3**	kN/m
Break Strength DT	ASTM D6693	**51,2**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**226,3**	N
Tear Resistance DT	ASTM D1004	**235,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,58**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180784

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	3
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,513**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,1**	kN/m
Yield Strength DT	ASTM D6693	**26,77**	kN/m
Yield Elongation MD	ASTM D6693	**12,02**	%
Yield Elongation DT	ASTM D6693	**12,38**	%
Break Strength MD	ASTM D6693	**47**	kN/m
Break Strength DT	ASTM D6693	**50,6**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,1**	N
Tear Resistance DT	ASTM D1004	**234,3**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,58**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180784

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	4
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,521**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,21**	kN/m
Yield Strength DT	ASTM D6693	**26,84**	kN/m
Yield Elongation MD	ASTM D6693	**12,4**	%
Yield Elongation DT	ASTM D6693	**12,62**	%
Break Strength MD	ASTM D6693	**47,5**	kN/m
Break Strength DT	ASTM D6693	**51**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**226,1**	N
Tear Resistance DT	ASTM D1004	**234,5**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,58**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180784

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	5
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,503**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,04**	kN/m
Yield Strength DT	ASTM D6693	**26,78**	kN/m
Yield Elongation MD	ASTM D6693	**12,06**	%
Yield Elongation DT	ASTM D6693	**12**	%
Break Strength MD	ASTM D6693	**46,8**	kN/m
Break Strength DT	ASTM D6693	**50,8**	kN/m
Break Elongation MD	ASTM D6693	**839**	%
Break Elongation DT	ASTM D6693	**909**	%
Tear Resistance MD	ASTM D1004	**225,3**	N
Tear Resistance DT	ASTM D1004	**234,1**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,58**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180784

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	6
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,514**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,24**	kN/m
Yield Strength DT	ASTM D6693	**26,97**	kN/m
Yield Elongation MD	ASTM D6693	**12,56**	%
Yield Elongation DT	ASTM D6693	**12,89**	%
Break Strength MD	ASTM D6693	**47,5**	kN/m
Break Strength DT	ASTM D6693	**51**	kN/m
Break Elongation MD	ASTM D6693	**843**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**226,4**	N
Tear Resistance DT	ASTM D1004	**235**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,58**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180784

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	7
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,504**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,05**	kN/m
Yield Strength DT	ASTM D6693	**26,78**	kN/m
Yield Elongation MD	ASTM D6693	**12,13**	%
Yield Elongation DT	ASTM D6693	**12,38**	%
Break Strength MD	ASTM D6693	**46,7**	kN/m
Break Strength DT	ASTM D6693	**50,8**	kN/m
Break Elongation MD	ASTM D6693	**839**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,8**	N
Tear Resistance DT	ASTM D1004	**234,3**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,58**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180784

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	8
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,522**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,32**	kN/m
Yield Strength DT	ASTM D6693	**26,84**	kN/m
Yield Elongation MD	ASTM D6693	**12,51**	%
Yield Elongation DT	ASTM D6693	**12,47**	%
Break Strength MD	ASTM D6693	**47,3**	kN/m
Break Strength DT	ASTM D6693	**51,1**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**226,6**	N
Tear Resistance DT	ASTM D1004	**234,7**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	9
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,509**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,18**	kN/m
Yield Strength DT	ASTM D6693	**26,65**	kN/m
Yield Elongation MD	ASTM D6693	**12,09**	%
Yield Elongation DT	ASTM D6693	**12,32**	%
Break Strength MD	ASTM D6693	**47,1**	kN/m
Break Strength DT	ASTM D6693	**50,9**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**909**	%
Tear Resistance MD	ASTM D1004	**225,9**	N
Tear Resistance DT	ASTM D1004	**233,7**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	10
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,516**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,34**	kN/m
Yield Strength DT	ASTM D6693	**26,91**	kN/m
Yield Elongation MD	ASTM D6693	**12,5**	%
Yield Elongation DT	ASTM D6693	**12,43**	%
Break Strength MD	ASTM D6693	**47,5**	kN/m
Break Strength DT	ASTM D6693	**51,1**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**913**	%
Tear Resistance MD	ASTM D1004	**226,3**	N
Tear Resistance DT	ASTM D1004	**235,3**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	11
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,509**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,04**	kN/m
Yield Strength DT	ASTM D6693	**26,77**	kN/m
Yield Elongation MD	ASTM D6693	**12,13**	%
Yield Elongation DT	ASTM D6693	**12,06**	%
Break Strength MD	ASTM D6693	**46,9**	kN/m
Break Strength DT	ASTM D6693	**50,9**	kN/m
Break Elongation MD	ASTM D6693	**839**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,3**	N
Tear Resistance DT	ASTM D1004	**234,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	12
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,519**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,37**	kN/m
Yield Strength DT	ASTM D6693	**26,97**	kN/m
Yield Elongation MD	ASTM D6693	**12,33**	%
Yield Elongation DT	ASTM D6693	**12,58**	%
Break Strength MD	ASTM D6693	**47,6**	kN/m
Break Strength DT	ASTM D6693	**51,1**	kN/m
Break Elongation MD	ASTM D6693	**843**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**226,7**	N
Tear Resistance DT	ASTM D1004	**235,4**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	13
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,507**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,11**	kN/m
Yield Strength DT	ASTM D6693	**26,67**	kN/m
Yield Elongation MD	ASTM D6693	**12,21**	%
Yield Elongation DT	ASTM D6693	**12,33**	%
Break Strength MD	ASTM D6693	**47**	kN/m
Break Strength DT	ASTM D6693	**50,7**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,5**	N
Tear Resistance DT	ASTM D1004	**233,9**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	14
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,521**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,3**	kN/m
Yield Strength DT	ASTM D6693	**26,98**	kN/m
Yield Elongation MD	ASTM D6693	**12,3**	%
Yield Elongation DT	ASTM D6693	**12,43**	%
Break Strength MD	ASTM D6693	**47,4**	kN/m
Break Strength DT	ASTM D6693	**51,3**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**226,9**	N
Tear Resistance DT	ASTM D1004	**235,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	15
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,508**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,17**	kN/m
Yield Strength DT	ASTM D6693	**26,74**	kN/m
Yield Elongation MD	ASTM D6693	**12,09**	%
Yield Elongation DT	ASTM D6693	**12,09**	%
Break Strength MD	ASTM D6693	**47**	kN/m
Break Strength DT	ASTM D6693	**50,9**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**225,6**	N
Tear Resistance DT	ASTM D1004	**234,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	16
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,518**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,37**	kN/m
Yield Strength DT	ASTM D6693	**26,85**	kN/m
Yield Elongation MD	ASTM D6693	**12,37**	%
Yield Elongation DT	ASTM D6693	**12,77**	%
Break Strength MD	ASTM D6693	**47,5**	kN/m
Break Strength DT	ASTM D6693	**51**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**227**	N
Tear Resistance DT	ASTM D1004	**235,5**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	17
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,507**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,11**	kN/m
Yield Strength DT	ASTM D6693	**26,72**	kN/m
Yield Elongation MD	ASTM D6693	**12,01**	%
Yield Elongation DT	ASTM D6693	**12,21**	%
Break Strength MD	ASTM D6693	**46,8**	kN/m
Break Strength DT	ASTM D6693	**50,4**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**909**	%
Tear Resistance MD	ASTM D1004	**225,5**	N
Tear Resistance DT	ASTM D1004	**233,9**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	18
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,524**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,27**	kN/m
Yield Strength DT	ASTM D6693	**26,97**	kN/m
Yield Elongation MD	ASTM D6693	**12,27**	%
Yield Elongation DT	ASTM D6693	**12,64**	%
Break Strength MD	ASTM D6693	**47,6**	kN/m
Break Strength DT	ASTM D6693	**51**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**226,4**	N
Tear Resistance DT	ASTM D1004	**235,1**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	19
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,509**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,14**	kN/m
Yield Strength DT	ASTM D6693	**26,61**	kN/m
Yield Elongation MD	ASTM D6693	**12,18**	%
Yield Elongation DT	ASTM D6693	**12,27**	%
Break Strength MD	ASTM D6693	**47,1**	kN/m
Break Strength DT	ASTM D6693	**50,7**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**909**	%
Tear Resistance MD	ASTM D1004	**225,1**	N
Tear Resistance DT	ASTM D1004	**234,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	20
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,523**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,33**	kN/m
Yield Strength DT	ASTM D6693	**26,88**	kN/m
Yield Elongation MD	ASTM D6693	**12,34**	%
Yield Elongation DT	ASTM D6693	**12,64**	%
Break Strength MD	ASTM D6693	**47,3**	kN/m
Break Strength DT	ASTM D6693	**51,1**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**913**	%
Tear Resistance MD	ASTM D1004	**226,3**	N
Tear Resistance DT	ASTM D1004	**234,9**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	21
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,507**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,08**	kN/m
Yield Strength DT	ASTM D6693	**26,68**	kN/m
Yield Elongation MD	ASTM D6693	**12,09**	%
Yield Elongation DT	ASTM D6693	**12,3**	%
Break Strength MD	ASTM D6693	**47**	kN/m
Break Strength DT	ASTM D6693	**50,8**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,9**	N
Tear Resistance DT	ASTM D1004	**234,3**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	22
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,516**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,23**	kN/m
Yield Strength DT	ASTM D6693	**26,94**	kN/m
Yield Elongation MD	ASTM D6693	**12,68**	%
Yield Elongation DT	ASTM D6693	**12,83**	%
Break Strength MD	ASTM D6693	**47,6**	kN/m
Break Strength DT	ASTM D6693	**51,1**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**227**	N
Tear Resistance DT	ASTM D1004	**235,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,26**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180786

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	23
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,507**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,02**	kN/m
Yield Strength DT	ASTM D6693	**26,75**	kN/m
Yield Elongation MD	ASTM D6693	**12,2**	%
Yield Elongation DT	ASTM D6693	**12,12**	%
Break Strength MD	ASTM D6693	**47**	kN/m
Break Strength DT	ASTM D6693	**50,6**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**225,9**	N
Tear Resistance DT	ASTM D1004	**234,3**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	24
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,52**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,27**	kN/m
Yield Strength DT	ASTM D6693	**26,93**	kN/m
Yield Elongation MD	ASTM D6693	**12,42**	%
Yield Elongation DT	ASTM D6693	**12,71**	%
Break Strength MD	ASTM D6693	**47,3**	kN/m
Break Strength DT	ASTM D6693	**51**	kN/m
Break Elongation MD	ASTM D6693	**843**	%
Break Elongation DT	ASTM D6693	**913**	%
Tear Resistance MD	ASTM D1004	**226,5**	N
Tear Resistance DT	ASTM D1004	**235,3**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	25
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,507**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,2**	kN/m
Yield Strength DT	ASTM D6693	**26,67**	kN/m
Yield Elongation MD	ASTM D6693	**12,1**	%
Yield Elongation DT	ASTM D6693	**12,32**	%
Break Strength MD	ASTM D6693	**47,1**	kN/m
Break Strength DT	ASTM D6693	**50,7**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,2**	N
Tear Resistance DT	ASTM D1004	**233,7**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	26
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,526**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,33**	kN/m
Yield Strength DT	ASTM D6693	**26,83**	kN/m
Yield Elongation MD	ASTM D6693	**12,63**	%
Yield Elongation DT	ASTM D6693	**12,89**	%
Break Strength MD	ASTM D6693	**47,6**	kN/m
Break Strength DT	ASTM D6693	**51,2**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**226,6**	N
Tear Resistance DT	ASTM D1004	**235,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	27
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,511**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,16**	kN/m
Yield Strength DT	ASTM D6693	**26,66**	kN/m
Yield Elongation MD	ASTM D6693	**12,02**	%
Yield Elongation DT	ASTM D6693	**12,27**	%
Break Strength MD	ASTM D6693	**46,9**	kN/m
Break Strength DT	ASTM D6693	**50,4**	kN/m
Break Elongation MD	ASTM D6693	**839**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**225,6**	N
Tear Resistance DT	ASTM D1004	**233,9**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	28
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,517**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,33**	kN/m
Yield Strength DT	ASTM D6693	**26,82**	kN/m
Yield Elongation MD	ASTM D6693	**12,65**	%
Yield Elongation DT	ASTM D6693	**12,47**	%
Break Strength MD	ASTM D6693	**47,2**	kN/m
Break Strength DT	ASTM D6693	**51**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**226,4**	N
Tear Resistance DT	ASTM D1004	**235,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	29
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,513**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,11**	kN/m
Yield Strength DT	ASTM D6693	**26,72**	kN/m
Yield Elongation MD	ASTM D6693	**12,38**	%
Yield Elongation DT	ASTM D6693	**12,28**	%
Break Strength MD	ASTM D6693	**46,8**	kN/m
Break Strength DT	ASTM D6693	**50,6**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,4**	N
Tear Resistance DT	ASTM D1004	**233,9**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	30
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,517**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,24**	kN/m
Yield Strength DT	ASTM D6693	**26,82**	kN/m
Yield Elongation MD	ASTM D6693	**12,67**	%
Yield Elongation DT	ASTM D6693	**12,44**	%
Break Strength MD	ASTM D6693	**47,5**	kN/m
Break Strength DT	ASTM D6693	**51,1**	kN/m
Break Elongation MD	ASTM D6693	**843**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**227,1**	N
Tear Resistance DT	ASTM D1004	**235,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	31
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,508**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,02**	kN/m
Yield Strength DT	ASTM D6693	**26,75**	kN/m
Yield Elongation MD	ASTM D6693	**12,17**	%
Yield Elongation DT	ASTM D6693	**12,35**	%
Break Strength MD	ASTM D6693	**47,2**	kN/m
Break Strength DT	ASTM D6693	**50,5**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,2**	N
Tear Resistance DT	ASTM D1004	**233,8**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	32
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,524**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,24**	kN/m
Yield Strength DT	ASTM D6693	**26,94**	kN/m
Yield Elongation MD	ASTM D6693	**12,2**	%
Yield Elongation DT	ASTM D6693	**12,78**	%
Break Strength MD	ASTM D6693	**47,5**	kN/m
Break Strength DT	ASTM D6693	**51,3**	kN/m
Break Elongation MD	ASTM D6693	**843**	%
Break Elongation DT	ASTM D6693	**913**	%
Tear Resistance MD	ASTM D1004	**226,3**	N
Tear Resistance DT	ASTM D1004	**234,8**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	33
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,507**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,11**	kN/m
Yield Strength DT	ASTM D6693	**26,72**	kN/m
Yield Elongation MD	ASTM D6693	**12,22**	%
Yield Elongation DT	ASTM D6693	**12,39**	%
Break Strength MD	ASTM D6693	**46,8**	kN/m
Break Strength DT	ASTM D6693	**50,5**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,2**	N
Tear Resistance DT	ASTM D1004	**233,6**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	34
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,518**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,28**	kN/m
Yield Strength DT	ASTM D6693	**26,91**	kN/m
Yield Elongation MD	ASTM D6693	**12,32**	%
Yield Elongation DT	ASTM D6693	**12,54**	%
Break Strength MD	ASTM D6693	**47,6**	kN/m
Break Strength DT	ASTM D6693	**51,4**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**226,9**	N
Tear Resistance DT	ASTM D1004	**235**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	35
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,515**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,06**	kN/m
Yield Strength DT	ASTM D6693	**26,8**	kN/m
Yield Elongation MD	ASTM D6693	**12,09**	%
Yield Elongation DT	ASTM D6693	**12,29**	%
Break Strength MD	ASTM D6693	**46,7**	kN/m
Break Strength DT	ASTM D6693	**50,5**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,9**	N
Tear Resistance DT	ASTM D1004	**234**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	36
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,521**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,4**	kN/m
Yield Strength DT	ASTM D6693	**26,83**	kN/m
Yield Elongation MD	ASTM D6693	**12,21**	%
Yield Elongation DT	ASTM D6693	**12,43**	%
Break Strength MD	ASTM D6693	**47,6**	kN/m
Break Strength DT	ASTM D6693	**51**	kN/m
Break Elongation MD	ASTM D6693	**843**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**226,1**	N
Tear Resistance DT	ASTM D1004	**234,5**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,38**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180788

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	37
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,526**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,14**	kN/m
Yield Strength DT	ASTM D6693	**26,6**	kN/m
Yield Elongation MD	ASTM D6693	**12,43**	%
Yield Elongation DT	ASTM D6693	**12,18**	%
Break Strength MD	ASTM D6693	**47**	kN/m
Break Strength DT	ASTM D6693	**50,8**	kN/m
Break Elongation MD	ASTM D6693	**839**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,3**	N
Tear Resistance DT	ASTM D1004	**234**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	38
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,53**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,24**	kN/m
Yield Strength DT	ASTM D6693	**26,87**	kN/m
Yield Elongation MD	ASTM D6693	**12,62**	%
Yield Elongation DT	ASTM D6693	**12,48**	%
Break Strength MD	ASTM D6693	**47,7**	kN/m
Break Strength DT	ASTM D6693	**51,1**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**226,1**	N
Tear Resistance DT	ASTM D1004	**234,9**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	39
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,522**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,08**	kN/m
Yield Strength DT	ASTM D6693	**26,68**	kN/m
Yield Elongation MD	ASTM D6693	**12,33**	%
Yield Elongation DT	ASTM D6693	**12,34**	%
Break Strength MD	ASTM D6693	**46,8**	kN/m
Break Strength DT	ASTM D6693	**50,4**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**226,1**	N
Tear Resistance DT	ASTM D1004	**233,9**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	40
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,529**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,31**	kN/m
Yield Strength DT	ASTM D6693	**26,86**	kN/m
Yield Elongation MD	ASTM D6693	**12,35**	%
Yield Elongation DT	ASTM D6693	**12,55**	%
Break Strength MD	ASTM D6693	**47,4**	kN/m
Break Strength DT	ASTM D6693	**51,1**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**227**	N
Tear Resistance DT	ASTM D1004	**235,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	41
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,526**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,16**	kN/m
Yield Strength DT	ASTM D6693	**26,73**	kN/m
Yield Elongation MD	ASTM D6693	**12,27**	%
Yield Elongation DT	ASTM D6693	**12,01**	%
Break Strength MD	ASTM D6693	**47**	kN/m
Break Strength DT	ASTM D6693	**50,7**	kN/m
Break Elongation MD	ASTM D6693	**839**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,7**	N
Tear Resistance DT	ASTM D1004	**234,2**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	42
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,524**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,22**	kN/m
Yield Strength DT	ASTM D6693	**26,99**	kN/m
Yield Elongation MD	ASTM D6693	**12,25**	%
Yield Elongation DT	ASTM D6693	**12,9**	%
Break Strength MD	ASTM D6693	**47,3**	kN/m
Break Strength DT	ASTM D6693	**51,4**	kN/m
Break Elongation MD	ASTM D6693	**841**	%
Break Elongation DT	ASTM D6693	**913**	%
Tear Resistance MD	ASTM D1004	**227**	N
Tear Resistance DT	ASTM D1004	**235**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	43
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,523**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,11**	kN/m
Yield Strength DT	ASTM D6693	**26,61**	kN/m
Yield Elongation MD	ASTM D6693	**12,08**	%
Yield Elongation DT	ASTM D6693	**12,34**	%
Break Strength MD	ASTM D6693	**46,7**	kN/m
Break Strength DT	ASTM D6693	**50,8**	kN/m
Break Elongation MD	ASTM D6693	**839**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**225,2**	N
Tear Resistance DT	ASTM D1004	**233,7**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	44
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,524**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,28**	kN/m
Yield Strength DT	ASTM D6693	**26,88**	kN/m
Yield Elongation MD	ASTM D6693	**12,68**	%
Yield Elongation DT	ASTM D6693	**12,65**	%
Break Strength MD	ASTM D6693	**47,6**	kN/m
Break Strength DT	ASTM D6693	**50,9**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**226,3**	N
Tear Resistance DT	ASTM D1004	**234,8**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	45
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,525**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,11**	kN/m
Yield Strength DT	ASTM D6693	**26,69**	kN/m
Yield Elongation MD	ASTM D6693	**12,3**	%
Yield Elongation DT	ASTM D6693	**12,16**	%
Break Strength MD	ASTM D6693	**47,1**	kN/m
Break Strength DT	ASTM D6693	**50,5**	kN/m
Break Elongation MD	ASTM D6693	**840**	%
Break Elongation DT	ASTM D6693	**910**	%
Tear Resistance MD	ASTM D1004	**226**	N
Tear Resistance DT	ASTM D1004	**233,8**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	46
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,523**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,31**	kN/m
Yield Strength DT	ASTM D6693	**26,81**	kN/m
Yield Elongation MD	ASTM D6693	**12,36**	%
Yield Elongation DT	ASTM D6693	**12,74**	%
Break Strength MD	ASTM D6693	**47,2**	kN/m
Break Strength DT	ASTM D6693	**51,2**	kN/m
Break Elongation MD	ASTM D6693	**843**	%
Break Elongation DT	ASTM D6693	**912**	%
Tear Resistance MD	ASTM D1004	**226,6**	N
Tear Resistance DT	ASTM D1004	**235,4**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	47
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,525**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,18**	kN/m
Yield Strength DT	ASTM D6693	**26,75**	kN/m
Yield Elongation MD	ASTM D6693	**12,17**	%
Yield Elongation DT	ASTM D6693	**12,17**	%
Break Strength MD	ASTM D6693	**47**	kN/m
Break Strength DT	ASTM D6693	**50,4**	kN/m
Break Elongation MD	ASTM D6693	**839**	%
Break Elongation DT	ASTM D6693	**911**	%
Tear Resistance MD	ASTM D1004	**225,9**	N
Tear Resistance DT	ASTM D1004	**233,6**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

QUALITY CERTIFICATE

PRODUCT:	ALVATECH 5002 GM-13
BATCH Nr.:	346.507
ROLL Nr.:	48
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	130

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	ASTM D5199	**1,529**	mm
Density	ASTM D792	**0,947**	g/cm3
Yield Strength MD	ASTM D6693	**26,31**	kN/m
Yield Strength DT	ASTM D6693	**26,99**	kN/m
Yield Elongation MD	ASTM D6693	**12,22**	%
Yield Elongation DT	ASTM D6693	**12,49**	%
Break Strength MD	ASTM D6693	**47,2**	kN/m
Break Strength DT	ASTM D6693	**51,4**	kN/m
Break Elongation MD	ASTM D6693	**842**	%
Break Elongation DT	ASTM D6693	**913**	%
Tear Resistance MD	ASTM D1004	**226,7**	N
Tear Resistance DT	ASTM D1004	**234,9**	N
Puncture Resistance	ASTM D4833	**549**	N
Stress Crack Resistance	ASTM D5397	**>500**	h
Carbon Black Content	ASTM D4218	**2,36**	%
Carbon Black Dispersion	ASTM D5596	**2,0**	-
Oxidative Induction Time (OIT)	ASTM D3895	**>120**	min
Oven Aging at 85ºC OIT	ASTM D5721	**>55**	%
UV Resistance (HPOIT)	ASTM D7238	**>50**	%
Secant Modulus DM - 2%	UNE EN ISO 527	**0**	MPa

DM: Machine or longitudinal direction; DT: Transversal direction

180791

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

QUALITY ASSURANCE DEPARTMENT

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH FIX 2F
BATCH Nr.:	346.455
ROLL Nr.:	22
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	165

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	UNE EN 1849-2	**1,5**	mm
Density	UNE EN ISO 1183	**0,946**	g/cm3
Tensile Strength at Yield DM	UNE EN ISO 527	**18,29**	MPa
Tensile Strength at Yield DT	UNE EN ISO 527	**18,3**	MPa
Tensile Strength at Break DM	UNE EN ISO 527	**29,73**	MPa
Tensile Strength at Break DT	UNE EN ISO 527	**30,06**	MPa
Elongation at Yield DM	UNE EN ISO 527	**12,97**	%
Elongation at Yield DT	UNE EN ISO 527	**12,37**	%
Elongation at Break DM	UNE EN ISO 527	**227**	%
Elongation at Break DT	UNE EN ISO 527	**412**	%
Tear Resistance DM	ISO 34 1/B(a)	**142,1**	N/mm
Tear Resistance DT	ISO 34 1/B(a)	**144,6**	N/mm
Static Puncture	EN ISO 12236	**3,2**	KN
Dimensional Stability DM	UNE EN 14632	**-0,97**	%
Dimensional Stability DT	UNE EN 14632	**0,68**	%
Carbon Black Content	ISO 6964	**2,55**	%
Carbon Black Dispersion	ISO 18553	**CONFORME**	-
Oxidation Induction Time	UNE EN 728	**>120**	min
Asperity Heigh of Textured Geomembrane (1)	ASTM D7466	**1**	mm
Asperity Heigh of Textured Geomembrane (2)	ASTM D7466	**1,49**	mm

Structured sheet area evaluated properties

DM: Machine or longitudinal direction; DT: Transversal direction

180776

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH FIX 2F
BATCH Nr.:	346.455
ROLL Nr.:	23
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	165

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	UNE EN 1849-2	**1,486**	mm
Density	UNE EN ISO 1183	**0,946**	g/cm3
Tensile Strength at Yield DM	UNE EN ISO 527	**18,14**	MPa
Tensile Strength at Yield DT	UNE EN ISO 527	**18,2**	MPa
Tensile Strength at Break DM	UNE EN ISO 527	**29,71**	MPa
Tensile Strength at Break DT	UNE EN ISO 527	**29,8**	MPa
Elongation at Yield DM	UNE EN ISO 527	**12,98**	%
Elongation at Yield DT	UNE EN ISO 527	**12,27**	%
Elongation at Break DM	UNE EN ISO 527	**223**	%
Elongation at Break DT	UNE EN ISO 527	**408**	%
Tear Resistance DM	ISO 34 1/B(a)	**141,5**	N/mm
Tear Resistance DT	ISO 34 1/B(a)	**143,9**	N/mm
Static Puncture	EN ISO 12236	**3,2**	KN
Dimensional Stability DM	UNE EN 14632	**-1**	%
Dimensional Stability DT	UNE EN 14632	**0,61**	%
Carbon Black Content	ISO 6964	**2,55**	%
Carbon Black Dispersion	ISO 18553	**CONFORME**	-
Oxidation Induction Time	UNE EN 728	**>120**	min
Asperity Heigh of Textured Geomembrane (1)	ASTM D7466	**0,98**	mm
Asperity Heigh of Textured Geomembrane (2)	ASTM D7466	**1,49**	mm

Structured sheet area evaluated properties

DM: Machine or longitudinal direction; DT: Transversal direction

180776

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH FIX 2F
BATCH Nr.:	346.455
ROLL Nr.:	24
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	165

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	UNE EN 1849-2	**1,492**	mm
Density	UNE EN ISO 1183	**0,946**	g/cm3
Tensile Strength at Yield DM	UNE EN ISO 527	**18,3**	MPa
Tensile Strength at Yield DT	UNE EN ISO 527	**18,39**	MPa
Tensile Strength at Break DM	UNE EN ISO 527	**29,72**	MPa
Tensile Strength at Break DT	UNE EN ISO 527	**29,7**	MPa
Elongation at Yield DM	UNE EN ISO 527	**12,94**	%
Elongation at Yield DT	UNE EN ISO 527	**12,38**	%
Elongation at Break DM	UNE EN ISO 527	**229**	%
Elongation at Break DT	UNE EN ISO 527	**414**	%
Tear Resistance DM	ISO 34 1/B(a)	**141,9**	N/mm
Tear Resistance DT	ISO 34 1/B(a)	**144,6**	N/mm
Static Puncture	EN ISO 12236	**3,2**	KN
Dimensional Stability DM	UNE EN 14632	**-0,99**	%
Dimensional Stability DT	UNE EN 14632	**0,64**	%
Carbon Black Content	ISO 6964	**2,55**	%
Carbon Black Dispersion	ISO 18553	**CONFORME**	-
Oxidation Induction Time	UNE EN 728	**>120**	min
Asperity Heigh of Textured Geomembrane (1)	ASTM D7466	**0,99**	mm
Asperity Heigh of Textured Geomembrane (2)	ASTM D7466	**1,49**	mm

Structured sheet area evaluated properties

DM: Machine or longitudinal direction; DT: Transversal direction

180776

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH FIX 2F
BATCH Nr.:	346.455
ROLL Nr.:	25
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	165

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	UNE EN 1849-2	**1,483**	mm
Density	UNE EN ISO 1183	**0,946**	g/cm3
Tensile Strength at Yield DM	UNE EN ISO 527	**18,13**	MPa
Tensile Strength at Yield DT	UNE EN ISO 527	**18,29**	MPa
Tensile Strength at Break DM	UNE EN ISO 527	**29,88**	MPa
Tensile Strength at Break DT	UNE EN ISO 527	**29,96**	MPa
Elongation at Yield DM	UNE EN ISO 527	**12,97**	%
Elongation at Yield DT	UNE EN ISO 527	**12,26**	%
Elongation at Break DM	UNE EN ISO 527	**219**	%
Elongation at Break DT	UNE EN ISO 527	**409**	%
Tear Resistance DM	ISO 34 1/B(a)	**141,2**	N/mm
Tear Resistance DT	ISO 34 1/B(a)	**144,1**	N/mm
Static Puncture	EN ISO 12236	**3,2**	KN
Dimensional Stability DM	UNE EN 14632	**-0,99**	%
Dimensional Stability DT	UNE EN 14632	**0,62**	%
Carbon Black Content	ISO 6964	**2,55**	%
Carbon Black Dispersion	ISO 18553	**CONFORME**	-
Oxidation Induction Time	UNE EN 728	**>120**	min
Asperity Heigh of Textured Geomembrane (1)	ASTM D7466	**0,97**	mm
Asperity Heigh of Textured Geomembrane (2)	ASTM D7466	**1,5**	mm

Structured sheet area evaluated properties

DM: Machine or longitudinal direction; DT: Transversal direction

180776

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH FIX 2F
BATCH Nr.:	346.455
ROLL Nr.:	26
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	165

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	UNE EN 1849-2	**1,498**	mm
Density	UNE EN ISO 1183	**0,946**	g/cm3
Tensile Strength at Yield DM	UNE EN ISO 527	**18,25**	MPa
Tensile Strength at Yield DT	UNE EN ISO 527	**18,38**	MPa
Tensile Strength at Break DM	UNE EN ISO 527	**29,71**	MPa
Tensile Strength at Break DT	UNE EN ISO 527	**29,98**	MPa
Elongation at Yield DM	UNE EN ISO 527	**12,95**	%
Elongation at Yield DT	UNE EN ISO 527	**12,33**	%
Elongation at Break DM	UNE EN ISO 527	**226**	%
Elongation at Break DT	UNE EN ISO 527	**413**	%
Tear Resistance DM	ISO 34 1/B(a)	**141,7**	N/mm
Tear Resistance DT	ISO 34 1/B(a)	**144,5**	N/mm
Static Puncture	EN ISO 12236	**3,2**	KN
Dimensional Stability DM	UNE EN 14632	**-0,99**	%
Dimensional Stability DT	UNE EN 14632	**0,64**	%
Carbon Black Content	ISO 6964	**2,55**	%
Carbon Black Dispersion	ISO 18553	**CONFORME**	-
Oxidation Induction Time	UNE EN 728	**>120**	min
Asperity Heigh of Textured Geomembrane (1)	ASTM D7466	**1**	mm
Asperity Heigh of Textured Geomembrane (2)	ASTM D7466	**1,49**	mm

Structured sheet area evaluated properties

DM: Machine or longitudinal direction; DT: Transversal direction

180776

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH FIX 2F
BATCH Nr.:	346.455
ROLL Nr.:	27
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	165

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	UNE EN 1849-2	**1,487**	mm
Density	UNE EN ISO 1183	**0,946**	g/cm3
Tensile Strength at Yield DM	UNE EN ISO 527	**18,19**	MPa
Tensile Strength at Yield DT	UNE EN ISO 527	**18,28**	MPa
Tensile Strength at Break DM	UNE EN ISO 527	**29,87**	MPa
Tensile Strength at Break DT	UNE EN ISO 527	**29,77**	MPa
Elongation at Yield DM	UNE EN ISO 527	**12,97**	%
Elongation at Yield DT	UNE EN ISO 527	**12,29**	%
Elongation at Break DM	UNE EN ISO 527	**221**	%
Elongation at Break DT	UNE EN ISO 527	**410**	%
Tear Resistance DM	ISO 34 1/B(a)	**141,4**	N/mm
Tear Resistance DT	ISO 34 1/B(a)	**144**	N/mm
Static Puncture	EN ISO 12236	**3,2**	KN
Dimensional Stability DM	UNE EN 14632	**-0,99**	%
Dimensional Stability DT	UNE EN 14632	**0,58**	%
Carbon Black Content	ISO 6964	**2,55**	%
Carbon Black Dispersion	ISO 18553	**CONFORME**	-
Oxidation Induction Time	UNE EN 728	**>120**	min
Asperity Heigh of Textured Geomembrane (1)	ASTM D7466	**0,98**	mm
Asperity Heigh of Textured Geomembrane (2)	ASTM D7466	**1,49**	mm

Structured sheet area evaluated properties

DM: Machine or longitudinal direction; DT: Transversal direction

180776

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH FIX 2F
BATCH Nr.:	346.455
ROLL Nr.:	43
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	165

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	UNE EN 1849-2	**1,478**	mm
Density	UNE EN ISO 1183	**0,946**	g/cm3
Tensile Strength at Yield DM	UNE EN ISO 527	**18,13**	MPa
Tensile Strength at Yield DT	UNE EN ISO 527	**18,29**	MPa
Tensile Strength at Break DM	UNE EN ISO 527	**30**	MPa
Tensile Strength at Break DT	UNE EN ISO 527	**29,92**	MPa
Elongation at Yield DM	UNE EN ISO 527	**12,98**	%
Elongation at Yield DT	UNE EN ISO 527	**12,23**	%
Elongation at Break DM	UNE EN ISO 527	**220**	%
Elongation at Break DT	UNE EN ISO 527	**407**	%
Tear Resistance DM	ISO 34 1/B(a)	**141,3**	N/mm
Tear Resistance DT	ISO 34 1/B(a)	**143,7**	N/mm
Static Puncture	EN ISO 12236	**3,2**	KN
Dimensional Stability DM	UNE EN 14632	**-0,98**	%
Dimensional Stability DT	UNE EN 14632	**0,6**	%
Carbon Black Content	ISO 6964	**2,55**	%
Carbon Black Dispersion	ISO 18553	**CONFORME**	-
Oxidation Induction Time	UNE EN 728	**>120**	min
Asperity Heigh of Textured Geomembrane (1)	ASTM D7466	**0,97**	mm
Asperity Heigh of Textured Geomembrane (2)	ASTM D7466	**1,5**	mm

Structured sheet area evaluated properties

DM: Machine or longitudinal direction; DT: Transversal direction

180785

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH FIX 2F
BATCH Nr.:	346.455
ROLL Nr.:	44
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	165

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	UNE EN 1849-2	**1,498**	mm
Density	UNE EN ISO 1183	**0,946**	g/cm3
Tensile Strength at Yield DM	UNE EN ISO 527	**18,27**	MPa
Tensile Strength at Yield DT	UNE EN ISO 527	**18,32**	MPa
Tensile Strength at Break DM	UNE EN ISO 527	**29,78**	MPa
Tensile Strength at Break DT	UNE EN ISO 527	**29,76**	MPa
Elongation at Yield DM	UNE EN ISO 527	**12,97**	%
Elongation at Yield DT	UNE EN ISO 527	**12,39**	%
Elongation at Break DM	UNE EN ISO 527	**228**	%
Elongation at Break DT	UNE EN ISO 527	**412**	%
Tear Resistance DM	ISO 34 1/B(a)	**141,9**	N/mm
Tear Resistance DT	ISO 34 1/B(a)	**144,4**	N/mm
Static Puncture	EN ISO 12236	**3,2**	KN
Dimensional Stability DM	UNE EN 14632	**-0,97**	%
Dimensional Stability DT	UNE EN 14632	**0,64**	%
Carbon Black Content	ISO 6964	**2,55**	%
Carbon Black Dispersion	ISO 18553	**CONFORME**	-
Oxidation Induction Time	UNE EN 728	**>120**	min
Asperity Heigh of Textured Geomembrane (1)	ASTM D7466	**0,99**	mm
Asperity Heigh of Textured Geomembrane (2)	ASTM D7466	**1,49**	mm

Structured sheet area evaluated properties

DM: Machine or longitudinal direction; DT: Transversal direction

180785

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

sotrafa
Transformación de Materias Plásticas
GEOSYNTHETICS DIVISION
Global Environmental Liners

CE 0099/CPR/A86/0015

IQNet CERTIFIED QUALITY SYSTEM

AENOR ER Empresa Registrada ER-0441/1998

QUALITY CERTIFICATE

PRODUCT:	ALVATECH FIX 2F
BATCH Nr.:	346.455
ROLL Nr.:	45
NOMINAL THICKNESS:	1,50
NOMINAL WIDTH:	7,50
NOMINAL LENGTH:	165

PROPERTY	TEST METHOD	VALUE	UNIT
Thickness	UNE EN 1849-2	**1,485**	mm
Density	UNE EN ISO 1183	**0,946**	g/cm3
Tensile Strength at Yield DM	UNE EN ISO 527	**18,16**	MPa
Tensile Strength at Yield DT	UNE EN ISO 527	**18,29**	MPa
Tensile Strength at Break DM	UNE EN ISO 527	**30,13**	MPa
Tensile Strength at Break DT	UNE EN ISO 527	**29,73**	MPa
Elongation at Yield DM	UNE EN ISO 527	**12,97**	%
Elongation at Yield DT	UNE EN ISO 527	**12,22**	%
Elongation at Break DM	UNE EN ISO 527	**220**	%
Elongation at Break DT	UNE EN ISO 527	**408**	%
Tear Resistance DM	ISO 34 1/B(a)	**141,4**	N/mm
Tear Resistance DT	ISO 34 1/B(a)	**143,7**	N/mm
Static Puncture	EN ISO 12236	**3,2**	KN
Dimensional Stability DM	UNE EN 14632	**-0,97**	%
Dimensional Stability DT	UNE EN 14632	**0,61**	%
Carbon Black Content	ISO 6964	**2,55**	%
Carbon Black Dispersion	ISO 18553	**CONFORME**	-
Oxidation Induction Time	UNE EN 728	**>120**	min
Asperity Heigh of Textured Geomembrane (1)	ASTM D7466	**0,98**	mm
Asperity Heigh of Textured Geomembrane (2)	ASTM D7466	**1,49**	mm

Structured sheet area evaluated properties

DM: Machine or longitudinal direction; DT: Transversal direction

180785

Terms and conditions spicified on Guarantee Certificate

The complete documentation of the CE marking for this product is available on our website: www.sotrafa.com

Certificate issued by computer. Authorized & valid without signature.

intermas geosynthetics

Certificado de Control de Calidad
Manufacturer Quality Control

NETS FOR LIFE

intermas geosynthetics

AENOR Gestión Ambiental UNE-EN ISO 14001 GA-1998/0007

AENOR Empresa Registrada UNE-EN ISO 9001 ER-0061/1994

INTERMAS NETS, S.A.
Ronda Collsabadell, 11
Polígono Industrial
08450 LLINARS DEL VALLÈS
(Barcelona) SPAIN

Tel. +34 93 842 57 00
Fax +34 93 842 57 01
www.intermasgroup.com
geo@intermasgroup.com

TITAN ENVIRONMENTAL
130 TRANSPORT ROAD
WINNIPEG MB R2C 2Z2
CANADÁ

Your reference : Order Titans 3617– OV: 108000169
Subject : Quality Certificate (EN 10204 Document 3.1.B)
Date : 19.04.18

INTERMAS NETS, S.A. Certifies and guarantees that the values obtained during the production of:

Delivery date	Delivery Note	Product	Fabrication Batch	Roll nº	
10/04/2018 (Cont: CAIU7614738/6217HXW/R9646BCB)	801251923	GMG 27.8/380	1806475	102 103 104 105 114 115 116 123 124 125 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147	27
10/04/2018 (Cont: SEGU4709450/5413HWC/R4977BBF)	801251924	GMG 27.8/380	1806475	94 95 96 97 98 99 100 101 106 107 108 109 110 111 112 113 117 118 119 120 121 122 126 127 128 129 130	27
10/04/2018 (Cont: TCNU1313005/7184HKK/R7595BCY)	801251925	GMG 27.8/380	1806475	67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93	27
10/04/2018 (Cont: MSCU7703681/6193HNP/R5107BCR)	801251926	GMG 27.8/380	1806475	40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66	27
10/04/2018 (Cont: CARU9763260/0264HRC/2325BCN)	801251927	GMG 27.8/380	1806475	1 2 7 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39	27
10/04/2018 (Cont: CRSU9312665/4733HMM/R8852BCP)	801252154	GMG 27.8/380	1806475	3 4 5 6 8 9 10 11 12 13 14 15	12

– Meet the product specifications:

Fabrication Batch: 1806475 **Resin Lot Number:** **143 – 146 – 147 – 148 – 149 – 150**				
Characteristics Geonet (1)	**Standard**	**Unit**	**Specif.**	**Value**
– Net raw material	--	--	--	HDPE
– Carbon Black	ASTM D 4218	%	2.0 –3.0	2.5
– Thickness	ASTM D 5199	mm	MAV	
– 2 kPa			7.0	7.0
– 200 kPa			--	6.6
– Transmissivity MD (2)	ASTM D 4716	m^2/sec	MARV	
– 480 kPa			4×10^{-3}	6.22×10^{-3}
– Tensile Strength MD	ASTM D 5035	kN/m	Min	
			11.4	19.14

INTERMAS NETS, S.A.
Ronda Collsabadell, 11
Polígono Industrial
08450 LLINARS DEL VALLÈS
(Barcelona) SPAIN

Tel. +34 93 842 57 00
Fax +34 93 842 57 01
www.intermasgroup.com
geo@intermasgroup.com

INFORME DE ENSAYO:
TEST REPORT:

0155-Titan-inf-Sil

Fabrication Batch: 1806475 **Geotextil: 3 ATC/5501 AST3UV – Batch: 26573 – 26574**					
Characteristics Geotextil (1)	**Standard**	**Unit**	**Specif.**	**Value**	**Test Frq.**
– Geotextil raw material	--	--	--	PP	--
– Basis weight	ASTM D 5261	g/m^2	MARV 280	Average 300	3000 m²
– Peak tensile strength (GRAB)	ASTM D 4632	N	MARV 950	1315	9290 m²
– Elongation at peak (GRAB)	ASTM D 4632	%	MARV 50	75	9290 m²
– Trapezoidal Tear	ASTM D 4533	N	MARV 350	398	9290 m²
– CBR Puncture	ASTM D 6241	kN	MARV 2.5	3.1	46500 m²
– Apparent Opening Size	ASTM D 4751	mm (µm)	MaxARV 80 (180)	87	46500 m²
– Permitivity	ASTM D 4491	sec^{-1}	MARV 1.3	1.3	46500 m²
– Water flow rate	ASTM D 4491	l/ m²*min	MARV 95 (3869)	3869	46500 m²
– UV Resistance (% retained at 500h)	ASTM D 4355	%	MARV 70	80	/

Fabrication Batch:	**1806475**							
Total Rolls of Fabrication Batch :	**147**							
Characteristics Geocomposite	**Standard**	**Unit**	**Specif.**	**Value**	**Ave.**	**Maxi.**	**Mini.**	**Nº Tests**
– Net foaming agent	--	--		none	--	--	--	--
– Roll Length	--	m	(±10%)	60	--	--	--	--
– Basis weight	ASTM D 5261	g/m^2	(-10%) 1560	--	1882	1955	1727	26
– Roll weight	ASTM D 5261	kg	--	356	--	--	--	--
– Net wide	ISO 2286-1	cm	(-2.5%) 380	--	381	389	378	26
– Geocomposite wide	ISO 2286-1	cm	(-2.5%) 400	--	411	423	405	26
– Overlap	ISO 2286-1	cm	(-20%) 10	--	18	24	14	26
– Strand angle	--	º	--	--	Ok			26
– Geocomposite thickness: – 2 kPa – 200 kPa	ASTM D 5199	mm	MAV 8.4 --	 8.7 7.0	 8.9 8.0	 9.4 8.3	 8.7 7.0	 40 40
– * MD Hydraulic transmissivity i=0.1 **(2)** (Hard-Hard) – 480 kPa	ASTM D 4716	m²*s	MARV 1*10^{-3}	 2.80*10^{-3}	 3.06*10^{-3}	 3.38*10^{-3}	 2.63*10^{-3}	 12
– * MD Hydraulic transmissivity i=0.02 **(3)** (Hard-Soft) – 300 kPa	ASTM D 4716	m²*s	MARV 1*10^{-3}	 2.08*10^{-3}	 2.57*10^{-3}	 3.12*10^{-3}	 1.74*10^{-3}	 12
– Ply Adhesion – Top Side – Bottom Side	ASTM D 7005	g/cm	Min 180 180	 243 217	 402 411	 619 645	 243 217	 20 20

* Transmissivity machine calibrated by Metaltest, Certificate C-08460

– Has been made according to standard UNE-EN-ISO 9001: 2000, certificate number ER-0061/1994 from AENOR,

(1) Geonet and geotextile properties listed are prior to lamination.
(2) Transmissivity measured using water at 21º-22º with a gradient of 0'1 and a confining pressure of 10,000psf between stainless steel plates after 15 minutes. Values may vary between individual labs.
(3) Transmissivity measured using water at 21º-22º with a gradient of 0'02 and a confining pressure of 6,300psf between foam and stainless steel plates after 100 hours. Values may vary between individual labs.

Qualifier:

- MARV = Minimum Average Roll Value
- MAV = Minimum Average Value
- MAX = Maximum Value
- Min = Minimum Value
- MaxARV = Maximum Average Roll Value

intermas geosynthetics

INTERMAS NETS, S.A.
Ronda Collsabadell, 11
Polígono Industrial
08450 LLINARS DEL VALLÈS
(Barcelona) SPAIN

Tel. +34 93 842 57 00
Fax +34 93 842 57 01
www.intermasgroup.com
geo@intermasgroup.com

INFORME DE ENSAYO:
TEST REPORT:

0155-Titan-inf-Sil

Customer: Titan Environmental
Material: GMG 27.8/380
Fabrication Batch: 1806475

														MEAN	MARV
Net Wide	ISO 2286-1	(cm)	**Test Roll Nº**	**1**	**2**	**7**	**15**	**20**	**24**	**29**	**33**	**39**	**45**		
				389	382	384	385	382	384	379	378	378	381		
			Test Roll Nº	**52**	**59**	**65**	**71**	**75**	**83**	**88**	**93**	**99**	**104**		
				382	382	380	380	381	380	380	380	380	380		
			Test Roll Nº	**113**	**116**	**122**	**130**	**136**	**139**						
				380	380	382	381	382	382					**381**	
Geocomposite Wide	ISO 2286-1	(cm)	**Test Roll Nº**	**1**	**2**	**7**	**15**	**20**	**24**	**29**	**33**	**39**	**45**		
				415	423	419	410	416	409	410	410	409	408		
			Test Roll Nº	**52**	**59**	**65**	**71**	**75**	**83**	**88**	**93**	**99**	**104**		
				412	413	414	411	408	408	407	407	406	405		
			Test Roll Nº	**113**	**116**	**122**	**130**	**136**	**139**						
				405	406	411	415	413	416					**411**	
Overlap	ISO 2286-1	(cm)	**Test Roll Nº**	**1**	**2**	**7**	**15**	**20**	**24**	**29**	**33**	**39**	**45**		
				17	24	20	15	17	16	19	21	20	18		
			Test Roll Nº	**52**	**59**	**65**	**71**	**75**	**83**	**88**	**93**	**99**	**104**		
				19	19	21	19	17	17	17	16	15	15		
			Test Roll Nº	**113**	**116**	**122**	**130**	**136**	**139**						
				14	15	16	20	19	20					**18**	
Basis Weight	ISO 2286-1	(g/m²)	**Test Roll Nº**	**1**	**2**	**7**	**15**	**20**	**24**	**29**	**33**	**39**	**45**		
				1769	1875	1912	1887	1795	1747	1727	1873	1879	1944		
			Test Roll Nº	**52**	**59**	**65**	**71**	**75**	**83**	**88**	**93**	**99**	**104**		
				1901	1906	1854	1818	1896	1955	1931	1887	1938	1938		
			Test Roll Nº	**113**	**116**	**122**	**130**	**136**	139						
				1937	1938	1901	1906	1899	1910					**1882**	
Geonet Thickness:	ASTM D5199		**Test Roll Nº**												
2 kPa		(mm)													
			7	7,1	7,1	7,3	7,1	7,1	7,1	7,0	7,1	7,1	7,2	**7,1**	
			53	7,1	7,3	7,1	7,1	7,1	7,0	7,0	7,0	7,0	7,2	**7,1**	
			93	7,0	7,0	7,0	7,1	7,1	7,2	7,2	7,2	7,1	7,2	**7,1**	
			130	7,1	7,1	7,2	7,0	7,2	7,0	7,0	7,0	7,0	7,2	**7,1**	
200 kPa		(mm)													
			7	6,9	6,8	6,9	6,8	6,8	6,8	6,7	6,8	6,8	6,9	**6,8**	
			53	6,9	6,9	6,8	6,8	6,8	6,6	6,7	6,7	6,7	6,8	**6,8**	
			93	6,7	6,7	6,8	6,7	6,8	6,8	6,7	6,9	6,9	6,9	**6,8**	
			130	6,8	6,8	6,6	6,6	6,9	6,6	6,7	6,6	6,6	6,8	**6,7**	
Geonet Tensile strength:	ASTM D5035														
MD		(kN/m)													
			7	19,74	19,14	19,57	20,41	19,25						**19,62**	
			53	21,40	22,54	22,71	21,73	20,22						**21,72**	
			93	20,84	20,52	20,92	21,67	20,53						**20,90**	
			130	19,76	21,12	22,24	21,97	19,37						**20,89**	
Geonet MD Hydraulic transmissivity i= 0,1	ASTM D4716	(Hard-Hard)													
480 kPa		(m²*s)													
			7	6,33E-03	6,45E-03	6,57E-03								**6,45E-03**	
			53	6,32E-03	6,21E-03	6,55E-03								**6,36E-03**	
			93	6,14E-03	6,25E-03	6,25E-03								**6,21E-03**	
			130	6,34E-03	6,45E-03	6,57E-03								**6,45E-03**	**6,22E-03**
Geocomposite Thickness:	ASTM D5199		**Test Roll Nº**												
2 kPa		(mm)													
			7	9,1	9,0	8,9	8,7	8,9	8,8	8,8	8,9	9,1	9,0	**8,9**	
			53	9,0	8,8	8,8	8,9	9,0	8,7	8,9	8,8	8,9	9,1	**8,9**	
			93	8,9	8,8	8,8	8,9	8,8	8,9	8,7	8,8	8,8	8,9	**8,8**	
			130	9,1	8,9	8,9	8,8	9,0	8,8	8,8	8,8	9,4	8,9	**8,9**	
200 kPa		(mm)													
			7	8,1	8,1	8,0	8,0	8,0	8,0	8,0	8,1	8,3	8,1	**8,1**	
			53	8,1	8,0	8,0	7,9	8,1	7,9	7,9	8,0	8,0	8,1	**8,0**	
			93	8,0	7,9	7,9,	8,0	8,0	8,0	7,9	8,0	7,9	7,9	**7,9**	
			130	8,1	7,9	7,9	7,9	7,0	7,9	7,9	7,9	7,9	7,9	**7,8**	
Geocomposite MD Hydraulic transmissivity i= 0,1	ASTM D4716	(Hard-Hard)													
480 kPa		(m²*s)													
			7	3,38E-03	3,38E-03	3,35E-03								**3,37E-03**	
			53	3,24E-03	3,10E-03	3,13E-03								**3,16E-03**	
			93	3,09E-03	2,96E-03	2,96E-03								**3,01E-03**	
			130	2,83E-03	2,65E-03	2,63E-03								**2,70E-03**	**2,80E-03**
Geocomposite MD Hydraulic transmissivity i= 0,02	ASTM D4716	(Hard-Soft)													
300 kPa		(m²*s)													
			7	3,00E-03	3,09E-03	3,02E-03								**3,04E-03**	
			53	3,12E-03	2,92E-03	2,81E-03								**2,95E-03**	
			93	2,49E-03	2,45E-03	2,27E-03								**2,40E-03**	
			130	2,10E-03	1,87E-03	1,74E-03								**1,90E-03**	**2,08E-03**
Ply Adhesion	ASTM D 7005														
Top Side		(g/cm)													
			7	381	406	329	386	346						**370**	
			53	512	520	433	504	429						**480**	
			93	452	353	285	243	313						**329**	
			130	267	319	430	517	619						**430**	
Bottom Side		(g/cm)													
			7	548	624	645	592	510						**584**	
			53	358	484	248	253	357						**340**	
			93	294	217	264	476	324						**315**	
			130	608	286	628	275	230						**405**	

INTERMAS NETS, S.A.
Ronda Collsabadell, 11
Polígono Industrial
08450 LLINARS DEL VALLÈS
(Barcelona) SPAIN

Tel. +34 93 842 57 00
Fax +34 93 842 57 01
www.intermasgroup.com
geo@intermasgroup.com

POLYETHYLENE RESIN CERTIFICATION

Customer Name: Titan Environmental
Fabrication Batch: 1806475
Geocomposite Production Plant: Intermas Nets, S.A.
Geocomposite Brand name: GMG 27.8/380

INTERMAS NETS, S.A. the Geonet Manufacturer, hereby certify the following for the material delivered to the above referenced project:

Resin Supplier	Resin Production Plant	Resin Brand Name	Resin Lot Number	Property	Test Method	Units	Resin Supplier Value
Vielpa	Repsol	HDPE	143	Density	ASTM D 1505	gr/cm³	0,940
				Melt flow Index	ASTM D 1238 (190/2.16kg)	gr/10min	0,277
Vielpa	Repsol	HDPE	146	Density	ASTM D 1505	gr/cm³	0,950
				Melt flow Index	ASTM D 1238 (190/2.16kg)	gr/10min	0,306
Vielpa	Repsol	HDPE	147	Density	ASTM D 1505	gr/cm³	0,957
				Melt flow Index	ASTM D 1238 (190/2.16kg)	gr/10min	0,304
Vielpa	Repsol	HDPE	148	Density	ASTM D 1505	gr/cm³	0,958
				Melt flow Index	ASTM D 1238 (190/2.16kg)	gr/10min	0,272
Vielpa	Repsol	HDPE	149	Density	ASTM D 1505	gr/cm³	0,957
				Melt flow Index	ASTM D 1238 (190/2.16kg)	gr/10min	0,253
Vielpa	Repsol	HDPE	150	Density	ASTM D 1505	gr/cm³	0,943
				Melt flow Index	ASTM D 1238 (190/2.16kg)	gr/10min	0,250

Silvia García
Quality Dept.

Appendix B-3

Certificate of Acceptance – Clay Subgrade

TITAN
Environmental Containment

SUB-GRADE ACCEPTANCE

PROJECT: BPI
PROJECT #: L7101
OWNER: Prairie Green Landfill
ENGINEER:
LOCATION: Prairie Green Landfill
CONTRACTOR: Edie
QA/QC: Christine Putt
DATE: July 11 / 2018

This document certifies that on July 11 / 2018 **, the project superintendant,** Derek Graham **for TITAN ENVIRONMENTAL CONTAINMENT has inspected the surface of the sub-grade and has found that it meets the installation of the geomembrane and geosynthetics as per engineer specifications.**

TITAN ENVIRONMENTAL CONTAINMENT accepts only the surface of the sub-grade and holds no responsibility of the structural strength of the containment system used on this project. Any and all failure causing damage to the geomembranes and geosynthetics being installed on this project will be repaired or replaced at the General contractors or Owners expense.

TITAN ENVIRONMENTAL CONTAINMENT will only accept Sub-grade on a daily installation and will not be held accountable for any damages to Sub-grade out side our control.

Area Being Accepted: Cell 15 Prairie Green Landfill, Manitoba.

Daniel Putt
TITAN REPRESENTITIVE

July 11 / 2018
DATE

GENERAL CONTRACTOR, OWNER REPRESENTITIVE

July 30/18
DATE

TITAN
Environmental Containment

CERTIFICATE OF COMPLETION

PROJECT: BFI
PROJECT #: 47101
OWNER: Prairie Green Landfill
ENGINEER:
LOCATION:
CONTRACTOR: Edie
QA/QC: Christine Putt
DATE:

This document certifies that on July 26 / 2018, **the project superintendant,** Derek Graham **for TITAN ENVIRONMENTAL CONTAINMENT has inspected the surface of the Liner and has found that it meets the installation of the geomembrane and geosynthetics as per engineer specifications.**

Area Being Accepted: Cell 15, Prairie Green Landfill, Manitoba

Daniel Putt
TITAN REPRESENTITIVE

July 26/2018
DATE

GENERAL CONTRACTOR, OWNER REPRESENTITIVE

July 30/18
DATE

Appendix B-4

Geomembrane Deployment Inspection Summary

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/12/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 1

DESCRIPTION	PANEL NUMBER	PANEL NUMBER	PANEL NUMBER
ROLL NUMBER	15		
DEPLOYED LENGTH	130 m		
AMBIENT AIR TEMP.	23 C		
OBSERVED OVERLAP	150 mm		
REMARKS			
MONITOR	DS		

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	60	60	60	62								
	60	60	59	60								
	60	60	60	60								
	61	60	60	62								
AVERAGE	60	60	60	61	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####

DESCRIPTION	PANEL NUMBER	PANEL NUMBER	PANEL NUMBER
ROLL NUMBER			
DEPLOYED LENGTH			
AMBIENT AIR TEMP.			
OBSERVED OVERLAP			
REMARKS			
MONITOR			

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/13/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 2

DESCRIPTION	PANEL NUMBER	P2	P3	P4
ROLL NUMBER		32	26	27
DEPLOYED LENGTH		130 m	130 m	130 m
AMBIENT AIR TEMP.		30 C	30 C	30 C
OBSERVED OVERLAP		150 mm	150 mm	150 mm
REMARKS				
MONITOR		DS	DS	DS

SHEET THICKNESS	P2 LEAD	P2 L SIDE	P2 R SIDE	P2 TRAIL	P3 LEAD	P3 L SIDE	P3 R SIDE	P3 TRAIL	P4 LEAD	P4 L SIDE	P4 R SIDE	P4 TRAIL
	61	60	61	60	61	60	60	60	60	60	59	60
	60	62	62	61	60	59	59	60	60	60	61	60
	60	61	61	60	60	59	60	59	61	60	60	61
	61	61	61	60	60	60	60	60	60	60	59	61
AVERAGE	61	61	61	60	60	60	60	60	60	60	60	61

DESCRIPTION	PANEL NUMBER	P5	P6	P7
ROLL NUMBER		23	28	28
DEPLOYED LENGTH		130 m	65.8 m	64.7
AMBIENT AIR TEMP.		30 C	30 C	30 C
OBSERVED OVERLAP		150 mm	150 mm	150 mm
REMARKS				
MONITOR		DS	DS	DS

SHEET THICKNESS	P5 LEAD	P5 L SIDE	P5 R SIDE	P5 TRAIL	P6 LEAD	P6 L SIDE	P6 R SIDE	P6 TRAIL	P7 LEAD	P7 L SIDE	P7 R SIDE	P7 TRAIL
	60	60	60	60	60	61	61	61	61	62	61	61
	59	60	60	60	60	61	62	60	60	61	60	59
	59	60	59	61	61	60	60	60	60	59	61	60
	60	60	60	61	61	60	60	60	60	60	60	60
AVERAGE	60	60	60	61	61	61	61	60	60	61	61	60

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: July 13/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 3

DESCRIPTION	PANEL NUMBER	P8				PANEL NUMBER	P9				PANEL NUMBER	P10			
ROLL NUMBER		R16					R16					R13			
DEPLOYED LENGTH		66.4 m					62.7 m					62.8 m			
AMBIENT AIR TEMP.		31 C					31 C					31 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	61	61	61	60		60	61	61	61		61	60	60	61	
	60	60	60	61		61	60	60	60		60	61	60	60	
	61	61	60	60		60	61	61	60		60	60	60	61	
	60	60	60	60		60	60	60	61		61	60	60	60	
AVERAGE	61	61	60	60		60	61	61	61		61	60	60	61	

DESCRIPTION	PANEL NUMBER	P11				PANEL NUMBER	P12				PANEL NUMBER	P13			
ROLL NUMBER		R13					R13					25			
DEPLOYED LENGTH		62.4					63.2 m					62.0 m			
AMBIENT AIR TEMP.		31 C					31 C					31 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	60	60	61		61	60	60	61		61	60	60	61	
	60	59	59	60		60	60	59	60		60	61	60	60	
	60	60	59	60		60	60	60	60		60	60	60	61	
	60	60	60	60		60	60	59	60		60	60	60	61	
AVERAGE	60	60	60	60		60	60	60	60		60	60	60	61	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 13-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 4

DESCRIPTION	PANEL NUMBER	P14				PANEL NUMBER	P15				PANEL NUMBER	P16			
ROLL NUMBER		25					29					29			
DEPLOYED LENGTH		62.8					62.0 m					62.4			
AMBIENT AIR TEMP.		31 C					31 C					31 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	61	60	60	60		60	60	60	61		61	60	60	61	
	60	59	60	60		60	60	60	60		60	59	58	60	
	62	60	60	60		60	59	59	61		61	60	59	60	
	61	60	60	61		61	60	60	61		61	60	60	61	
AVERAGE	61	60	60	60		60	60	60	61		61	60	59	61	

DESCRIPTION	PANEL NUMBER					PANEL NUMBER					PANEL NUMBER				
ROLL NUMBER															
DEPLOYED LENGTH															
AMBIENT AIR TEMP.															
OBSERVED OVERLAP															
REMARKS															
MONITOR															
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
AVERAGE	#DIV/0!	#####	#####	#####		#DIV/0!	#####	#####	#####		#DIV/0!	#DIV/0!	#####	#####	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 14-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 5

DESCRIPTION	PANEL NUMBER	P17				PANEL NUMBER	P18				PANEL NUMBER	P19			
ROLL NUMBER		30					30					24			
DEPLOYED LENGTH		64.6 m					64.4 m					65.3			
AMBIENT AIR TEMP.		29 C					29 C					29 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	61	60	58	60		60	60	59	60		60	60	60	61	
	60	60	59	60		60	59	60	60		60	59	60	60	
	60	59	60	60		60	60	60	61		61	60	60	61	
	61	60	60	60		60	60	60	61		61	60	60	61	
AVERAGE	61	60	59	60		60	60	60	61		61	60	60	61	

DESCRIPTION	PANEL NUMBER	P20				PANEL NUMBER	P21				PANEL NUMBER	P22			
ROLL NUMBER		24					22					22			
DEPLOYED LENGTH		64.6 m					63.9 m					65.4 m			
AMBIENT AIR TEMP.		29 C					29 C					30 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	61	60	59	60		60	59	60	62		62	60	60	61	
	60	60	60	61		61	61	60	61		61	60	60	60	
	61	60	59	60		60	60	60	61		61	60	59	60	
	61	60	59	60		60	60	60	60		60	60	59	61	
AVERAGE	61	60	59	60		60	60	60	61		61	60	60	61	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 14-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 6

DESCRIPTION	PANEL NUMBER	P23			PANEL NUMBER	P24			PANEL NUMBER			
ROLL NUMBER		21				21						
DEPLOYED LENGTH		65.5 m				67.2 m						
AMBIENT AIR TEMP.		30 C				30 C						
OBSERVED OVERLAP		150 mm				150 mm						
REMARKS												
MONITOR		DS				DS						
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	61	60	60	61	61	60	60	60				
	60	59	59	60	60	60	60	61				
	60	60	59	60	60	59	61	61				
	61	60	61	61	61	60	60	60				
AVERAGE	61	60	60	61	61	60	60	61	#DIV/0!	#DIV/0!	#####	#####

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
ROLL NUMBER												
DEPLOYED LENGTH												
AMBIENT AIR TEMP.												
OBSERVED OVERLAP												
REMARKS												
MONITOR												
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####	#DIV/0!	#DIV/0!	#####	#####

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 18-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 7

DESCRIPTION	PANEL NUMBER	P25	P26	P27
ROLL NUMBER		12	37	43
DEPLOYED LENGTH		132.0 m	132 m	129.4 m
AMBIENT AIR TEMP.		25 C	25 C	25 C
OBSERVED OVERLAP		150 mm	150 mm	150 mm
REMARKS				
MONITOR		DS	DS	DS

SHEET THICKNESS	P25 LEAD	P25 L SIDE	P25 R SIDE	P25 TRAIL	P26 LEAD	P26 L SIDE	P26 R SIDE	P26 TRAIL	P27 LEAD	P27 L SIDE	P27 R SIDE	P27 TRAIL
	61	60	59	60	60	60	59	60	60	58	60	60
	60	60	61	61	61	60	60	60	60	60	58	60
	60	60	60	60	60	58	59	60	60	58	59	61
	61	61	60	60	60	60	59	60	60	59	60	60
AVERAGE	61	60	60	60	60	60	59	60	60	59	59	60

DESCRIPTION	PANEL NUMBER	P28	P29	P30
ROLL NUMBER		42	38	39
DEPLOYED LENGTH		105 m	105.1 m	62.2 m
AMBIENT AIR TEMP.		25 C	25 C	25 C
OBSERVED OVERLAP		150 mm	150 mm	150 mm
REMARKS				
MONITOR		DS	DS	DS

SHEET THICKNESS	P28 LEAD	P28 L SIDE	P28 R SIDE	P28 TRAIL	P29 LEAD	P29 L SIDE	P29 R SIDE	P29 TRAIL	P30 LEAD	P30 L SIDE	P30 R SIDE	P30 TRAIL
	60	58	59	60	60	60	60	62	62	60	60	60
	60	59	59	60	60	59	60	61	61	60	60	60
	61	60	60	60	60	60	61	61	61	60	61	60
	60	59	60	60	60	60	60	61	61	60	61	60
AVERAGE	60	59	60	60	60	60	60	61	61	60	61	60

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 18-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 8

DESCRIPTION	PANEL NUMBER	P31				PANEL NUMBER	P32				PANEL NUMBER	P33			
ROLL NUMBER		39					17					17			
DEPLOYED LENGTH		63.9					63.7 m					62.7 m			
AMBIENT AIR TEMP.		25 C					26 C					26 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	59	60	60		60	60	59	60		60	58	60	60	
	61	59	60	60		60	60	59	60		60	59	59	60	
	60	60	60	61		61	60	60	60		60	59	60	60	
	60	60	60	61		61	60	60	60		60	59	60	60	
AVERAGE	60	60	60	61		61	60	60	60		60	59	60	60	

DESCRIPTION	PANEL NUMBER	P34				PANEL NUMBER	P35				PANEL NUMBER	P36			
ROLL NUMBER		48					48					48			
DEPLOYED LENGTH		63.1 m					63.7					63.7 m			
AMBIENT AIR TEMP.		26 C					30 C					30 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	59	60	60		60	57	58	61		61	59	58	60	
	60	59	60	60		60	58	59	60		60	60	59	59	
	60	59	59	60		60	59	59	60		60	60	59	60	
	60	60	59	60		60	59	59	60		60	60	59	60	
AVERAGE	60	59	60	60		60	58	59	60		60	60	59	60	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 18-Jul-18
TRANSPORT EQUIPMENT: Backhoe and Spreader Bar
SHEET NUMBER: 9

DESCRIPTION	PANEL NUMBER	P37				PANEL NUMBER	P38				PANEL NUMBER	P39			
ROLL NUMBER		31					8					8			
DEPLOYED LENGTH		63.4 m					63.8 m					63.8 m			
AMBIENT AIR TEMP.		30 C					30 C					30 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	59	59	61		61	58	59	60		60	58	59	60	
	61	60	60	60		60	58	60	61		61	59	58	60	
	62	61	60	60		60	59	60	60		60	58	59	60	
	61	60	60	61		61	60	59	60		60	59	60	60	
AVERAGE	61	60	60	61		61	59	60	60		60	59	59	60	

DESCRIPTION	PANEL NUMBER	P40				PANEL NUMBER	P41				PANEL NUMBER				
ROLL NUMBER		10					10								
DEPLOYED LENGTH		63.4 m					63.4 m								
AMBIENT AIR TEMP.		30 C					30 C								
OBSERVED OVERLAP		150 mm					150 mm								
REMARKS															
MONITOR		DS					DS								
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	59	59	60		60	59	59	60						
	60	60	59	60		60	59	60	60						
	60	59	60	61		61	59	60	61						
	60	60	60	61		61	59	60	61						
AVERAGE	60	60	60	61		61	59	60	61		#DIV/0!	#DIV/0!	#####	#####	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 19-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 10

DESCRIPTION	PANEL NUMBER	P42			PANEL NUMBER	P43			PANEL NUMBER	P44		
ROLL NUMBER		20				20				36		
DEPLOYED LENGTH		62.0 m				62.9 m				22.0 m		
AMBIENT AIR TEMP.		24 C				24 C				24 C		
OBSERVED OVERLAP		150 mm				150 mm				150 mm		
REMARKS												
MONITOR		DS				DS				DS		
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	60	59	60	60	60	59	59	60	60	60	59	60
	61	60	60	61	61	60	60	60	60	59	59	60
	61	60	60	61	61	60	59	60	60	60	60	60
	61	61	60	60	60	60	60	61	61	60	60	60
AVERAGE	61	60	60	61	61	60	60	60	60	60	60	60

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
ROLL NUMBER												
DEPLOYED LENGTH												
AMBIENT AIR TEMP.												
OBSERVED OVERLAP												
REMARKS												
MONITOR												
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####	#DIV/0!	#DIV/0!	#####	#####

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 21-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 11

DESCRIPTION	PANEL NUMBER	P45				PANEL NUMBER	P46				PANEL NUMBER	P47			
ROLL NUMBER		36					38					3			
DEPLOYED LENGTH		68.7 m					11.0 m					78.0 m			
AMBIENT AIR TEMP.		21 C					21 C					21 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	60	60	61		61	60	59	60		60	60	60	60	
	61	60	60	61		61	60	59	60		60	59	60	61	
	60	59	60	60		60	60	59	60		60	59	61	60	
	60	59	60	60		60	60	60	61		61	60	61	61	
AVERAGE	60	60	60	61		61	60	59	60		60	60	61	61	

DESCRIPTION	PANEL NUMBER	P48				PANEL NUMBER	P49				PANEL NUMBER	P50			
ROLL NUMBER							-					3			
DEPLOYED LENGTH		76.0 m					51.6 m					27.0 m			
AMBIENT AIR TEMP.		21 C					21 C					21 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	59	60	60		60	58	59	60		60	60	61	61	
	61	60	60	60		60	59	60	60		60	59	60	60	
	60	60	59	60		60	59	60	60		60	59	60	60	
	61	60	59	60		60	59	60	60		60	59	60	60	
AVERAGE	61	60	60	60		60	59	60	60		60	59	60	60	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 21-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 12

DESCRIPTION	PANEL NUMBER	P51	P52	P53
ROLL NUMBER		21390	21390	21390
DEPLOYED LENGTH		30.6 m	31.0 m	34.3 m
AMBIENT AIR TEMP.		26 C	26 C	26 C
OBSERVED OVERLAP		150 mm	150 mm	150 mm
REMARKS				
MONITOR		DS	DS	DS
SHEET THICKNESS	LEAD	61	60	61
	L SIDE	60	60	60
	R SIDE	60	60	59
	TRAIL	61	61	60
	LEAD	60	61	60
	L SIDE	59	60	60
	R SIDE	59	60	59
	TRAIL	60	60	61
	LEAD	61	61	61
	L SIDE	60	61	60
	R SIDE	61	61	60
	TRAIL	61	61	61
	LEAD	61	61	61
	L SIDE	60	61	60
	R SIDE	61	61	60
	TRAIL	61	61	61
AVERAGE		61	61	61
		60	61	60
		60	61	60
		61	61	61

DESCRIPTION	PANEL NUMBER	P54	P55	P56
ROLL NUMBER		21390	21390	21388
DEPLOYED LENGTH		35.5 m	32.3 m	2.2 m
AMBIENT AIR TEMP.		26 C	26 C	26 C
OBSERVED OVERLAP		150 mm	150 mm	150 mm
REMARKS				
MONITOR		DS	DS	DS
SHEET THICKNESS	LEAD	60	60	60
	L SIDE	60	59	59
	R SIDE	59	59	59
	TRAIL	60	60	60
	LEAD	61	61	61
	L SIDE	60	60	59
	R SIDE	60	61	59
	TRAIL	61	61	60
	LEAD	61	60	60
	L SIDE	60	60	61
	R SIDE	60	60	61
	TRAIL	61	60	61
	LEAD	61	60	60
	L SIDE	60	60	61
	R SIDE	60	60	61
	TRAIL	61	60	61
AVERAGE		61	60	60
		60	60	60
		60	60	60
		61	60	61

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 21-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 13

DESCRIPTION	PANEL NUMBER	P57				PANEL NUMBER	P58				PANEL NUMBER	P59			
ROLL NUMBER		21388					21388					21388			
DEPLOYED LENGTH		35.1 m					37.8 m					38.8 m			
AMBIENT AIR TEMP.		26 C					26 C					26 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	60	60	60		60	60	59	60		60	58	58	61	
	60	60	60	60		61	60	59	61		61	60	59	60	
	61	61	60	61		61	60	59	61		61	61	60	60	
	61	61	61	61		61	60	59	61		61	61	60	60	
AVERAGE	61	61	60	61		61	60	59	61		61	60	59	60	

DESCRIPTION	PANEL NUMBER	P60				PANEL NUMBER					PANEL NUMBER				
ROLL NUMBER		21392													
DEPLOYED LENGTH		34.8 m													
AMBIENT AIR TEMP.		26 C													
OBSERVED OVERLAP		150 mm													
REMARKS															
MONITOR		DS													
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	61	60	60	60											
	60	58	59	61											
	60	59	59	61											
	60	59	60	61											
AVERAGE	60	59	60	61		#DIV/0!	#####	#####	#####		#DIV/0!	#DIV/0!	#####	#####	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 22-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 14

DESCRIPTION	PANEL NUMBER	P61	P62	P63
ROLL NUMBER		21392	21392	21394
DEPLOYED LENGTH		34.4 m	34.4 m	35.1 m
AMBIENT AIR TEMP.		25 C	25 C	25 C
OBSERVED OVERLAP		150 mm	150 mm	150 mm
REMARKS				
MONITOR		DS	DS	DS
SHEET THICKNESS	LEAD	61	61	60
	L SIDE	60	60	59
	R SIDE	59	59	59
	TRAIL	61	60	60
	LEAD	60	60	60
	L SIDE	60	60	59
	R SIDE	60	59	58
	TRAIL	60	60	60
	LEAD	60	60	61
	L SIDE	60	60	60
	R SIDE	61	60	59
	TRAIL	60	61	60
	LEAD	61	61	61
	L SIDE	60	60	60
	R SIDE	61	60	60
	TRAIL	61	61	62
AVERAGE	LEAD	61	61	61
	L SIDE	60	60	60
	R SIDE	60	60	59
	TRAIL	61	61	61

DESCRIPTION	PANEL NUMBER	P64	P65	P66
ROLL NUMBER		21394	21394	21394
DEPLOYED LENGTH		35.5 m	16.8 m	34.4 m
AMBIENT AIR TEMP.		25 C	25 C	25 C
OBSERVED OVERLAP		150 mm	150 mm	150 mm
REMARKS				
MONITOR		DS	DS	DS
SHEET THICKNESS	LEAD	60	61	61
	L SIDE	60	60	60
	R SIDE	60	60	61
	TRAIL	61	61	60
	LEAD	60	60	60
	L SIDE	59	59	60
	R SIDE	59	59	60
	TRAIL	60	60	60
	LEAD	60	60	60
	L SIDE	60	59	60
	R SIDE	60	59	60
	TRAIL	60	60	60
	LEAD	62	61	61
	L SIDE	61	60	60
	R SIDE	61	60	60
	TRAIL	61	61	60
AVERAGE	LEAD	61	61	61
	L SIDE	60	60	60
	R SIDE	60	60	60
	TRAIL	61	61	60

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 22-Jul-18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 15

DESCRIPTION	PANEL NUMBER	P67				PANEL NUMBER	P68				PANEL NUMBER	P69			
ROLL NUMBER		42					42					42			
DEPLOYED LENGTH		10.7 m					10.7 m					3.8 m			
AMBIENT AIR TEMP.		25 C					25 C					25 C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	59	60	60		60	61	61	60		60	59	60	60	
	60	61	60	60		60	60	59	60		60	60	60	60	
	60	60	60	60		60	60	60	60		60	60	59	60	
	60	60	60	60		60	60	60	60		60	60	59	60	
AVERAGE	60	60	60	60		60	60	60	60		60	60	60	60	

DESCRIPTION	PANEL NUMBER					PANEL NUMBER					PANEL NUMBER				
ROLL NUMBER															
DEPLOYED LENGTH															
AMBIENT AIR TEMP.															
OBSERVED OVERLAP															
REMARKS															
MONITOR															
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
AVERAGE	#DIV/0!	#####	#####	#####		#DIV/0!	#####	#####	#####		#DIV/0!	#DIV/0!	#####	#####	

Appendix B-5

Geomembrane Trial Seam Summary

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: 13-Jul-18
SHEET NUMBER: 1

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF-1	13:10	WW27	AS	31C	650		850	FTB 103 100 104 105	FTB 111 110 97 102	FTB 120 122	P	DS	
TF-2	13:32	WW15	AS	31C	650		860	FTB 121 107 98 100	FTB 128 103 109 115	FTB 121 136	P	DS	
TF-3	13:57	WW9	AS	31C	600		865	FTB 96 104 104 103	FTB 95 85 104 97	FTB 125 127	P	DS	
TF-4	17:25	WW15	AS	32C	600		860	FTB 101 103 96 95	FTB 83 93 85 99	FTB 120 120	P	DS	
TF-5	17:35	WW9	AS	32C	600		860	FTB 95 97 94	FAILED 92 94 92		F	DS	
TF-6	17:40	WW27	AS	32C	600		830	FAILED 87			F	DS	
TF-5A	18:08	WW9	AS	32C	600		860	FTB 103	FAILED 76		F	DS	
TF-6A	18:16	WW27	AS	32C	600		860	FTB 109 101 106 101	FTB 100 97 102 99	FTB 123 120	P	DS	
TF-7	18:14	WW11	AS	32C	600		440	FTB 103 101 94 102	FTB 108 105 103 102	FTB 128 133	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: 14-Jul-18
SHEET NUMBER: 2

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF-8	8:38	WW27	GC	27C	600		860	FTB 116 118 116 116	FTB 116 122 119 122	FTB 127 128	P	AFK	
TF-9	8:42	WW11	DM	27C	600		440	FTB 115 117 113 116	FTB 112 114 114 112	FTB 132 139	P	AFK	
TF-10	8:45	WW15	AM	27C	650		860	FAILED 105 111			F	AFK	
TF-10A	9:21	WW15	AM	27C	550		860	FTB 121 120 118 119	FTB 119 121 118 114	FTB 122 130	P	AFK	
TF-11	14:30	WW15	AM	32C	550		850	FTB 105 99	FAILED 108 104		F	DS	
TF-12	14:59	WW11	AM	32C	600		440	FTB 103	FAILED 101		F	DS	
TF-12A	15:16	WW11	AM	32C	500		440	FTB 117 109 106 107	FTB 113 110 114 110	FTB 121 125	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: 17-Jul-18
SHEET NUMBER: 3

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF-13	17:05	WW27	GS	27C	600		840	FTB 117 114 121 116	FTB 116 114 121 112	FTB 122 121	P	AFK	
TF-14	17:04	WW15	AS	27C	550		860	FTB 102 105 98 114	FTB 110 108 108 106	FTB 121 124	P	AFK	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: 18-Jul-18
SHEET NUMBER: 4

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF-15	10:57	WW27	GC	24C	500		800	FTB 119 102 120 119	FTB 126 130 121 126	FTB 127 131	P	DS	
TF-16	11:36	WW1	AM	27C	460		500	FTB 106	FAILED 101		F	DS	
TF-17	11:45	WW15	AS	27C	600		860	FTB 111 115 117 109	FTB 110 102 117 121	FTB `121 121	P	DS	
TF-16A	11:37	WW1	AM	27C	460		500	FTB 116 122 113 123	FTB 100 117 119 105	FTB 120 124	P	DS	
TF-18	15:56	WW27	GC	31C	600		860	FTB 116 112 110 116	FTB 110 104 108 106	FTB 123 123	P	DS	
TF-19	16:06	WW1	AM	31C	460		500	FTB 117 110 110 116	FTB 101 110 108 106	FTB 124 121	P	DS	
TF-20	16:27	WW15	AS	31C	600		860	FTB 113 116 101 110	FTB 122 109 109 105	FTB 120 120	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: 19-Jul-18
SHEET NUMBER: 5

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF-21	8:51	WW27	GC	24C	600		860	FTB 119 123 127 118	FTB 125 124 125 124	FTB 134 135	P	DS	
TF-22	15:50	WW1	GC	29C	500		460	FTB 99 99 121 112	FTB 99 121 109 115	FTB 121 126	P	DS	
TF-23	16:59	WW15	AM	19C	500		860	FTB 112 105 105 110	FTB 105 107 95 105	FTB 123 122	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: 21-Jul-18
SHEET NUMBER: 6

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF-24	15:09	WW15	AS	26C	600		830	FTB 111 119 118 117	FTB 121 122 114 111	FTB 128 124	P	DS	
TF-25	15:15	WW1	KM	26C	600		460	FTB 99 109 104 103	FTB 106 82105 110	FTB 122 128	P	DS	
TF-26	15:07	WW27	CS	26C	600		860	FTB 120 109 129 110	FTB 105 98 110 110	FTB 133 133	P	DS	
TF-27	19:04	WW15	AS	26C	500		830	FAILED 115			F	DS	
TF-28	19:10	WW27	CS	26C	500		860	FAILED 104			F	DS	
TF-29	19:27	WW1	KM	26C	500		460	FTB 110	FAILED 85		F	DS	
TF-28A	19:40	WW27	CS	26C	350		835	FTB 128 128 124 115	FTB 104 111 101 105	FTB 120 125	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

X	TF - # = FUSION
	TX - # = EXTRUSION

DATE: 22-Jul-18
SHEET NUMBER: 7

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TF-30	10:53	WW27	CS	26C	500	835		FTB 96 111 105 106	FTB 109 114 106 106	 125 131	P	AFK	
TF-31	11:14	WW15	AS	26C	450	830		FTB 117	FAILED 96		F	AFK	
TF-32	11:56	WW11	AS	26C	450	430		FTB 105 99 113 112	FTB 101 111 112 110	 133 135	P	AFK	
TF-33	14:01	WW1	KH	25C	400	450		FTB 92 119 109 121	FTB 109 122 109 113	 123 120	P	AFK	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

[X] TF - # = FUSION
[ ] TX - # = EXTRUSION

DATE: 24-Jul-18
SHEET NUMBER: 8

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES: AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	TEST RESULTS: INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH	PASS OR FAIL	MON.	REMARKS
TF-34	9:09	WW11	DM	18C	430		600	FTB 129 129 129 139	FTB 134134 136 126	FTB 143 144	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

[ ] TF - # = FUSION
[X] TX - # = EXTRUSION

DATE: 13-Jul-18
SHEET NUMBER: 1

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
								FTB		FTB			
TX-1	14:22	EXT-6	GS	31	440	440		90 88 88 87		130 124	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

[ ] TF - # = FUSION
[X] TX - # = EXTRUSION

DATE: 7/14/2018
SHEET NUMBER: 2

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX-2	15:25	EXT-6	DP	33	450	465		FAIL 101 90 86 102			F	DS	
TX-2A	16:15	EXT-6	DP	33	440	460		FAIL 104 104 16			F	DS	
TX-3	16:38	EXT-6	RN	33	400	465		FTB 110 112 110 113		FTB 123 136	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: 7/15/2018
SHEET NUMBER: 3

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX-4	9:00	EXT-6	DP	18	485	485		FTB 114 111 121 121		FTB 123 135	P	DS	
TX-5	9:03	EXT-6	DP	18	485	485		FTB 119 112 123 116		FTB 128 140	P	DS	
TX-6	9:14	EXT-21	GS	18	475	475		FTB 112 121 94 96		FTB 140 131	P	DS	
TX-7	14:30	EXT-21	DP	25	475	475		FTB 109 104 103 103		FTB 119 128	P	AFK	
TX-8	14:40	EXT-6	DP	25	490	480		FAIL 110			F	AFK	
TX-8A	15:15	EXT-5	DP	25	480	480		FTB 119 119 119 116		FTB 123 124	P	AFK	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

[ ] TF - # = FUSION
[X] TX - # = EXTRUSION

DATE: 16-Jul-18
SHEET NUMBER: 4

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES: AMBIENT AIR TEMP.	TEMPERATURES: PREHEAT OR MACHINE SPEED	TEMPERATURES: EXTRUDER	TEMPERATURES: NOZZLE OR WEDGE	TEST RESULTS: INSIDE PEEL MODE STRENGTH	TEST RESULTS: OUTSIDE PEEL MODE STRENGTH	TEST RESULTS: SHEAR MODE STRENGTH	PASS OR FAIL	MON.	REMARKS
TX-9	8:40	EXT-21	GS	16	475	475		FTB 110 106 110 103		FTB 165 164	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

[ ] TF - # = FUSION
[X] TX - # = EXTRUSION

DATE: 18-Jul-18
SHEET NUMBER: 5

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES: AMBIENT AIR TEMP.	TEMPERATURES: PREHEAT OR MACHINE SPEED	TEMPERATURES: EXTRUDER	TEMPERATURES: NOZZLE OR WEDGE	TEST RESULTS: INSIDE PEEL MODE STRENGTH	TEST RESULTS: OUTSIDE PEEL MODE STRENGTH	TEST RESULTS: SHEAR MODE STRENGTH	PASS OR FAIL	MON.	REMARKS
TX-10	15:15	EXT-21	GS	30	375	375		FTB 113 106 111 92		FTB 124 126	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: 7/19/2018
SHEET NUMBER: 6

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX-11	9:02	EXT-21	JP	24	475	465		FTB 104 112 114 116		FTB 144 126	P	DS	
TX-12	14:44	EXT-21	JP	27	475	465		FTB 102 107 92 97		FTB 186 123	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: 7/20/2018
SHEET NUMBER: 7

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX-13	8:48	EXT-21	JP	18	475	485		FTB 100 100 111 97		FTB 166 164	P	DS	
TX-14	14:45	EXT-21	JP	24	475	485		FAIL 104 12 190 107			F	DS	
TX-15	15:18	EXT-21	DG	24	480	490		FTB 119 122 121 109		FTB 123 120	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

[ ] TF - # = FUSION
[X] TX - # = EXTRUSION

DATE: 21-Jul-18
SHEET NUMBER: 8

				TEMPERATURES				TEST RESULTS					
SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH	PASS OR FAIL	MON.	REMARKS
TX-16	9:05	EXT-21	JP	21	480	490		FTB 82 95 96 83		FTB 126 128	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: 7/22/2018
SHEET NUMBER: 9

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX-17	8:50	TX-21	JP	20	480	490		FTB 129 118 137 139		FTB 143 142	P	DS	
TX-18	8:55	TX-21	JP	20	480	490		FTB 129 114 125 132		FTB 142 143	P	DS	SMOOTH TEXTURED
TX-19	13:53	TX-21	JP	25	480	490		FTB 127 110 117 136		FTB 138 122	P	DS	TEXTURED TEXTURED

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

[ ] TF - # = FUSION
[X] TX - # = EXTRUSION

DATE: 7/23/2018
SHEET NUMBER: 10

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES: AMBIENT AIR TEMP.	TEMPERATURES: PREHEAT OR MACHINE SPEED	TEMPERATURES: EXTRUDER	TEMPERATURES: NOZZLE OR WEDGE	TEST RESULTS: INSIDE PEEL MODE STRENGTH	TEST RESULTS: OUTSIDE PEEL MODE STRENGTH	TEST RESULTS: SHEAR MODE STRENGTH	PASS OR FAIL	MON.	REMARKS
								FTB		FTB			TEXTURED
TX-20	8:44	EXT-21	JP	17	480	490		114 94 91 137		153 159	P	DS	TEXTURED
								FTB		FTB			SMOOTH
TX-21	8:48	EXT-21	JP	17	480	490		114 124 117 117		120 122	P	DS	SMOOTH
								FTB		FTB			SMOOTH
TX-22	8:50	EXT-21	JP	17	480	490		100 107 91 111		120 123	P	DS	TEXTURED
								FAIL					
TX-23	16:12	EXT-21	JP	23	480	490		114			F	DS	
								FTB		FTB			
TX-24	16:15	EXT-21	DP	23	480	490		85 110 87 113		125 127	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

	TF - # = FUSION
X	TX - # = EXTRUSION

DATE: 7/24/2018
SHEET NUMBER: 11

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES				TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
TX-25	8:45	EXT-21	JP	18	480	490		FTB 115 142 143 141		FTB 134 143	P	DS	
TX-26	8:50	EXT-21	DP	18	480	490		FTB 117 127 93 111		FTB 141 148	P	DS	
TX-27	10:45	EXT-21	JP	19	480	490		FTB 94 101 115 108		FTB 142 135	P	DS	TEXTURED TEXTURED
TX-28	13:50	EXT-21	DG	18	459	490		FTB 94 119 89 106		FTB 121 153	P	DS	

GEOMEMBRANE TRIAL SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

[ ] TF - # = FUSION
[X] TX - # = EXTRUSION

DATE: 26-Jul-18
SHEET NUMBER: 12

SAMPLE NUMBER	APROX. TIME	WELDING MACHINE NUMBER	WELD TECH.	TEMPERATURES: AMBIENT AIR TEMP.	PREHEAT OR MACHINE SPEED	EXTRUDER	NOZZLE OR WEDGE	TEST RESULTS: INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH	PASS OR FAIL	MON.	REMARKS
TX-29	10:45	EXT-21	CM	17	490	495		FTB 122 115 118 119		FTB 139 135	P	DS	

Appendix B-6

Geomembrane Seam Welding Inspection

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 13-Jul-18

SHEET NUMBER 1

X	FUSION
	EXTRUSION

MACHINE # WW-11

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-7	18:41	DM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P11/P12	EEOS	WEOS	18:50	31C	DM	600	440		63.2	63.0		DS		07/13/18	DS
2	P14/P15	EEOS	WEOS	19:10	31C	DM	600	440		62.0	125.2		DS		07/13/18	DS
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
								DAILY TOTAL		125.2						
								DESTRUCTIVE LENGTH CARRY - OVER			125.2					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 14-Jul-18

SHEET NUMBER 2

X	FUSION
	EXTRUSION

MACHINE # WW11

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-9	8:42	DM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P17/P18	EEOS	WEOS	11:01	29C	DM	600	440		64.0	146.0/43.2	DSF-6	DS		07/14/18	DS
2	P20/P21	EEOS	WEOS	11:30	31C	DM	600	440		63.0	106.2		AFK		07/14/18	DS
3	P23/P24	EEOS	WEOS	12:34	31C	DM	600	440		65.0	146.3/25	DSF-7	AFK		07/14/18	DS
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
								DAILY TOTAL		192.0						
								DESTRUCTIVE LENGTH CARRY - OVER			25.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 14-Jul-18

SHEET NUMBER 3

[X] FUSION
[ ] EXTRUSION

MACHINE # WW-11

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-12A	15:16	AM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P5/P6	SEOS	NEOS	15:21	32C	AM	500	440		7.4	32.4		DS		07/14/18	DS
2	P5/P7	SEOS	NEOS	15:25	32C	AM	500	440		7.4	39.8		DS		07/14/18	DS
3	P5/P8	SEOS	NEOS	15:29	32C	AM	500	440		7.4	47.8		DS		07/14/18	DS
4	P5/P9	SEOS	NEOS	15:33	32C	AM	500	440		7.4	54.6		DS		07/14/18	DS
5	P5/P11	SEOS	NEOS	15:37	32C	AM	500	440		7.4	62.0		DS		07/14/18	DS
6	P5/P12	SEOS	NEOS	15:41	32C	AM	500	440		7.4	69.4		DS		07/14/18	DS
7	P5/P13	SEOS	NEOS	15:45	32C	AM	500	440		7.4	76.8		DS		07/14/18	DS
8	P5/P14	SEOS	NEOS	15:49	32C	AM	500	440		7.4	84.2		DS		07/14/18	DS
9	P5/P15	SEOS	NEOS	15:53	32C	AM	500	440		7.4	91.6		DS		07/14/18	DS
10	P5/P16	SEOS	NEOS	15:57	32C	AM	500	440		7.4	99.0		DS		07/14/18	DS
11	P5/P17	SEOS	NEOS	16:01	32C	AM	500	440		7.4	106.4		DS		07/14/18	DS
12	P5/P18	SEOS	NEOS	16:05	32C	AM	500	440		7.4	113.8		DS		07/14/18	DS
13	P5/P19	SEOS	NEOS	16:09	32C	AM	500	440		7.4	121.8		DS		07/14/18	DS
14	P5/P20	SEOS	NEOS	16:13	32C	AM	500	440		7.4	128.6		DS		07/14/18	DS
15	P5/P21	SEOS	NEOS	16:17	32C	AM	500	440		7.4	136.0		DS		07/14/18	DS
16	P5/P22	SEOS	NEOS	16:21	32C	AM	500	440		7.4	143.4		DS		07/14/18	DS
17	P5/P23	SEOS	NEOS	16:25	32C	AM	500	440		7.4	150.8		DS		07/14/18	DS
								DAILY TOTAL		125.8						
								DESTRUCTIVE LENGTH CARRY - OVER			150.8					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

X FUSION

EXTRUSION

MACHINE # WW-11

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-12A	15:16	AM

DATE 14-Jul-18

SHEET NUMBER 4

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL	MACHINE TEMPERATURES INDICATOR WEDGE OR NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P5/P24	SEOS	NEOS	16:30	32C	AM	500	440		3.3	154.1		DS		07/14/18	DS
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 3.3 154.1

DESTRUCTIVE LENGTH CARRY - OVER

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

X FUSION

EXTRUSION

MACHINE # WW-11

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-32	11:56	AS

DATE 22-Jul-18

SHEET NUMBER 5

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL	MACHINE TEMPERATURES INDICATOR WEDGE OR NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P63/P64	NEOS	SEOS	12:08	25C	AS	450	430		35.0	189.1		AFK		07/23/18	DS
2	P65/P66	NEOS	SEOS	12:30	25C	AS	450	430		17.0	206.0		AFK		07/23/18	DS
3	P50/P67	WEOS	EEOS	13:50	25C	AS	450	430		10.0	216.0		AFK		07/23/18	DS
4	P67/P68	WEOS	EEOS	13:57	25C	AS	450	430		10.0	226.0		AFK		07/23/18	DS
5	P68/P69	WEOS	EEOS	14:00	25C	AS	450	430		3.0	229.0		AFK		07/23/18	DS
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 75.0

DESTRUCTIVE LENGTH CARRY - OVER 229.0

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 18-Jul-18

SHEET NUMBER 6

X	FUSION
	EXTRUSION

MACHINE # WW-1

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-16A	11:37	AM
TF-19	16:06	AM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P27/P28	SEOS	NEOS	12:23	28C	AM	460	500		105.0	105.0		AFK		07/18/18	DS
2	P30/P31	EEOS	WEOS	16:30	31C	AM	460	500		64.0	145/24	DSF12	AFK		07/18/18	DS
3	P31/P32	EEOS	WEOS	16:48	31C	AM	460	500		63.0	87.0		AFK		07/18/18	DS
4	P33/P34	EEOS	WEOS	17:09	31C	AM	460	500		62.0	149.0		AFK		07/18/18	DS
5	P38/P39	EEOS	WEOS	17:47	31C	AM	460	500		63.0	208/4	DSF14	AFK		07/18/18	DS
6	P40/P41	EEOS	WEOS	18:22	31C	AM	460	500		63.0	67.0		AFK		07/19/18	DS
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
								DAILY TOTAL		420.0						
								DESTRUCTIVE LENGTH CARRY - OVER			67.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

X FUSION

EXTRUSION

MACHINE # WW-1

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-22	15:50	GC

DATE 19-Jul-18

SHEET NUMBER 7

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P29/P43	NEOS	SEOS	16:00	28	AM	500	460		7.0	74.0		AFK		07/20/18	DS
2	P29/P42	NEOS	SEOS	16:05	28	AM	500	460		7.0	81.0		AFK		07/20/18	DS
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL 14.0

DESTRUCTIVE LENGTH CARRY - OVER 81.0

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 24-Jul-18

SHEET NUMBER 8

X	FUSION
	EXTRUSION

MACHINE # WW-1

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-25	15:15	KH

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P47/P48	EEOS	WEOS	15:38	26C	KH	600	460		76.0	270/2	DSF-17	AFK		07/22/18	DS
2	P52/P53	NEOS	SEOS	18:21	26C	KH	600	460		30.0	32.0		AFK		07/22/18	DS
3	P57/P58	NEOS	SEOS	18:47	26C	KH	600	460		35.0	67.0		AFK		07/22/18	DS
4	P59/P60	NEOS	SEOS	19:04	26C	KH	600	460		34.0	101.0		AFK		07/22/18	DS
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 175.0

DESTRUCTIVE LENGTH CARRY - OVER 101.0

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 22-Jul-18

SHEET NUMBER 9

X	FUSION
	EXTRUSION

MACHINE # WW-1

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-33	14:01	KH

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P64/P67	NEOS	SEOS	14:19	25C	KH	400	450		7.0	107.0		AFK		07/23/18	DS
2	P64/P68	NEOS	SEOS	14:23	25C	KH	400	450		2.0	109.0		AFK		EXTRUDED	DS
3	P65/P68	NEOS	SEOS	14:24	25C	KH	400	450		6.0	115.0		AFK		07/23/18	DS
4	P65/P69	NEOS	SEOS	14:30	25C	KH	400	450		7.0	122.0		AFK		07/23/18	DS
5	P66/P69	SEOS	NEOS	14:30	25C	KH	400	450		1.0	123.0		AFK		EXTRUDED	DS
6	P66/P68	SEOS	NEOS	14:40	25C	KH	400	450		7.0	130.0		AFK		07/23/18	DS
7	P66/P67	SEOS	NEOS	14:44	25C	KH	400	450		7.0	137.0		AFK		07/23/18	DS
8	P50/P66	WEOS	EEOS	14:46	25C	KH	400	450		3.0	140.0		AFK		07/23/18	DS
9	P50/P64	WEOS	EEOS	14:51	25C	KH	400	450		7.0	147.0		AFK		07/23/18	DS
10	P50/P63	WEOS	EEOS	14:55	25C	KH	400	450		7.0	154.0		AFK		07/23/18	DS
11	P50/P62	WEOS	EEOS	14:59	25C	KH	400	450		2.0	156.0		AFK		EXTRUDED	DS
12	P49/P62	WEOS	EEOS	15:00	25C	KH	400	450		5.0	161.0		AFK		07/23/18	DS
13	P49/P61	WEOS	EEOS	15:04	25C	KH	400	450		7.0	168.0		AFK		07/23/18	DS
14																
15																
16																
17																

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL 68.0
DESTRUCTIVE LENGTH CARRY - OVER 168.0

** COLUMNS TO BE USED
BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 13-Jul-18

SHEET NUMBER 10

X	FUSION
	EXTRUSION

MACHINE # WW-27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-1	13:10	AS
TF-6A	18:16	GC

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P1/P2	SEOS	NEOS	13:43	31C	AS	650	850		130.0	130.0		DS		07/13/18	DS
2	P4/P5	SEOS	NEOS	14:45	31C	AS	650	850		130.0	140/120	DSF-11	DS		07/13/18	DS
3	P8/P9	EEOS	WEOS	18:45	31C	GC	600	860		62.7	140/42	DSF-8	DS		07/15/18	DS
4	P8/P10	EEOS	WEOS	19:01	31C	GC	600	860		3.1	45.1		DS		07/15/18	DS
5	P12/P13	EEOS	WEOS	19:08	31C	GC	600	860		62.0	107.0		DS		07/13/18	DS
6	P15/P16	EEOS	WEOS	19:28	31C	GC	600	860		62.9	120.3/49.7	DSF-5	DS		07/13/18	DS
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
									DAILY TOTAL	128.0						
									DESTRUCTIVE LENGTH CARRY - OVER		49.7					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 14-Jul-18

SHEET NUMBER 11

[X] FUSION
[ ] EXTRUSION

MACHINE # WW-27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-8	8:38	GC

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P16/P17	EEOS	WEOS	10:47	29C	GC	600	860		64.6	114.3		DS		07/14/18	DS
2	P19/P20	EEOS	WEOS	11:19	31C	GC	600	860		64.0	178.3		DS		07/14/18	DS
3	P22/P23	EEOS	WEOS	11:45	31C	GC	600	860		65.0	243.3		DS		07/14/18	DS
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 193.6

DESTRUCTIVE LENGTH CARRY - OVER 243.3

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 18-Jul-18

SHEET NUMBER 12

X	FUSION
	EXTRUSION

MACHINE # WW-27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-15	10:57	GC
TF-18	15:56	GC

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P25/P26	SEOS	NEOS	11:50	28C	500	800			132.0	241.0		AFK		07/18/18	DS
2	P28/P29	SEOS	NEOS	12:50	28C	500	800			105.0	287/59	DSF-11	AFK		07/18/18	DS
3	P6/P30	EEOS	WEOS	16:15	31C	600	860			63.0	122.0		AFK		07/19/18	DS
4	P35/P36	EEOS	WEOS	17:12	31C	600	860			63.0	185.0		AFK		07/18/18	DS
5	P37/P38	EEOS	WEOS	17:47	31C	600	860			63.0	248.0		AFK		07/18/18	DS
6	P31/P32	EEOS	WEOS	16:46	31C	600	860			63.0	311.0		AFK		07/18/18	DS
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
								DAILY TOTAL		489.0						
								DESTRUCTIVE LENGTH CARRY - OVER			311.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

[ ] FUSION
[X] EXTRUSION

MACHINE # WW-27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-21	8:51	GC

DATE 19-Jul-18

SHEET NUMBER 13

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P29/P41	SEOS	NEOS	9:10	28C	GC	600	860		7.0	318.0		AFK		07/19/18	DS
2	P29/P40	SEOS	NEOS	9:12	28C	GC	600	860		7.0	325.0		AFK		07/19/18	DS
3	P29/P39	SEOS	NEOS	9:15	28C	GC	600	860		7.0	332.0		AFK		07/19/18	DS
4	P29/P38	SEOS	NEOS	9:16	28C	GC	600	860		7.0	336/3		AFK		07/19/18	DS
5	P29/P37	SEOS	NEOS	9:20	28C	GC	600	860		7.0	10.0		AFK		07/19/18	DS
6	P29/P36	SEOS	NEOS	9:23	28C	GC	600	860		7.0	17.0		AFK		07/19/18	DS
7	P29/P35	SEOS	NEOS	9:26	28C	GC	600	860		7.0	24.0		AFK		07/19/18	DS
8	P29/P34	SEOS	NEOS	9:29	28C	GC	600	860		7.0	31.0		AFK		07/19/18	DS
9	P29/P33	SEOS	NEOS	9:37	28C	GC	600	860		7.0	38.0		AFK		07/19/18	DS
10	P29/P32	SEOS	NEOS	9:35	28C	GC	600	860		7.0	45.0		AFK		07/19/18	DS
11	P29/P31	SEOS	NEOS	9:38	28C	GC	600	860		7.0	52.0		AFK		07/19/18	DS
12	P29/P30	SEOS	NEOS	9:41	28C	GC	600	860		7.0	59.0		AFK		07/19/18	DS
13	P41/P42	EEOS	WEOS	12:10	28C	GC	600	860		62.0	121.0		AFK		07/19/18	DS
14	P42/P43	EEOS	WEOS	12:33	28C	GC	600	860		62.0	183.0		AFK		07/19/18	DS
15																
16																
17																
									DAILY TOTAL	208.0						
									DESTRUCTIVE LENGTH CARRY - OVER		183.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 21-Jul-18

SHEET NUMBER 14

[X] FUSION
[ ] EXTRUSION

MACHINE # WW-27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-26	15:07	CS
TF-28A	19:40	CS

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P49/P50	NEOS	SEOS	15:15	26C	CS	600	859		7.0	81.0		AFK		EXTRUDED	DS
2	P48/P50	WEOS	EEOS	16:00	26C	CS	600	859		27.0	108.0		AFK		07/22/18	DS
3	P48/P49	WEOS	EEOS	16:15	26C	CS	600	859		51.0	159.0		AFK		07/22/18	DS
4	P44/P49	SEOS	NEOS	16:50	26C	CS	600	859		3.0	162.0		AFK		07/22/18	DS
5	P27/P49	SEOS	NEOS	16:55	26C	CS	600	859		4.0	166.0		AFK		07/22/18	DS
6	P27/P48	SEOS	NEOS	17:00	26C	CS	600	859		7.0	173.0		AFK		07/22/18	DS
7	P27/P47	SEOS	NEOS	17:05	26C	CS	600	859		7.0	180.0		AFK		07/22/18	DS
8	P27/P45	SEOS	NEOS	17:10	26C	CS	600	859		7.0	187.0		AFK		07/22/18	DS
9	P28/P45	EEOS	WEOS	17:12	26C	CS	600	859		7.0	194.0		AFK		07/22/18	DS
10	P43/P45	EEOS	WEOS	17:15	26C	CS	600	859		51.0	245.0		AFK		07/22/18	DS
11	P43/P46	EEOS	WEOS	17:30	26C	CS	600	859		11.0	247/9	DSF-16	AFK		07/22/18	DS
12	P51/P52	NEOS	SEOS	18:21	26C	CS	600	859		30.0	39.0		AFK	EXTR.9H-NEOS	07/22/18	DS
13	P55/P56	WEOS	EEOS	18:37	26C	CS	600	859		7.0	46.0		AFK		07/22/18	DS
14	P54/P56	EEOS	WEOS	18:42	26C	CS	600	859		2.0	48.0		AFK		07/22/18	DS
15	P54/P55	WEOS	EEOS	18:44	26C	CS	600	859		32.0	80.0		AFK		07/22/18	DS
16	P58/P59	NEOS	SEOS	18:58	26C	CS	600	859		37.0	117.0		AFK		07/22/18	DS
17	P49/P60	WEOS	EEOS	19:51	26C	CS	350	835		7.0	124.0		AFK		07/23/18	DS
								DAILY TOTAL		297.0						
								DESTRUCTIVE LENGTH CARRY - OVER			124.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

[ ] FUSION
[X] EXTRUSION

MACHINE # WW-27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF28A	19:40	CS

DATE: 21-Jul-18

SHEET NUMBER 15

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL	MACHINE TEMPERATURES INDICATOR WEDGE OR NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P49/P59	WEOS	EEOS	20:00	22C	CS	350	835		7.0	131.0		AFK		07/22/18	DS
2	P49/P58	WEOS	EEOS	20:03	22C	CS	350	835		7.0	138.0		AFK		07/22/18	DS
3	P49/P57	WEOS	EEOS	20:10	22C	CS	350	835		7.0	145.0		AFK		07/22/18	DS
4	P49/P56	WEOS	EEOS	20:15	22C	CS	350	835		7.0	152.0		AFK		07/22/18	DS
5	P49/P54	WEOS	EEOS	20:20	22C	CS	350	835		5.0	157.0		AFK		07/23/18	DS
6	P44/P54	WEOS	EEOS	20:23	22C	CS	350	835		2.0	159.0		AFK		07/22/18	DS
7	P44/P53	WEOS	EEOS	20:25	22C	CS	350	835		7.0	166.0		AFK		07/22/18	DS
8	P44/P52	WEOS	EEOS	20:30	22C	CS	350	835		7.0	173.0		AFK		07/22/18	DS
9	P44/P51	WEOS	EEOS	20:34	22C	CS	350	835		7.0	200.0		AFK		07/22/18	DS
10																
11																
12																
13																
14																
15																
16																
17																
								DAILY TOTAL		56.0						
								DESTRUCTIVE LENGTH CARRY - OVER			200.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 22-Jul-18

SHEET NUMBER 16

X	FUSION
	EXTRUSION

MACHINE # WW-27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-30	10:53	CS

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P60/P61	NEOS	SEOS	11:09	26C	CS	500	835		34.0	234.0		AFK		07/23/18	DS
2	P61/P62	NEOS	SEOS	11:31	26C	CS	500	835		34.0	268.0		AFK		07/23/18	DS
3	P62/P63	NEOS	SEOS	11:52	26C	CS	500	835		34.0	282/20	DSF-18	AFK		07/23/18	DS
4	P64/P65	NEOS	SEOS	12:12	26C	CS	500	835		25.0	45.0		AFK		07/23/18	DS
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 127.0

DESTRUCTIVE LENGTH CARRY - OVER 45.0

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE July 13. 2018

SHEET NUMBER 17

X	FUSION
	EXTRUSION

MACHINE # WW-15

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-2	13:32	AM
TF-4	17:25	AM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P2/P3	SEOS	NEOS	14:11	31C	AM	650	860		130.0	128/2	DSF-3	DS		07/13/18	DS
2	P6/P7	EEOS	WEOS	18:02	31C	AM	600	860		65.8	67.8		DS		07/13/18	DS
3	P7/P8	EEOS	WEOS	18:00	31C	AM	600	860		64.7	132.5		DS		07/13/18	DS
4	P9/P10	SEOS	NEOS	18:40	31C	AM	600	860		7.5	140.0		DS		07/13/18	DS
5	P9/P11	EEOS	WEOS	18:50	31C	AM	600	860		62.8	145/57.8	DSF-4	DS		07/13/18	DS
6	P13/P14	EEOS	WEOS	19:05	31C	AM	600	860		62.8	120.0		DS		07/13/18	DS
7	P10/P11	EEOS	WEOS	19:03	31C	AM	600	860		7.5	128.1		DS		EXTRUDED	DS
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 401.1

DESTRUCTIVE LENGTH CARRY - OVER 128.1

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 14-Jul-18

SHEET NUMBER 18

X	FUSION
	EXTRUSION

MACHINE # WW-15

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-10A	9:21	AM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P18/P19	EEOS	WEOS	11:08	31C	AM	550	860		64.4	192.5		DS		07/14/18	DS
2	P21/P22	EEOS	WEOS	11:43	31C	AM	550	860		63.0	255.5		DS		07/14/18	DS
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
	DAILY TOTAL									127.4						
	DESTRUCTIVE LENGTH CARRY - OVER										255.5					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 18-Jul-18

SHEET NUMBER 19

X	FUSION
	EXTRUSION

MACHINE # WW-15

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-15	10:57	AS
TF-20	16:27	AS

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P26/P27	SEOS	NEOS	12:11	28C	AS	600	860		132.0	300/54.4	DSF-10	DS		07/18/18	DS
2	P1/P25	EEOS	WEOS	14:40	30C	AS	600	860		6.0	60.4		AFK		07/18/18	DS
3	P1/P26	EEOS	WEOS	14:43	30C	AS	600	860		0.5	60.9		AFK		COVERED BY 6M	
4	P2/P26	EEOS	WEOS	14:43	30C	AS	600	860		6.0	66.9		AFK		07/18/18	DS
5	P2/P27	EEOS	WEOS	14:45	30C	AS	600	860		0.5	67.4		AFK		COVERED BY 6N	
6	P3/P27	EEOS	WEOS	14:45	30C	AS	600	860		6.0	73.4		AFK		07/18/18	DS
7	P3/P28	EEOS	WEOS	14:47	30C	AS	600	860		0.5	73.9		AFK		COVERED BY 6P	
8	P4/P28	EEOS	WEOS	14:47	30C	AS	600	860		6.0	79.9		AFK		07/19/18	DS
9	P4/P29	EEOS	WEOS	14:49	30C	AS	600	860		0.5	80.4		AFK		07/18/18	DS
10	P5/P29	EEOS	WEOS	14:49	30C	AS	600	860		6.0	86.4		AFK		07/18/18	DS
11	P32/P33	EEOS	WEOS	16;50	30C	AS	600	860		62.6	149.0		AFK		07/18/18	DS
12	P34/P35	EEOS	WEOS	15:21	31C	AS	600	860		63.0	212.0		AFK		07/18/18	DS
13	P36/P37	EEOS	WEOS	15:38	31C	AS	600	860		63.0	275.0		AFK		07/18/18	DS
14	P39/P40	EEOS	WEOS	18:12	31C	AS	600	860		63.0	277/61	DSF-13	AFK		07/18/18	DS
15																
16																
17																
									DAILY TOTAL	415.6						
									DESTRUCTIVE LENGTH CARRY - OVER		61.0m					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED
BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 19-Jul-18

SHEET NUMBER 20

X FUSION

EXTRUSION

MACHINE # WW-15

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-23	16:58	AM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P27/P44	WEOS	EEOS	17:58	28C	AM	500	860		7.0	68.0		AFK		07/20/18	DS
2	P26/P44	WEOS	EEOS	18:00	28C	AM	500	860		7.0	75.0		AFK		EXTRUDED	DS
3	P25/P44	WEOS	EEOS	18:03	28C	AM	500	860		7.0	82.0		AFK		07/20/18	DS
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 21.0

DESTRUCTIVE LENGTH CARRY - OVER 82.0

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 21-Jul-18

SHEET NUMBER 21

X	FUSION
	EXTRUSION

MACHINE # WW-15

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-24	15:09	AS
TF-27	19:00	AS

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P45/P46	NEOS	SEOS	15:32	26C	AS	600	830		7.0	89.0		AFK		07/22/18	DS
2	P45/P47	EEOS	WEOS	15:36	26C	AS	600	830		68.0	157.0		AFK		07/22/18	DS
3	P46/P47	EEOS	WEOS	15:40	26C	AS	600	830		11.0	168.0		AFK		07/22/18	DS
4	P53/P54	NEOS	SEOS	18:25	26C	AS	600	830		34.0	208.0		AFK		07/22/18	DS
5	P56/P57	NEOS	SEOS	18:41	26C	AS	600	830		2.0	204.0		AFK		07/22/18	DS
6	P55/P57	NEOS	SEOS	18:43	26C	AS	600	830		35.0	234.0		AFK	EXTRUDED	07/22/18	DS
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
								DAILY TOTAL		157.0						
								DESTRUCTIVE LENGTH CARRY - OVER			234.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 13-Jul-18

SHEET NUMBER 22

X	FUSION
	EXTRUSION

MACHINE # WW-9

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-3	13:57	DM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL	MACHINE TEMPERATURES INDICATOR WEDGE OR NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P3/P4	SEOS	NEOS	14:30	31C	DM	600	865		130.0	126/4	DSF-2	DS		07/13/18	DS
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL 130.0

DESTRUCTIVE LENGTH CARRY - OVER 4.0

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

[ ] FUSION
[X] EXTRUSION

MACHINE # EXT-5

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX-8	15:15	DP

DATE 15-Jul-18

SHEET NUMBER 1

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P1/ETI	36.2m	IT	15:25	25 C	DP	480	480		27.8	27.8		DS		07/25/18	CB
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL 27.8
DESTRUCTIVE LENGTH CARRY - OVER 27.8 m

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

[ ] FUSION
[X] EXTRUSION

MACHINE # EXT-6

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX-5	9:03	DP

DATE 15-Jul-18

SHEET NUMBER 2

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL	MACHINE TEMPERATURES INDICATOR WEDGE OR NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P10/P11	WEOS	EEOS	10:45	20 C	DP	485	485		3.0	3.0		AFK		07/16/18	DS
2	P1/ETI	2F	26.2m	12:00	20 C	DP	485	485		36.2	39.2		DS		07/15/18	DS
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 39.2

DESTRUCTIVE LENGTH CARRY - OVER 39.2

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 15-Jul-18

SHEET NUMBER 3

[ ] FUSION
[X] EXTRUSION

MACHINE # EXT-21

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX-6	9:14	GS
TX-7	14:40	GS

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	NTI/P5	WEOS	EEOS	10:00	18 C	GS	475	475		6.0	6.0		DS		07/15/18	DS
2	NTI/P4	WEOS	EEOS	10:10	18 C	GS	475	475		7.6	13.6		DS		07/15/18	DS
3	NTI/P3	WEOS	EEOS	10:22	19 C	GS	475	475		7.6	21.2		DS		07/15/18	DS
4	NTI/P2	WEOS	4M	11:06	19 C	GS	475	475		4.4	25.6		DS		07/15/18	DS
5	NTI/P2	4H	EEOS	11:18	19 C	GS	475	475		2.4	28.0		DS		07/15/18	DS
6	NTI/P1	WEOS	4J	11:22	19 C	GS	475	475		2.2	30.2		DS		07/15/18	DS
7	NTI/P1	WEOS	EEOS	12:00	19 C	GS	475	475		2.3	32.2		DS		07/15/18	DS
8	ETI/P1	NEOS	4N	12:55	19 C	GS	475	475		17.8	50/0	DSX-1	DS		07/15/18	DS
9	ETI/P1	4N	IT	17:12	19 C	GS	475	475		43.1	43.1		DS		07/15/18	DS
10																
11																
12																
13																
14																
15																
16																
17																
									DAILY TOTAL	93.4						
									DESTRUCTIVE LENGTH CARRY - OVER		43.1					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 16-Jul-18

SHEET NUMBER 4

[ ] FUSION

[X] EXTRUSION

MACHINE # EXT-21

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX-9	8:40	GS

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	NTI/P24	EEOS	4T	9:30	16C	GS	475	475		6.9	50.0/0	DSX-2	DS		07/16/18	DS
2	NTI/P24	4T	4S	9:39	18C	GS	475	475		37.3	37.3		DS		07/16/18	DS
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
								DAILY TOTAL		44.2						
								DESTRUCTIVE LENGTH CARRY - OVER			37.3					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 20-Jul-18

SHEET NUMBER 5

[ ] FUSION
[X] EXTRUSION

MACHINE # EXT-21

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX-13	8:48	JP
TX-15	15:18	DG

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P26/P44	WEOS	EEOS	10:10	22C	JP	475	485		7.0	44.3		DS		07/20/18	CB
2	S30/S31	WEOS	7L	12:15	22C	JP	475	485		15.0	49.3/0	DX-3	DS		07/20/18	CB
3	S29/S30	WEOS	7J	12:30	22C	JP	475	485		17.0	27.0		DS		07/20/18	CB
4	ETI/P25	NEOS	6B	13:45	22C	DG	480	490		8.5	35.5		DS		07/25/18	CB
5	ETI/P25	6B	6C	14:00	22C	DG	480	490		12.0	47.0/0	DSX-4	DS		07/25/18	CB
6	ETI/P25	6C	6D	14:15	22C	DG	480	490		12.0	12.0		DS		07/25/18	CB
7	ETI/P25	6D	6E	14:30	22C	DG	480	490		12.0	24.0		DS		07/25/18	CB
8	ETI/P25	6E	6F	14:40	22C	DG	480	490		12.0	36.0		DS		07/25/18	CB
9	ETI/P25	6F	6G	15:10	22C	DG	480	490		12.0	43.0/5	DX-5	DS		07/25/18	CB
10	ETI/P25	6G	6H	15:45	22C	DG	480	490		12.0	17.0		DS		07/25/18	CB
11	ETI/P25	6H	6J	16:05	22C	DG	480	490		12.0	29.0		DS		07/25/18	CB
12	ETI/P25	6J	6K	16:20	22C	DG	480	490		12.0	31.0		DS		07/25/18	CB
13	ETI/P25	6K	SEOS	16:45	22C	DG	480	490		11.0	35.0/6	DX-6	DS		07/25/18	CB
14	ETI/P1	2F	SEOS	13:40	22C	DG	480	490		2.0	8.0		DS		07/25/18	CB
15																
16																
17																
									DAILY TOTAL	156.5						
									DESTRUCTIVE LENGTH CARRY - OVER		8.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED
BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 22-Jul-18

SHEET NUMBER 6

[ ] FUSION
[X] EXTRUSION

MACHINE # EXT-21

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX17	8:50	JP
TX18	8:55	JP
TX19	13:53	JP

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P56/P57	SEOS	NEOS	10:35	26C	JP		480	490	2.0	9.0		DS		07/23/18	CB
2	P52/P53	9E	9F	11:45	26C	JP		480	490	10.0	19.0		DS		07/23/18	CB
3	P51/P52	9M	8N	12:30	26C	JP		480	490	8.0	27.0		DS		07/23/18	CB
4	P52/P53	9F	8M	14:15	26C	JP		480	490	5.0	32.0		DS		07/23/18	CB
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 25.0

DESTRUCTIVE LENGTH CARRY - OVER 32.0

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 23-Jul-18

SHEET NUMBER 7

[ ] FUSION
[X] EXTRUSION

MACHINE # EXT-21

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX20	8:44	JP
TX21	8:48	JP
TX22	8:50	JP

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P50/P62	9P	9K	9:32	17C	JP				2.0	34.0		DS		07/23/18	CB
2	P49/P50	SEOS	NEOS	11:00	17C	JP				7.0	41.0		DS		07/23/18	CB
3	P49/P62	EEOS	WEOS	11:12	17C	JP				2.0	43.0		DS		07/23/18	CB
4	P64/P68	NEOS	SEOS	11:15	17C	JP				2.0	45.0		DS		07/23/18	CB
5	P66/P69	SEOS	NEOS	11:20	17C	JP				1.0	46.0		DS		07/23/18	CB
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
								DAILY TOTAL		14.0						
								DESTRUCTIVE LENGTH CARRY - OVER			150.8					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 24-Jul-18

SHEET NUMBER 8

[ ] FUSION
[X] EXTRUSION

MACHINE # EX21

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX25	8:45	JP
TX26	8:45	JP
TX27	10:45	JP

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	ETI/P44	9R	NEOS	10:37	19C	JP	480		490	7.0	49.0/4.0	DSX7	DS	DSX7	07/25/18	CB
2	ETI/SPB	9V	9U	10:40	19C	JP	480		490	3.0	7.0		DS		07/25/18	CB
3	SPB/P51	9U	SEOS	11:00	19C	JP	480		490	23.0	30.0		DS		07/25/18	CB
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 33.0

DESTRUCTIVE LENGTH CARRY - OVER 30.0

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

[ ] FUSION
[X] EXTRUSION

MACHINE # EXT21

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX29	10:45	CM

DATE 26-Jul-18

SHEET NUMBER 9

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	NTI/P24	4S	10P	11:35	17C	CM	490		495	1.8	31.8		DS		07/26/18	CB
2	NTI/P24	10P	10Q	11:43	17C	CM	490		495	4.0	35.8		DS		07/26/18	CB
3	NTI/P24	10Q	10R	12:30	17C	CM	490		495	3.1	36.9		DS		07/26/18	CB
4	NTI/P24	10R	10S	14:00	17C	CM	490		495	3.7	40.6		DS		07/26/18	CB
5	NTI/P24	10S	WEOS	14:20	17C	CM	490		495	2.3	42.9		DS		07/26/18	CB
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 14.9

DESTRUCTIVE LENGTH CARRY - OVER 42.9

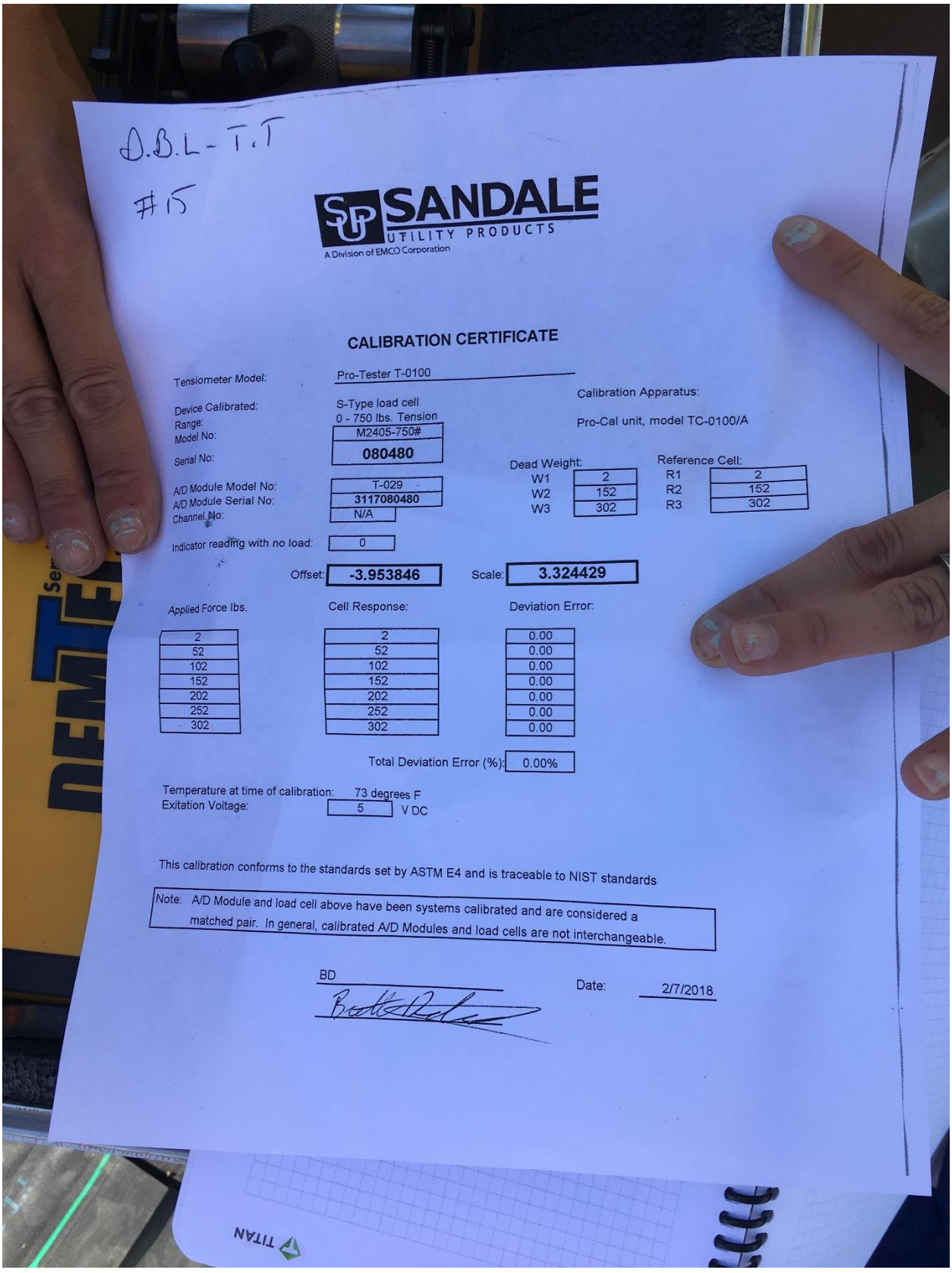
* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

Appendix B-7

Geomembrane Seam Destructive Test Summary

- Tensiometer Certificate of Calibration
- Seam Destructive Test Summary



D.B.L - T.T

#15

SANDALE
UTILITY PRODUCTS
A Division of EMCO Corporation

CALIBRATION CERTIFICATE

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
Range: 0 - 750 lbs. Tension
Model No: M2405-750#
Serial No: 080480

Calibration Apparatus:
Pro-Cal unit, model TC-0100/A

A/D Module Model No: T-029
A/D Module Serial No: 3117080480
Channel No: N/A

Dead Weight:
W1 2
W2 152
W3 302

Reference Cell:
R1 2
R2 152
R3 302

Indicator reading with no load: 0

Offset: -3.953846 Scale: 3.324429

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F
Exitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

BD

Date: 2/7/2018

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 14, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF1	7/13/2018	P4/P5 10.0m N of SEOS	3A	FTB 94 103 102 102 112	FTB 125 102 110 129 103	FTB 132 136 135 133 136	PASS	AFK	
DSF2	7/13/2018	P3/P4 5.0m S of NEOS	4B	FTB 101 96 111 117 124	FTB 112 129 95 117 104	FTB 133 133 128 133 126	PASS	AFK	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 14, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
		P2/P3		FTB	FTB	FTB			
DSF3	7/13/2018	2.0m S of NEOS	4E	99 104 103 27 98	104 117 100 96 97	121 120 125 127 126	PASS	AFK	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 15, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF5	7/14/2018	P15/P16 13.2m W of EEOS	3C	FTB 119 138 120 124 124	FTB 119 122 104 127 122	FTB 151 155 148 150 147	PASS	AFK	
DSF4	7/14/2018	P9/P11 5.0m W of EEOS	3B	FTB 119 115114 118 124	FTB 129 29 118 123 115	FTB 139 135 140 140 147	PASS	AFK	
DSF7	7/14/2018	P23/P24 40.0m E of WEOS	4L	FTB 129 115 127 131 110	FTB 119 117 108 112 128	FTB 132 139 151 152 130	PASS	AFK	
DSF8	7/15/2018	P8/P9 20.0m Wof EEOS	6A	FTB 108 126 106 124 121	FTB 109 117 116 111 112	FTB 143 148 142 149 138	PASS	AFK	
DSF6	7/14/2018	P17/P18 20.8m W of EEOS	4F	FTB 109 115 107 132 121	FTB 106 111 110 120 107	FTB 139 142 132 140 134	PASS	AFK	
DSX1	7/15/2018	P1/ETI 17.0m S of NEOS	4N	FTB 98 106 94 97 117		FTB 129 131 121 127 130	PASS	AFK	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 16, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
		P3/P4		FTB		FTB			
DSX2	07/16/18	6.9m W of EEOS	4T	107 121 105 114 117		137 136 145 135 133	PASS	DS	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 17, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
		S1/S3		FTB	FTB	FTB			
DSF9	07/17/18	1.0m W of EEOS	-	117 114 121 116 124	116 114 121 117 123	122 121 134 123 123	PASS	AFK	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 18, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF11	07/18/18	P28/P29 46.0m N of SEOS	2P	FTB 103 103 107 104 99	FTB 99 100 98 101 104	FTB 130 120 139 124 138	PASS	DS	
DSF10	07/18/18	P26/P27 77.6m N of SEOS	6L	FTB 116 113 102 118 107	FTB 106 107 114 108 107	FTB 122 121 127 123 123	PASS	DS	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 19, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSF13	07/18/18	P39/P40 2.0m W of EEOS	6X	FTB 106 115 121 110 89	FTB 117 116 121 126 105	FTB 127 123 136 131 130	PASS	DS	
DSF15	07/19/18	P29/P39 4.0m N of SEOS	7B	FTB 116 113 117 119 99	FTB 102 102 103 104 120	FTB 126 126 120 125 124	PASS	DS	
DSF12	07/18/18	P30/P31 40.0m E of WEOS	6U	FTB 109 109 115 110 111	FTB 112 115 118 114 116	FTB 135 133 125 125 133	PASS	DS	
DSF14	07/18/18	P38/P39 4.0m E OF WEOS	7A	FTB 111 112 117 108 110	FTB 120 108 121 110 101	FTB 122 126 126 125 125	PASS	DS	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 20, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
DSX3	07/20/18	P30/P31 5.0m E of WEOS	7L	FTB 116 116 110 116 120		FTB 147 130 148 146 129	PASS	DS	
DSX5	07/20/18	ETI/P25 87.0m S of NEOS	5X	FTB 108 123 119 128 115		FTB 126 126 128 122 131	PASS	DS	
DSX4	07/20/18	ETI/P25 22.0m S of NEOS	5W	FTB 99 122 120 124 102		FTB 132 126 128 133 129	PASS	DS	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 21, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
		ETI/P25		FTB		FTB			
DSX6	07/20/18	120.0m S of NEOS	7M	123 96 76 95 91		150 144 151 131 136	PASS	DS	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 23, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
		P63/P62		FTB	FTB	FTB			TEXTURED
DSF18	07/22/18	14.0m S of NEOS	8D	121 119 117 117 134	124 113 129 119 121	123 133 138 145 126	PASS	DS	TEXTURED
		P47/P48		FTB	FTB	FTB			
DSF17	07/21/18	2.0m E of WEOS	8C	117 101 116 111 109	111 111 116 116 106	138 133 135 134 138	PASS	DS	
		P43/P46		FTB	FTB	FTB			
DSF16	07/21/18	2.0m E of WEOS	8B	118 112 104 110 111	111 98 111 116 115	123 137 134 140 122	PASS	DS	

GEOMEMBRANE DESTRUCTIVE TESTING SUMMARY LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE: July 24, 2018

SAMPLE NUMBER	DATE	APPROXIMATE LOCATION	REPAIR CODE	TEST RESULTS			PASS OR FAIL	MON.	REMARKS
				INSIDE PEEL MODE STRENGTH	OUTSIDE PEEL MODE STRENGTH	SHEAR MODE STRENGTH			
		P44/ETI		FTB		FTB			
DSX7	07/24/18	3.0m S of NEOS	9T	95 101 109 87 118		129 128 126 129 125	PASS	DS	

Appendix B-8

Geomembrane Seam Pressure Test Summary

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 13-Jul-18

Sheet Number 1

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P1/P2	SEOS	2G	1	DP	14:09	14:14	40	39	Y	P	N		CB	
2	P1/P2	2G	2H	2	DP	14:24	14:29	42	42	Y	P	N		CB	
3	P1/P2	2H	2J	1	DP	14:41	14:46	42	40	Y	P	N		CB	
4	P1/P2	2J	NEOS	2	DP	14:51	14:58	43	41	Y	P		Y	CB	
5	P2/P3	NEOS	SEOS	1	DP	15:00	15:05	38	37	Y	P		Y	CB	
6	P3/P4	NEOS	SEOS	2	DP	15:14	15:19	46	45	Y	P		Y	CB	
7	P4/P5	NEOS	SEOS	1	DP	15:40	15:45	54	53	Y	P		Y	CB	
8	P6/P7	4C	EEOS	1	DP	18:30	18:35	38	37	Y	P	N		CB	
9	P6/P7	4C	WEOS	1	DP	18:42	18:47	48	46	Y	P		Y	CB	
10	P9/P10	NEOS	SEOS	1	DP	18:52	18:57	35	33	Y	P		Y	AFK	
11	P7/P8	WEOS	EEOS	1	DP	19:00	19:05	44	42	Y	P		Y	AFK	
12	P11/P12	WEOS	EEOS	1	DP	19:20	19:25	46	46	Y	P		Y	AFK	
13	P12/P13	WEOS	EEOS	1	DP	19:30	19:35	54	53	Y	P		Y	AFK	
14	P13/P14	WEOS	EEOS	1	DP	19:32	19:37	50	49	Y	P		Y	AFK	
15	P14/P15	WEOS	EEOS	1	DP	19:40	19:45	40	38	Y	P		Y	AFK	
16	P15/P16	WEOS	EEOS	1	DP	19:53	19:58	40	39	Y	P		Y	AFK	
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 14-Jul-18

Sheet Number 2

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P5/P15	NEOS	SEOS	1	DP	18:23	18:28	48	46	Y	P		Y	CB	
2	P5/P16	SEOS	NEOS	2	DP	18:23	18:28	46	45	Y	P		Y	CB	
3	P5/P17	WEOS	EEOS	1	DP	18:32	18:37	52	50	Y	P		Y	CB	
4	P5/P18	SEOS	NEOS	2	DP	18:32	18:37	48	46	Y	P		Y	CB	
5	P5/P19	NEOS	SEOS	1	DP	18:41	18:46	48	47	Y	P		Y	CB	
6	P5/P20	SEOS	NEOS	2	DP	18:40	18:46	48	46	Y	P		Y	CB	
7	P5/P21	NEOS	SEOS	1	DP	18:49	18:54	52	50	Y	P		Y	CB	
8	P5/P22	SEOS	NEOS	2	DP	18:49	18:54	46	45	Y	P		Y	CB	
9	P5/P28	NEOS	SEOS	1	DP	18:56	19:01	45	45	Y	P		Y	CB	
10	P5/P24	SEOS	NEOS	2	DP	18:56	19:01	46	45	Y	P		Y	CB	
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 14-Jul-18

Sheet Number 3

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P16/P17	WEOS	EEOS	1	DP	11:23	11:27	45	43	Y	P		Y	CB	
2	P17/P19	WEOS	EEOS	2	DP	11:25	11:30	49	45	Y	F	N		CB	
3	P17/P18	WEOS	EEOS	3	DP	11:39	11:44	42	41	Y	P		Y	CB	
4	P18/P19	WEOS	EEOS	1	DP	11:24	11:47	45	44	Y	P		Y	CB	
5	P19/P20	WEOS	EEOS	2	DP	11:50	11:55	49	47	Y	P		Y	CB	
6	P20/P21	WEOS	4G	3	DP	12:10	12:15	43	41	Y	P	N		CB	
7	P21/P22	WEOS	EEOS	1	DP	12:15	12:20	48	47	Y	P		Y	CB	
8	P22/P23	WEOS	EEOS	2	DP	12:20	12:25	38	37	Y	P		Y	CB	
9	P20/P21	4G	EEOS	3	DP	12:33	12:38	39	37	Y	P		Y	CB	
10	P23/P24	WEOS	EEOS	1	DP	14:19	14:24	42	40	Y	P		Y	CB	
11	P5/P8	SEOS	NEOS	2	DP	17:20	17:25	45	44	Y	P		Y	CB	
12	P5/P9	SEOS	NEOS	3	DP	17:24	17:29	39	38	Y	P		Y	CB	
13	P5/P7	NEOS	SEOS	1	DP	17:58	18:03	45	43	Y	P		Y	CB	
14	P5/P11	NEOS	SEOS	2	DP	18:06	18:11	53	51	Y	P		Y	CB	
15	P5/P12	NEOS	SEOS	1	DP	18:06	18:11	49	48	Y	P		Y	CB	
16	P5/P13	NEOS	SEOS	1	DP	18:15	18:20	48	47	Y	P		Y	CB	
17	P5/P14	SEOS	NEOS	2	DP	18:15	18:20	47	46	Y	P		Y	CB	
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmential

Date : 15-Jul-18

Sheet Number 4

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P8/P10	NEOS	EEOS	1	DP	10:00	10:05	56	56	Y	P		Y	CB	
2	P8/P9	WEOS	EEOS	1	DP	10:20	10:25	41	41	Y	P		Y	CB	
3	P9/P11	WEOS	3B	1	DP	11:08	11:13	38	38	Y	P		Y	CB	
4	P9/P11	3B	EEOS	1	DP	14:58	15:03	44	43	Y	P		Y	CB	
5	P5/P6	WEOS	SEOS	1	DP	17:58	18:03	45	43	Y	P		Y	CB	
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 18-Jul-18

Sheet Number 5

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P26/P27	NEOS	SEOS	1	DP	13:17	13:22	43	41	Y	P		Y	AFK	
2	P27/P28	NEOS	SEOS	2	DP	13:20	13:25	44	44	Y	P		Y	AFK	
3	P28/P29	NEOS	SEOS	3	DP	13:22	13:27	52	50	Y	P		Y	AFK	
4	P25/P26	NEOS	SEOS	1	DP	17:40	17:45	45	45	Y	P		Y	CB	
5	P1/P25	WEOS	EEOS	2	DP	17:40	17:45	35	35	Y	P		Y	CB	
6	P2/P26	EEOS	WEOS	3	DP	17:40	17:45	40	38	Y	P		Y	CB	
7	P5/P29	EEOS	WEOS	1	DP	17:58	18:03	44	41	Y	P		Y	CB	
8	P30/P31	EEOS	6B	1	DP	18:21	18:26	43	40	Y	P	N		CB	
9	P30/P31	6B	6S	1	DP	18:28	18:33	45	45	Y	P	N		CB	
10	P30/P31	6S	WEOS	1	DP	18:40	18:45	44	44	Y	P		Y	CB	
11	P31/P32	EEOS	6T	1	DP	18:47	18:52	43	43	Y	P	N		CB	
12	P32/P33	EEOS	WEOS	1	DP	18:54	18:59	49	47	Y	P		Y	CB	
13	P34/P35	EEOS	WEOS	1	DP	18:58	19:54	54	53	Y	P		Y	CB	
14	P35/P36	EEOS	WEOS	1	DP	19:05	19:10	50	49	Y	P		Y	CB	
15	P36/P37	6W	WEOS	2	DP	18:09	18:14	50	49	Y	P		Y	CB	
16	P37/P38	EEOS	WEOS	1	DP	18:12	18:17	45	44	Y	P		Y	CB	
17	P38/P39	EEOS	WEOS	2	DP	18:16	18:21	49	48	Y	P		Y	CB	
18	P39/P40	EEOS	WEOS	1	DP	18:20	18:25	50	49	Y	P		Y	CB	
19	P1/P26	EEOS	WEOS	1	DP	17:40	17:45	40	38	Y	P		Y	CB	
20	P3/P27	EEOS	WEOS	1	DP	9:45	9:50	41	38	Y	P		Y	CB	2W-5M

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 18-Jul-18

Sheet Number 6

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P4/P28	EEOS	WEOS	1	DP	9:42	9:47	47	46	Y	P		Y	CB	
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 19-Jul-18

Sheet Number 7

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P40/P41	EEOS	2S	1	DP	9:04	9:09	45	42	Y	P		Y	DS	
2	P40/P41	2S	WEOS	2	DP	9:05	9:10	44	44	Y	P		Y	DS	
3	P6/P30	EEOS	WEOS	1	DP	9:30	9:35	48	47	Y	P		Y	DS	
4	P4/P28	2U	WEOS	1	DP	9:42	9:47	47	46	Y	P		Y	DS	
5	P3/P27	2W	EEOS	1	DP	9:49	9:54	41	38	Y	P		Y	DS	
6	P29/P30	SEOS	NEOS	1	DP	10:25	10:30	45	44	Y	P		Y	DS	
7	P29/P31	NEOS	SEOS	2	DP	10:25	10:30	45	45	Y	P		Y	DS	
8	P29/P32	SEOS	NEOS	1	DP	10:31	10:36	44	42	Y	P		Y	DS	
9	P29/P33	NEOS	SEOS	2	DP	10:31	10:36	42	42	Y	P		Y	DS	
10	P33/P34	EEOS	WEOS	1	DP	10:38	10:43	48	47	Y	P		Y	DS	
11	P29/P34	NEOS	SEOS	2	DP	10:38	10:43	50	48	Y	P		Y	DS	
12	P29/P35	SEOS	NEOS	1	DP	10:54	10:59	44	42	Y	P		Y	DS	
13	P29/P36	NEOS	SEOS	2	DP	10:54	10:59	44	42	Y	P		Y	DS	
14	P29/37	SEOS	NEOS	1	DP	11:01	11:06	43	40	Y	P		Y	DS	
15	P29/P38	NEOS	SEOS	2	DP	11:01	11:06	45	43	Y	P		Y	DS	
16	P29/P39	SEOS	NEOS	1	DP	11:09	11:14	44	44	Y	P		Y	DS	
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 19-Jul-18

Sheet Number 8

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P29/S40	NEOS	SEOS	2	DP	11:09	11:14	44	44	Y	P		Y	CB	
2	P29/S41	SEOS	NEOS	1	DP	11:15	11:20	45	43	Y	P		Y	CB	
3	P41/P42	WEOS	EEOS	1	DP	12:46	12:51	45	44	Y	P		Y	CB	
4	P42/P43	WEOS	EEOS	1	DP	12:59	13:04	45	43	Y	P		Y	CB	
5	P36/P37	6W	WEOS	1	DP	7:09	7:14	50	48	Y	P		Y	CB	
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 20-Jul-18

Sheet Number 9

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P25/P44	WEOS	EEOS	1	DP	10:05	10:10	38	38	Y	P		Y	DS	
2	P27/P44	WEOS	EEOS	2	DP	10:54	10:59	42	40	Y	P		Y	DS	
3	P29/P42	SEOS	NEOS	1	DP	11:01	11:06	35	34	Y	P		Y	CB	
4	P29/P43	SEOS	NEOS	2	DP	12:11	12:16	37	35	Y	P		Y	CB	
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 22-Jul-18

Sheet Number 10

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P44/P51	WEOS	EEOS	1	DP	9:20	9:25	45	45	Y	P		Y	DS	
2	P44/P53	WEOS	EEOS	1	DP	9:34	9:39	44	43	Y	P		Y	DS	
3	P53/P54	NEOS	SEOS	1	DP	9:44	9:49	43	41	Y	P		Y	DS	
4	P44/P49	WEOS	EEOS	2	DP	9:44	9:49	43	42	Y	P		Y	DS	
5	P44/P54	WEOS	EEOS	1	DP	9:57	10:03	45	45	Y	P		Y	DS	
6	P54/P56	NEOS	SEOS	2	DP	10:03	10:08	34	32	Y	P		Y	DS	
7	P55/P56	EEOS	WEOS	1	DP	10:05	10:10	45	43	Y	P		Y	DS	
8	P54/P55	WEOS	EEOS	2	DP	10:09	10:14	45	44	Y	P		Y	DS	
9	P49/P56	EEOS	WEOS	1	DP	10:11	10:16	45	44	Y	P		Y	DS	
10	P56/P57	SEOS	NEOS	1	DP	10:19	10:24	41	39	Y	P		Y	DS	
11	P55/P57	NEOS	SEOS	2	DP	10:19	10:24	40	-	Y	F	N		CB	EXTRUDED
12	P49/P57	EEOS	WEOS	1	DP	10:26	10:31	44	44	Y	P		Y	CB	
13	P57/P58	NEOS	SEOS	1	DP	10:34	10:39	40	39	Y	P		Y	DS	
14	P49/P58	EEOS	WEOS	1	DP	10:34	10:39	46	45	Y	P		Y	CB	
15	P58/P59	NEOS	SEOS	1	DP	10:53	10:58	44	43	Y	P		Y	DS	
16	P49/P59	EEOS	WEOS	2	DP	10:53	10:58	48	47	Y	P		Y	DS	
17	P59/P60	NEOS	SEOS	1	DP	11:04	11:09	42	40	Y	P		Y	DS	
18	P49/P60	EEOS	WEOS	2	DP	11:10	11:15	57	55	Y	P		Y	DS	
19	P44/P52	EEOS	WEOS	1	DP	11:21	11:26	49	48	Y	P		Y	DS	
20	P44/P52	9D	8M	1	DP	11:28	11:33	50	47	Y	P		Y	DS	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 22-Jul-18

Sheet Number 11

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P52/P53	9F	SEOS	1	DP	11:58	12:03	39	37	Y	P		Y	DS	9F-NEOS EXTR.
2	P51/P52	9G	SEOS	1	DP	12:05	12:10	43	42	Y	P	N		DS	
3	P51/P52	9G	9H	1	DP	12:22	12:17	44	41	Y	P		Y	DS	9H-NEOS EXTR.
4	P45/P46	NEOS	SEOS	1	DP	14:32	14:37	36	36	Y	P		Y	CB	
5	P43/P45	WEOS	EEOS	2	DP	14:32	14:37	40	38	Y	P		Y	CB	
6	P43/P46	EEOS	WEOS	3	DP	14:32	14:37	35	34	Y	P		Y	CB	
7	P46/P47	WEOS	EEOS	1	DP	14:43	14:47	44	43	Y	P		Y	CB	
8	P45/P47	WEOS	EEOS	2	DP	14:43	14:47	44	43	Y	P		Y	CB	
9	P47/P48	WEOS	EEOS	1	DP	14:51	14:56	32	31	Y	P		Y	CB	
10	P48/P50	NEOS	SEOS	1	DP	15:02	15:07	44	44	Y	P		Y	CB	
11	P48/P49	WEOS	EEOS	2	DP	15:02	15:07	44	44	Y	P		Y	CB	
12	P38/P45	WEOS	EEOS	1	DP	15:12	15:17	42	42	Y	P		Y	CB	
13	P29/P45	EEOS	WEOS	2	DP	15:12	15:17	47	45	Y	P		Y	CB	
14	P27/P45	SEOS	NEOS	1	DP	15:20	15:25	39	38	Y	P		Y	CB	
15	P27/P47	NEOS	SEOS	2	DP	15:20	15:25	66	65	Y	P		Y	CB	
16	P27/P48	SEOS	NEOS	1	DP	15:27	15:32	44	41	Y	P		Y	CB	
17	P27/P49	NEOS	SEOS	2	DP	15:33	15:38	53	52	Y	P		Y	CB	
18	P44/P49	NEOS	SEOS	1	DP	15:41	15:46	42	39	Y	P		Y	CB	
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 23-Jul-18

Sheet Number 12

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P62/P63	NEOS	SEOS	1	DP	8:56	9:01	45	45	Y	P		Y	CB	
2	P62/P63	8D	NEOS	1	DP	9:22	9:27	42	40	Y	P		Y	CB	
3	P60/P61	NEOS	SEOS	1	DP	9:30	9:35	48	46	Y	P		Y	CB	
4	P49/P61	EEOS	WEOS	2	DP	9:30	9:35	46	45	Y	P		Y	CB	
5	P49/P62	EEOS	WEOS	1	DP	9:39	9:44	48	48	Y	P		Y	CB	
6	P61/P62	NEOS	SEOS	2	DP	9:39	9:44	47	47	Y	P		Y	CB	
7	P50/P63	EEOS	WEOS	1	DP	9:49	9:54	44	44	Y	P		Y	CB	
8	P63/P64	NEOS	SEOS	1	DP	9:56	10:01	50	47	Y	P		Y	CB	
9	P64/P50	EEOS	WEOS	2	DP	9:56	10:01	50	48	Y	P		Y	CB	
10	P67/P68	EEOS	WEOS	1	DP	10:09	10:14	45	45	Y	P		Y	CB	
11	P64/P65	NEOS	SEOS	1	DP	10:23	10:28	45	43	Y	P		Y	CB	
12	P64/P69	NEOS	SEOS	1	DP	10:33	10:38	49	49	Y	P		Y	CB	
13	P65/P69	EEOS	WEOS	2	DP	10:33	10:38	45	44	Y	P		Y	CB	
14	P65/P66	NEOS	SEOS	1	DP	10:46	10:51	47	46	Y	P		Y	CB	
15	P66/P68	8W	NEOS	1	DP	10:52	10:57	54	54	Y	P		Y	CB	
16	P50/P56	EEOS	WEOS	2	DP	11:03	11:08	54	53	Y	P		Y	CB	
17	P65/P68	NEOS	SEOS	1	DP	11:10	11:15	52	52	Y	P		Y	CB	
18	P50/P67	EEOS	WEOS	1	DP	11:19	11:24	48	48	Y	P		Y	CB	
19	P68/P69	EEOS	WEOS	2	DP	10:33	10:30	45	44	Y	P		Y	CB	
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : July 23. 2018

Sheet Number 13

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P64/P67	NEOS	SEOS	1	DP	11:23	11:28	45	44	Y	P		Y	CB	
2	P50/P67	EEOS	WEOS	1	DP	11:35	11:40	48	48	Y	P		Y	CB	1/2 WAY UP TO TOP
3	P50/P67	EEOS	WEOS	1	DP	11:19	11:54	45	45	Y	P		Y	CB	
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : July 23. 2018

Sheet Number 14

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	P49/P56	EEOS	WEOS	1	DP	10:11	10:16	45	44	Y	P		Y	DS	
2	P49/P54	WEOS	EEOS	1	DP	9:57	10:02	45	45	Y	P		Y	DS	
3	P44/P51	EEOS	WEOS	1	DP	9:20	9:25	45	45	Y	P		Y	DS	
4	P64/P68	NEOS	SEOS	1	DP	10:11	10:16	52	52	Y	P		Y	DS	
5	P64/P69	NEOS	SEOS	1	DP	10:33	10:38	49	49	Y	P		Y	DS	
6	P49/P60	EEOS	WEOS	1	DP	11:11	11:16	57	55	Y	P		Y	DS	
7	P65/P69	NEOS	SEOS	1	DP	10:33	10:38	49	49	Y	P		Y	DS	
8	P64/P50	EEOS	WEOS	1	DP	9:56	10:01	50	48	Y	P		Y	DS	
9	P50/P63	EEOS	WEOS	1	DP	9:49	10:54	44	44	Y	P		Y	DS	
10	P49/P62	EEOS	WEOS	1	DP	9:39	10:44	48	48	Y	P		Y	DS	
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

Appendix B-9

Geomembrane Defect Summary

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 1

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P1/ETI	4.7 m S of NEOS	INT	AFK		7/15/18	7/15/18
B	~	~	~	~		~	~
C	P1/ETI	8.2 m S og NEOS	D	AFK		7/15/18	7/16/18
D	P1/ETI	11.3 m S of NEOS	INT	AFK		7/15/18	7/15/18
E	P1/ETI	15 m S of NEOS	D	AFK		7/15/18	7/16/18
F	P1/ETI	18.1 m S of NEOS	INT	AFK	4 N COVERS 1F	4 N COVERS 1F	4 N COVERS 1F
G	P1/ETI	21.4 m S of NEOS	D	AFK		7/15/18	7/16/18
H	P1/ETI	24.8 m S of NEOS	INT	AFK		7/15/18	7/15/18
J	P1/ETI	27.4 m S of NEOS	D	AFK		7/15/18	7/16/18
K	P1/ETI	31.7 m S of NEOS	INT	AFK		7/15/18	7/15/18
L	P1/ETI	33.9 m S of NEOS	D	AFK		7/15/18	7/16/18
M	P1/ETI	38.4 m S of NEOS	INT	AFK		7/15/18	7/15/18
N	P1/ETI	40.3 m S of NEOS	D	AFK		7/15/18	7/16/18
P	P1/ETI	45.1 m S of NEOS	D	AFK		7/15/18	7/16/18
Q	P1/ETI	51.8 m S of NEOS	INT	AFK		7/15/18	7/15/18
R	P1/ETI	53.3 m S of NEOS	D	AFK		7/15/18	7/16/18
S	P1/ETI	58.6 m S of NEOS	INT	AFK		7/15/18	7/15/18
T	P1/ETI	62.1 m S of NEOS	D	AFK		7/15/18	7/16/18
U	P1/ETI	65.3 m S of NEOS	INT	AFK		7/15/18	7/20/18
V	P1/ETI	72 m S of NEOS	D	AFK		7/15/18	7/20/18
W	P1/ETI	78 m S of NEOS	INT	AFK		7/15/18	7/20/18
X	P1/ETI	85.6 m S of NEOS	D	AFK		7/15/18	7/20/18

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 2

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P1/ETI	92.2 m S of NEOS	INT	AFK		07/15/18	07/15/18
B	P1/ETI	98.8 m S of NEOS	D	AFK		07/15/18	07/16/18
C	P1/ETI	105.7 m S of NEOS	INT	AFK		07/15/18	07/15/18
D	P1/ETI	112.4 m S of NEOS	D	AFK		07/15/18	07/15/18
E	P1/ETI	119.4 m S of NEOS	INT	AFK		07/15/18	07/25/18
F	P1/ETI	125.0 m S of NEOS	D	AFK		07/15/18	07/15/18
G	P1/P2	29.5 m N of SEOS	BO	CB		07/13/18	07/14/18
H	P1/P2	76.0 m N of SEOS	BO	CB		07/13/18	07/14/18
J	P1/P2	122.7 m N of SEOS	BO	CB		07/13/18	07/14/18
K	P2/P3/NTI	INT	T	CB		07/15/18	07/20/18
L	P3/P4/NTI	INT	T	CB		07/15/18	07/15/18
M	P4/P5/NTI	INT	T	CB		COVERED BY 3G	
N	S25/S26	3.4 m W of EEOS	BO	DS		07/18/18	07/18/18
P	P28/P29	46.0 m N of SEOS	DSF-11	DS		07/18/18	07/18/18
Q	ETI/P1/P25	INT	T	DS		07/23/18	07/25/18
R	P5/P6/P29/P30	INT	T	DS		07/19/18	07/20/18
S	P40/P41	3.1 m W of EEOS	BO	DS		07/18/18	07/20/18
T	P36/P37	49.6 m W of EEOS	BO	DS		07/18/18	07/20/18
U	P4/P28	4.0 m W of EEOS	IO	DS		07/19/18	07/20/18
V	P4/P3/P28	INT	T	DS		07/19/18	07/20/18
W	P3/P27	3.7 m E of WEOS	IO	DS		07/19/18	07/20/18
X	P4/P28	INT	T	DS		07/19/18	07/20/18

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 3

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P4/P5	10 m N of SEOS	DSF-1	DS		07/13/18	07/14/18
B	P9/P11	5 m W of EEOS	DSF-4	DS		07/15/18	07/15/18
C	P15/P16	13.2 m W of EEOS	DSF-5	DS		07/15/18	07/16/18
D	EIT/P1	81.1 m N of SEOS	T	DS		07/15/18	07/15/18
E	P4	4.5m Wof EEOS 2.0m S of NEOS	D	DS		07/15/18	07/15/18
F	NTI/P1/P2	7.5 m W of EEOS	T	DS		07/15/18	07/15/18
G	NTI/P4/P5	29.9 m E of ETI	T	DS		07/15/18	07/15/18
H	P5/P7/P8	INT	T	DS		07/14/18	07/15/18
J	P5/P6/P8	INT	T	DS		07/14/18	07/15/18
K	P8	3.7 m N,1 m W of NEOS	D	DS		07/14/18	07/15/18
L	P5/P8/P9	INT	T	DS		07/14/18	07/15/18
M	P5/P9/P11	INT	T	DS		07/14/18	07/15/18
N	P8/P9/P10	INT	T	DS		07/14/18	07/16/18
P	P9/P10/P11	INT	T	DS		07/14/18	07/16/18
Q	P5/P11/P12	INT	T	DS		07/15/18	07/15/18
R	P5/P12/P13	INT	T	DS		07/14/18	07/15/18
S	P5/P13/P14	INT	T	DS		07/14/18	07/15/18
T	P5/P14/P15	INT	T	DS		07/14/18	07/15/18
U	P5/P15/P16	INT	T	DS		07/14/18	07/15/18
V	P5/P16/P17	INT	T	DS		07/14/18	07/15/18
W	P17	1.5 m W X0.5m SofEEOS	P	DS		07/14/18	07/15/18
X	P5/P17/P18	INT	T	DS		07/14/18	07/15/18

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 4

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P2	2.0 m S & 3.0 m W of EEOS	D	AFK		07/13/18	07/15/18
B	P3.P4	5.0 m S of NEOS	DS-F2	AFK		07/13/18	07/14/18
C	P6/P7	5.0 m E of WEOS	BO	AFK		07/14/18	07/15/18
D	P10	1.5 m & 3. 5m S of NEOS	D	AFK		07/14/18	07/16/18
E	P2/P3	2.0 m S of NEOS	DSF-3	AFK		07/15/18	07/15/18
F	P17/P18	20.8 m W of EEOS	DSF-6	AFK		07/15/18	07/16/18
G	P20/P21	27 m W of EEOS	BO	AFK		07/14/18	07/16/18
H	P2/NTI	3.0 m W of EEOS	D	AFK		07/15/18	07/15/18
J	P1/NTI	4 m E of WEOS	IO	AFK		07/15/18	07/15/18
K	P1/ETI	2 m S of EEOS	IO	AFK		07/15/18	07/15/18
L	P23/P24	40 m W of EEOS	DSF-7	AFK		07/15/18	07/16/18
M	P21	15 m S & 1 m W of EEOS	D	AFK		07/14/18	07/15/18
N	ETI/P1	17.5 m S of NEOS	DSX-1	DS		07/15/18	07/16/18
P	~	~	~	~		~	~
Q	P1	37 m N &1.2 m W of EEOS	D	DS		07/15/18	07/15/18
R	NTI/P24	7.7 m W of EEOS	D	DS		07/16/18	07/16/18
S	NTI/P24	45.3 m W of EEOS	D	DS		07/16/18	07/16/18
T	NTI/P24	6.9 m W of EEOS	DSX-2	DS		07/16/18	07/16/18
U	P29/P30/P31	INT	T	DS		07/19/18	07/16/18
V	P29/P31/P32	INT	T	DS		07/19/18	07/20/18
W	P29/P32/P38	INT	T	DS		07/19/18	07/20/18
X	P29/P33/P34	INT	T	DS		07/19/18	07/25/18

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 5

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P5/P18/P19	INT	T	DS		07/14/18	07/15/18
B	P5/P19/P20	INT	T	DS		07/14/18	07/15/18
C	P5/P20/P21	INT	T	DS		07/14/18	07/15/18
D	P5/P21/P22	INT	T	DS		07/14/18	07/15/18
E	P5/P22/P23	INT	T	DS		07/14/18	07/14/18
F	P5/P23/P24	INT	T	DS		07/14/18	07/15/18
G	ETI/P5/P24	INT	T	DS		07/14/18	07/15/18
H	P21/P34/P35	INT	T	DS		07/19/18	07/20/18
J	P21/P35/P36	INT	T	DS		07/19/18	07/20/18
K	ETI/P1/P25	INT	T	DS		07/23/18	07/20/18
L	P1/P2/P26	INT	T	DS		07/19/18	07/20/18
M	P36	2.7 m N & 3 m W of EEOS	D	DS		07/19/18	07/20/18
N	P29/P36/P37	INT	T	DS		07/19/18	07/20/18
P	P29/P37/P38	INT	T	DS		07/19/18	07/20/18
Q	P29/P38/P39	INT	T	DS		07/19/18	07/20/18
R	P29/P41/P42	INT	T	DS		07/20/18	07/20/18
S	P41	1.4 S & 2.5 m W of NEOS	D	DS		07/19/18	07/20/18
T	P42	1 m S & 4 m W of NEOS	D	DS		07/20/18	07/20/18
U	P26/P27/P44	INT	T	DS		07/20/18	07/20/18
V	P25/P26/P44	INT	T	DS		07/20/18	07/20/18
W	ETI/P25	22 m S of NEOS	DSX-4	DS		07/20/18	07/25/18
X	ETI/P25	71 m S of NEOS	DSX-5	DS		07/20/18	07/25/18

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 6

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P8/P9	20 m W of EEOS	DSF-8	AFK		07/15/18	07/16/18
B	P25/ETI	11 m S of NEOS	D	AFK		07/23/18	07/25/18
C	P25/ETI	25 m S of NEOS	D	AFK		07/23/18	07/25/18
D	P25/ETI	38.5 m S of NEOS	D	AFK		07/23/18	07/25/18
E	P25/ETI	52 m S of NEOS	D	AFK		07/23/18	07/25/18
F	P25/ETI	65 m S of NEOS	D	AFK		07/23/18	07/25/18
G	P25/ETI	79 m S of NEOS	D	AFK		07/23/18	07/25/18
H	P25/ETI	92 m S of NEOS	D	AFK		07/24/18	07/25/18
J	P25/ETI	106 m S of NEOS	D	AFK		07/24/18	07/25/18
K	P25/ETI	119 m S of NEOS	D	AFK		07/24/18	07/25/18
L	P26/P27	77.6 m N of SEOS	DSF-10	AFK		07/18/18	07/20/18
M	P1/P2/P25/P26	INT	PT	AFK		07/18/18	07/20/18
N	P2/P3/P26/P27	INT	PT	AFK		07/18/18	07/20/18
P	P3/P4/P27/P28	INT	PT	AFK		07/18/18	07/20/18
Q	P4/P5/P28/P29	INT	PT	AFK		07/18/18	07/20/18
R	P30/P31	8 m W of EEOS	BO	AFK		07/18/18	07/20/18
S	P30/P31	15 m W of EEOS	BO	AFK		07/18/18	07/20/18
T	P31/P32	14 m W of EEOS	BO	AFK		07/18/18	07/20/18
U	P35/P33	34 m Wof EEOS	BO	AFK		07/18/18	07/20/18
V	P36	2 m W & 3 m N of SEOS	D	AFK		07/18/18	07/20/18
W	P36/P37	5 m W of EEOS	BO	AFK		07/18/18	07/20/18
X	P39/P40	2 m W of EEOS	DSF-13	AFK		07/19/18	07/20/18

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 7

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P38/P39	4 m E of WEOS	DSF-14	AFK		07/19/18	07/20/18
B	P29/P38	4 m N of SEOS	DSF-15	AFK		07/19/18	07/20/18
C	P29/P39/P40	INT	PT	AFK		07/19/18	07/20/18
D	P29/P40/P41	INT	PT	AFK		07/19/18	07/20/18
E	P37	3 m S & 20 m E of WEOS	D	AFK		07/19/18	07/20/18
F	S28/S29	15 m E of WEOS	BO	AFK		07/19/18	07/20/18
G	S28/S29	10 m W of EEOS	BO	AFK		07/19/18	07/20/18
H	S30/S31	15 m E of WEOS	BO	AFK		07/19/18	07/20/18
J	S29/S30	5.7 m E of WEOS	BO	AFK		07/19/18	07/20/18
K	~	~	~	~		~	~
L	S30/S31	12 m S of NEOS	DSX-3	DS		07/20/18	07/20/18
M	ETI/P25	INT	DSX-6	DS		07/20/18	07/20/18
N	P29/P42/P43	INT	T	DS		07/20/18	07/20/18
P	P45/P46/P47	INT	T	DS		07/22/18	07/23/18
Q	P43/P45/P46	INT	T	DS		07/22/18	07/23/18
R	P27/P44/P49	INT	T	DS		07/22/18	07/23/18
S	P27/P44/P49	INT	T	DS		07/22/18	07/23/18
T	P27/P47/P48	INT	T	DS		07/22/18	07/23/18
U	P27/P45/P47	INT	T	DS		07/22/18	07/23/18
V	P27/P28/P45	INT	T	DS		07/22/18	07/23/18
W	P27	0.6 m E of WEOS	WR	DS	Covered by 7 V	Covered by 7 V	Covered by 7 V
X	P28/P29/P45	INT	T	DS		07/22/18	07/23/18

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 8

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P48/P49/P50	INT	PT	AFK		07/22/18	07/23/18
B	P43/P46	2 m E of WEOS	DSF-16	AFK		07/23/18	07/23/18
C	P47/P48	2 m E of WEOS	DSF-17	AFK		07/23/18	07/23/18
D	P62/P63	20 m N of SEOS	DSF-18	AFK		07/23/18	07/23/18
E	P49/P59/P60	INT	PT	AFK		07/22/18	07/23/18
F	P49/P58/P59	INT	PT	AFK		07/22/18	07/23/18
G	P49/P57/P58	INT	PT	AFK		07/22/18	07/23/18
H	P49/P56/P57	INT	PT	AFK		07/22/18	07/23/18
J	P49/P54/P56	INT	PT	AFK		07/22/18	07/23/18
K	P44/P49/P54	INT	PT	AFK		07/22/18	07/23/18
L	P44/P53/P54	INT	PT	AFK		07/22/18	07/23/18
M	P44/P532/P53	INT	PT	AFK		07/22/18	07/23/18
N	P44/P51/P52	INT	PT	AFK		07/22/18	07/23/18
P	P29/P43/P45	INT	PT	AFK	DSF11	07/22/18	07/23/18
Q	P64/P67/P68	INT	PT	AFK		07/23/18	07/23/18
R	P64/P65/68	INT	PT	AFK		07/23/18	07/23/18
S	P65/P68/P69	INT	PT	AFK		07/23/18	07/23/18
T	P65/P66/P69	INT	PT	AFK		07/23/18	07/23/18
U	P66/P68/P69	INT	PT	AFK		07/23/18	07/23/18
V	P66/P67/P68	INT	PT	AFK		07/23/18	07/23/18
W	P50/P66/P67	INT	PT	AFK		07/23/18	07/23/18
X	P49/P60/P61	INT	PT	DS		07/23/18	07/23/18

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 9

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P54/P55/P56	INT	T	DS		07/22/18	07/23/18
B	P55/P56/P57	INT	T	DS		07/22/18	07/23/18
C	P49/P60	1 m E of WEOS	BO	DS		07/23/18	07/23/18
D	P44/P52	4 m W of EEOS	IO	DS		07/22/18	07/23/18
E	P52/P53	5 m N of SEOS	IO	DS		07/23/18	07/23/18
F	P52/P53	10 m N of SEOS	IO	DS		07/23/18	07/23/18
G	P51/P52	20.5 m S of NEOS	IO	DS		07/22/18	07/23/18
H	P51/52	8.2 m S of NEOS	IO	DS		07/22/18	07/23/18
J	P49/P61/P62	INT	T	DS		07/23/18	07/23/18
K	P50/P62/P63	INT	T	DS		07/23/18	07/23/18
L	P50/P63/P64	INT	T	DS		07/23/18	07/23/18
M	P50/P64/P67	INT	T	DS		07/23/18	07/23/18
N	P48	1.2 m S of NEOS	D	DS		07/22/18	07/23/18
P	P49/P50/P62	INT	T	DS		07/23/18	07/23/18
Q	P50/P67	5.6 m W of EEOS	G&W	DS		07/23/18	07/23/18
R	P25/P44/ETI	INT	T	DS		07/24/18	07/25/18
S	P44/ETI	2.2 m S of NEOS	P	DS		07/24/18	07/25/18
T	P44/ETI	3 m S of NEOS	DSX-7	DS		07/24/18	07/25/18
U	P51/ETI	NEOS - ETI	P	DS		07/24/18	07/25/18
V	SPB/ETI	3 m E of WEOS	P	DS		07/24/18	07/25/18
W	P49/D2/D3	INT	T	DS		07/24/18	07/25/18
X	P48/D1/D2	INT	T	DS		07/24/18	07/25/18

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

GEOMEMBRANE DEFECT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

SHEET NUMBER 10

	DEFECT LOCATION					**	**
DEFECT CODE	SEAM,PANEL OR REPAIR NO.	DEFECT LOCATION DESCRIPTION	DEFECT TYPE	MON.	REMARKS	REPAIR DATE	TEST DATE
A	P48/D1/D2	INT	T	DS		07/24/18	07/24/18
B	P49/D2/D4	INT	T	DS		07/24/18	07/24/18
C	D2/D3/D4	INT	T	DS		07/24/18	07/24/18
D	P59/D3/D4	INT	T	DS		07/24/18	07/24/18
E	~	~	~	~		~	~
F	~	~	~	~		~	~
G	~	~	~	~		~	~
H	~	~	~	~		~	~
J	~	~	~	~		~	~
K	~	~	~	~		~	~
L	~	~	~	~		~	~
M	~	~	~	~		~	~
N	~	~	~	~		~	~
P	NTI/P24	16.8m E of WEOS	P	DS		07/24/18	07/24/18
Q	NTI/P24	12m E of WEOS	P	DS		07/24/18	07/24/18
R	NTI/P24	7.5m E of WEOS	P	DS		07/24/18	07/24/18
S	NTI/P24	2.3m E of WEOS	P	DS		07/24/18	07/24/18
T							
U							
V							
W							
X							

AD- ANIMAL RELATED DAMAGE
B - UNDISPERSED RESIN BEAD
BO - FUSION WELDER BURN
CO - CHANGE OF OVERLAP
CR - CREASE
D - INSTALLATION DAMAGE
DS - # - DESTRUCTIVE TEST NUMBER
PT - PRESSURE TEST CUT
SI - SOIL SURFACE IRREGULARITY
WS - WELDER RESTART
EE - EARTHWORK EQUIPMENT DAMAGE
EXT - EXTENSION
FM - FISHMOUTH
FS - FAILED SEAM LENGTH
FTS - FIELD TEST STRIP
HT - HEAT TACK BURN
IO - INSUFFICIENT OVERLAP (UNDER SPEC)
MD - MAUFACTURER/DELIVERY DAMAGE
T - THREE PANEL INTERSECTION
WR - WRINKLE

** COLUMNS TO BE USED BY
THE DATA REVIEWER ONLY

Appendix B-10

Geomembrane Repair Summary

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-1	14:22	GS

MACHINE NUMBER EXT-6

DATE July 13, 2018

SHEET NUMBER 1

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	2G	7/13/2018	14:55	P	0.3m X 0.3m	GS	AFK	
2	2H	7/13/2018	15:08	P	0.3m X 0.3m	GS	AFK	
3	2S	7/13/2018	15:30	P	0.3m X 0.3m	GS	AFK	
4	4A	7/13/2018	15:45	P	0.4m X 0.4	GS	AFK	
5	3A	7/13/2018	16:27	P	1.5m X 0.5m	GS	AFK	DSF-1
6	4B	7/13/2018	17:25	P	1.5m X 0.5m	GS	AFK	DSF-2
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE :

RS - RECONSTRUCTED SEAM
P - PATCH
G & W - GRIND WELD
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-2	15:25	DP
TX-2A	16:15	DP
TX-3	16:38	RN

MACHINE NUMBER EXT-6
DATE July 14, 2018
SHEET NUMBER 2

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	3J	7/14/2018	17:00	G&W	0.6m	RN	DS	
2	3H	7/14/2018	17:05	P	2.0m X 1.0m	RN	DS	
3	3K	7/14/2018	17:12	P	0.5m X 0.5m	RN	DS	
4	3L	7/14/2018	17:14	G&W	0.4m	RN	DS	
5	3M	7/14/2018	17:15	G&W	0.3m	RN	DS	
6	4C	7/14/2018	17:25	P	1.5m X 1.0m	RN	DS	
7	3N	7/14/2018	17:27	G&W	0.3m	RN	DS	
8	3P	7/14/2018	17:32	G&W	0.3m	RN	DS	
9	4D	7/14/2018	17:37	P	1.0m X 1.0m	RN	DS	
10	3Q	7/14/2018	17:55	G&W	0.3m	RN	DS	
11	3R	7/14/2018	17:57	G&W	0.2m	RN	DS	
12	3S	7/14/2018	18:05	PATCH	0.5m X 0.5m	RN	DS	
13	3T	7/14/2018	18:07	G&W	0.3m	RN	DS	
14	3U	7/14/2018	18:10	G&W	0.3m	RN	DS	
15	3V	7/14/2018	18:15	G&W	0.3m	RN	DS	
16	3W	7/14/2018	18:16	P	0.5m X 0.4m	RN	DS	
17	3X	7/14/2018	18:18	G&W	0.3m	RN	DS	
18	5A	7/14/2018	18:18	G&W	0.3m	RN	DS	
19	5B	7/14/2018	18:19	G&W	0.3m	RN	DS	
20	5C	7/14/2018	18:19	G&W	0.3m	RN	DS	
21	5D	7/14/2018	18:26	G&W	0.3m	RN	DS	
22	4M	7/14/2018	18:28	P	0.4m X 0.4m	RN	DS	
23	5E	7/14/2018	18:30	G&W	0.3m	RN	DS	
24	5F	7/14/2018	18:30	G&W	0.3m	RN	DS	
25	5G	7/14/2018	18:36	PATCH	1.5m X 0.5m	RN	DS	

REPAIR TYPE :
RS - RECONSTRUCTED SEAM
P - PATCH
G & W - GRIND WELD
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-2	15:25	DP
TX-2A	16:15	DP
TX-3	16:38	RN

MACHINE NUMBER EXT-6

DATE July 14, 2018

SHEET NUMBER 3

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	4G	7/14/2018	18:45	P	0.4m X 0.4m	RN	DS	
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
P - PATCH
G & W - GRIND WELD
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-5	9:03	DD

MACHINE NUMBER EXT-6

DATE July 15, 2018

SHEET NUMBER 4

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	6A	7/15/2018	9:45	P	1.5m X 0.5m	DP	AFK	
2	3C	7/15/2018	10:30	P	1.5m X 1.0m	DP	AFK	
3	4F	7/15/2018	11:15	P	1.5m X 0.5m	DP	AFK	
4	3B	7/15/2018	11:00	P	1.5m X 0.5m	DP	AFK	
5	4L	7/15/2018	11:45	P	1.5m X 0.5m	DP	AFK	
6	2D	7/15/2018	12:35	P	1.0m X 4.0m	DP	AFK	
7	4Q	7/15/2018	13:00	P	0.6m X 0.6m	DP	AFK	
8	2E	7/15/2018	12:08	G&W	0.3m	DP	AFK	
9	2C	7/15/2018	12:15	G&W	0.3m	DP	AFK	
10	2A	7/15/2018	12:25	G&W	0.3m	DP	AFK	
11	2F	7/15/2018	12:27	P	1.5m X 0.5m	DP	AFK	
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
P - PATCH
G & W - GRIND WELD
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-6	9:14	GS
TX-7	14:40	GS

MACHINE NUMBER EXT-21
DATE July 15, 2018
SHEET NUMBER 5

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	3F	7/15/2018	10:18	P	0.6m X 0.6m	GS	DS	
2	2L	7/15/2018	10:22	G&W	0.3m	GS	DS	
3	2K	7/15/2018	10:32	G&W	0.3m	GS	DS	
4	4E	7/15/2018	10:51	P	1.5m X1.0m	GS	DS	
5	4H	7/15/2018	11:15	P	0.6m X 1.0m	GS	DS	
6	3F	7/15/2018	11:22	G&W	0.3m	GS	DS	
7	4J	7/15/2018	11:33	P	3.0m X 0.6m	GS	DS	
8	3G	7/15/2018	10:15	G&W	0.3m	GS	DS	
9	4K	7/15/2018	12:09	P	4.5m X 2.5m	GS	DS	
10	1A	7/15/2018	12:34	G&W	0.3m	GS	DS	
11	1D	7/15/2018	12:41	G&W	0.3m	GS	DS	
12	4D	7/15/2018	15:30	P	1.0m X 0.6m	DSX-1	DS	COVERS 1F
13	1H	7/15/2018	14:39	G&W	0.3m	GS	DS	
14	1K	7/15/2018	14:59	G&W	0.3m	GS	DS	
15	1M	7/15/2018	15:10	G&W	0.3m	GS	DS	
16	3D	7/15/2018	15:20	G&W	0.3m	GS	DS	
17	1Q	7/15/2018	15:30	G&W	0.3m	GS	DS	
18	1S	7/15/2018	15:35	G&W	0.3m	GS	DS	
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE :
RS - RECONSTRUCTED SEAM
G & W - GRIND WELD
P - PATCH
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-8	15:15	DP

MACHINE NUMBER EXT-5
DATE July 15, 2018
SHEET NUMBER 6

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	4Q	7/15/2018	15:20	P	0.6m X 0.6m	DP	DS	
2	1W	7/15/2018	15:30	G&W	0.3m	DP	DS	
3	1U	7/15/2018	15:35	G&W	0.3m	DP	DS	
4	1C	7/15/2018	16:00	P	4.0m X 0.5m	DP	DS	
5	1E	7/15/2018	16:05	P	4.5m X 0.5m	DP	DS	
6	1G	7/15/2018	16:25	P	4.2m X 0.5m	DP	DS	
7	1J	7/15/2018	16:45	P	4.2m X 0.5m	DP	DS	
8	1L	7/15/2018	17:15	P	4.2m X 0.5m	DP	DS	
9	1N	7/15/2018	17:35	P	4.2m X 0.5m	DP	DS	
10	1P	7/15/2018	17:50	P	4.2m X 0.5m	DP	DS	
11	1R	7/15/2018	18:05	P	4.2m X 0.5m	DP	DS	
12	1T	7/15/2018	18;25	P	4.2m X 1.0m	DP	DS	
13	1V	7/15/2018	18:45	P	4.2m X 1.0m	DP	DS	
14	1X	7/15/2018	18:55	P	4.2m X 1.0m	DP	DS	
15	2B	7/15/2018	19:15	P	4.2m X 1.0m	DP	DS	
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
G & W - GRIND WELD
P - PATCH
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-9	8:40	GS

MACHINE NUMBER EXT-21

DATE July 16, 2018

SHEET NUMBER 7

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	4R	7/16/2018	9:41	P	0.4m X 0.4m	GS	DS	
2	4T	7/16/2018	11:03	P	1.0m X 0.6m	GS	DS	
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE :
RS - RECONSTRUCTED SEAM
P - PATCH
G & W - GRIND WELD
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-10	15:15	GS

MACHINE NUMBER EXT-21
DATE July 18, 2018
SHEET NUMBER 8

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	6Q	7/18/2018	16:18	G&W	0.5m	GS	AFK	
2	6P	7/18/2018	16:20	G&W	0.5m	GS	AFK	
3	6N	7/18/2018	16:22	G&W	0.5m	GS	AFK	
4	6M	7/18/2018	16:23	G&W	1.0m	GS	AFK	
5	2N	7/18/2018	15:40	P	0.6m X 0.6m	GS	AFK	
6	6T	7/18/2018	17:25	P	0.4m X 0.6m	GS	AFK	
7	6S	7/18/2018	17:30	P	0.5m X 1.5m	GS	AFK	
8	6R	7/18/2018	17:35	P	0.6m X 01.5m	GS	AFK	
9	6L	7/18/2018	17:57	P	0.6m X 1.5m	GS	AFK	
10	2P	7/18/2018	18:15	P	0.6m X 1.5m	GS	AFK	
11	6W	7/18/2018	18:20	P	0.3m X 0.3m	GS	AFK	
12	6V	7/18/2018	18:21	G&W	0.6m	GS	AFK	
13	6U	7/18/2018	18:32	G&W	0.3m	GS	DS	
14	2T	7/18/2018	18:35	G&W	0.3m	GS	DS	
15	2S	7/18/2018	18:52	P	0.6m X 0.6m	GS	DS	
16	5L	7/18/2018	16:24	G&W	0.5m	GS	DS	
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
G & W - GRIND WELD
P - PATCH
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-11	9:02	JP
TX-12	14:44	JP

MACHINE NUMBER EXT-21
DATE July 19, 2019
SHEET NUMBER 9

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	2X	7/19/2018	9:19	G&W	3.0m	JP	DS	
2	2U	7/19/2018	9:20	G&W	3.5m	JP	DS	
3	2V	7/19/2018	9:29	G&W	0.3m	JP	DS	
4	6P	7/19/2018	9:30	G&W	0.3m	JP	DS	
5	2W	7/19/2018	9:32	G&W	3.4m	JP	DS	
6	2R	7/19/2018	10:08	P	1.0m X 0.6m	JP	DS	
7	4U	7/19/2018	10:13	G&W	0.4m	JP	DS	
8	4V	7/19/2018	10:15	G&W	0.3m	JP	DS	
9	4W	7/19/2018	10:19	G&W	0.3m	JP	DS	
10	4X	7/19/2018	10:23	G&W	0.4m	JP	DS	
11	5H	7/19/2018	10:25	G&W	0.3m	JP	DS	
12	5J	7/19/2018	10:33	G&W	0.4m	JP	DS	
13	5M	7/19/2018	10:45	P	0.6m X 0.6m	JP	DS	
14	5N	7/19/2018	10:47	G&W	0.3m	JP	DS	
15	5P	7/19/2018	10:49	G&W	0.3m	JP	DS	
16	5Q	7/19/2018	10:52	G&W	0.3m	JP	DS	
17	6X	7/19/2018	11:22	P	0.6m X 1.5m	JP	AFK	
18	7B	7/19/2018	11:46	P	0.6m X 1.5m	JP	AFK	
19	7C	7/19/2018	11:30	G&W	0.4m	JP	AFK	
20	7D	7/19/2018	11:20	G&W	0.4m	JP	AFK	
21	5S	7/19/2018	12:23	P	0.4m X 0.5m	JP	AFK	
22	7E	7/19/2018	12:54	P	0.4m X 0.4m	JP	AFK	
23	7A	7/19/2018	15:00	P	0.5m X 1.3m	JP	AFK	
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
G & W - GRIND WELD
P - PATCH
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-12	14:44	JP

MACHINE NUMBER EX-21

DATE July 19, 2018

SHEET NUMBER 10

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	7H	7/19/2019	18:47	P	1.0m X 0.5m	JP	AFK	
2	7F	7/19/2019	19:03	P	1.0m X 0.5m	JP	AFK	
3	7J	7/19/2019	19:09	P	0.5m X 0.5m	JP	AFK	
4	7G	7/19/2019	19:10	P	0.5m X 0.5m	JP	AFK	
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE :

RS - RECONSTRUCTED SEAM
P - PATCH
G & W - GRIND WELD
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-13	8:48	JP
TX-15	15:18	DG

MACHINE NUMBER ETX-21
DATE July 20, 2018
SHEET NUMBER 11

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	5B	7/20/2018	9:20	P	1.0m X 1.2m	JP	DS	
2	5T	7/20/2018	9:15	P	0.4m X 0.4m	JP	DS	
3	5U	7/20/2018	10:00	G&W	0.3m	JP	DS	
4	5V	7/20/2018	10:02	G&W	0.3m	JP	DS	
5	7L	7/20/2018	11:00	P	0.6m X 1.5m	JP	DS	
6	7M	7/20/2018	18:11	P	0.6m X 1.5m	JP	DS	
7	5X	7/20/2018	17:10	P	0.6m X 1.5m	JP	DS	
8	5W	7/20/2018	18:35	P	0.6m X 1.5m	JP	DS	
9	7N	7/20/2018	9:10	G&W	0.3m	JP	DS	
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
P - PATCH
G & W - GRIND WELD
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-17	8:50	JP
TX-18	8:55	JP
TX-19	13:53	JP

MACHINE NUMBER EXT-21
DATE July 22, 2018
SHEET NUMBER 12

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	8K	7/22/2018	9:19	G&W	0.3m	JP	DS	
2	8N	7/22/2018	9:10	G&W	0.3m	JP	DS	
3	8M	7/22/2018	9:12	G&W	0.3m	JP	DS	
4	8L	7/22/2018	9:15	G&W	0.3m	JP	DS	
5	8J	7/22/2018	9:17	G&W	0.3m	JP	DS	
6	8H	7/22/2018	9:21	G&W	0.3m	JP	DS	
7	8G	7/22/2018	9:30	G&W	0.3m	JP	DS	
8	8F	7/22/2018	9:40	G&W	0.3m	JP	DS	
9	9A	7/22/2018	9:31	G&W	0.3m	JP	DS	
10	9B	7/22/2018	9:33	G&W	0.3m	JP	DS	
11	8E	7/22/2018	9:58	G&W	1.5m X 1.0m	JP	DS	
12	9D	7/22/2018	10:09	P	0.4m	JP	DS	
13	9G	7/22/2018	12:00	G&W	0.3m	JP	DS	
14	9H	7/22/2018	12:11	G&W	0.2m	JP	DS	
15	7R	7/22/2018	9:00	G&W	0.3m	JP	DS	
16	7S	7/22/2018	9:02	G&W	0.3m	JP	DS	
17	9N	7/22/2018	10:20	P	0.6m X 0.6m	JP	DS	
18	7T	7/22/2018	10:21	G&W	0.3m	JP	DS	
19	7U	7/22/2018	10:22	G&W	0.3m	JP	DS	
20	7V	7/22/2018	10:23	G&W	1.3m	JP	DS	
21	7X	7/22/2018	10:25	G&W	0.4m	JP	DS	
22	8P	7/22/2018	10:30	G&W	0.3m	JP	DS	
23	7Q	7/22/2018	10:32	G&W	0.3m	JP	DS	
24	7P	7/22/2018	10:34	G&W	0.3m	JP	DS	
25	8A	7/22/2018	10:37	G&W	0.3m	JP	DS	

REPAIR TYPE : RS - RECONSTRUCTED SEAM
G & W - GRIND WELD
P - PATCH
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-20	8:44	JP
TX-21	8:48	JP
TX-22	8:50	JP
TX-23	16:12	JP

MACHINE NUMBER EXT-21
DATE July 23, 2018
SHEET NUMBER 13

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	9C	7/23/2018	9:25	P	1.0m X 1.0m	JP	DS	
2	8X	7/23/2018	9:29	G&W	0.3m	JP	DS	
3	9J	7/23/2018	9:30	G&W	0.3m	JP	DS	
4	8D	7/23/2018	10:53	P	1.0m X 1.5m	JP	DS	
5	9L	7/23/2018	9:34	G&W	0.3m	JP	DS	
6	7V	7/23/2018	12:03	P	2.0m X 2.0m	JP	DS	
7	7W	7/23/2018	12:20	P	1.0m X 6.0m	JP	DS	
8	9M	7/23/2018	9:18	P	1.0m X 0.6m	JP	DS	
9	8Q	7/23/2018	10:00	G&W	0.3m	JP	DS	
10	8R	7/23/2018	9:58	G&W	0.3m	JP	DS	
11	8S	7/23/2018	10:20	G&W	0.4m	JP	DS	
12	8T	7/23/2018	10:22	G&W	0.3m	JP	DS	
13	8U	7/23/2018	10:25	G&W	0.3m	JP	DS	
14	8V	7/23/2018	10:30	G&W	0.3m	JP	DS	
15	8W	7/23/2018	10:10	P	1.0m X 0.6m	JP	DS	
16	8C	7/23/2018	10:15	P	1.0m X 0.6m	JP	DS	DSF-17
17	8B	7/23/2018	10:22	P	1.0m X 0.6m	JP	DS	
18	9Q	7/23/2018	10:23	G&W	0.3m	JP	DS	
19	9D	7/23/2018	11:19	G&W	0.3m	JP	DS	
20	9E	7/23/2018	11:20	G&W	5m	JP	DS	
21	9F	7/23/2018	11:26	G&W	5m	JP	DS	
22	9P	7/23/2018	9:33	G&W	5m	JP	DS	
23	9K	7/23/2018	9:32	G&W	5m	JP	DS	
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
G & W - GRIND WELD
P - PATCH
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-24	16:15	DP

MACHINE NUMBER EXT-21

DATE July 23, 2018

SHEET NUMBER 14

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	2E	7/23/2018	16:45	P	4.3m X 0.5m	DP	DS	
2	5K	7/23/2018	16:54	G&W	0.3m	DP	DS	
3	2Q	7/23/2018	16:54	P	0.6m X 0.4m	DP	DS	
4	6B	7/23/2018	17:05	P	4.0m X 0.5m	DP	DS	
5	6C	7/23/2018	17:27	P	4.0m X 0.5m	DP	DS	
6	6D	7/23/2018	18:00	P	4.0m X 0.5m	DP	DS	
7	6E	7/23/2018	18:24	P	4.0m X 0.5m	DP	DS	
8	6F	7/23/2018	18:36	P	0.4m X 0.5m	DP	DS	
9	6G	7/23/2018	19:01	P	0.4m X 0.5m	DP	DS	
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
G & W - GRIND WELD
P - PATCH
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

MACHINE NUMBER EXT-21

NO.	TIME	TECH. ID
TX-25	8:45	JP
TX-26	8:50	DP
TX-27	10:45	JP

DATE July 24, 2018

SHEET NUMBER 15

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	6H	7/24/2018	9:01	P	4.0m X 0.6m	JP/DP	DS	
2	6J	7/24/2018	9:21	P	4.0m X 0.6m	JP/DP	DS	
3	6K	7/24/2018	9:40	P	4.0m X 0.6m	JP/DP	DS	
4	9B	7/24/2018	9:59	P	2.0m X 1.0n	JP/DP	DS	DSX-7
5	9T	7/24/2018	10:20	P	4.0m X 0.6m	JP/DP	DS	
6	9U	7/24/2018	10:50	P	9.0m X 1.5m	JP/DP	DS	
7	9V	7/24/2018	10:58	P	0.6m X 0.3m	JP/DP	DS	
8	9S	7/24/2018	10:05	P	4.0m X 0.6m	JP/DP	DS	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
P - PATCH
G & W - GRIND WELD
C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-28	13:50	DG

MACHINE NUMBER EXT-21

DATE July 24, 2018

SHEET NUMBER 16

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	9W	7/24/2018	14:31	G & W	0.3m	DG	DS	
2	9X	7/24/2018	14:37	G & W	0.3m	DG	DS	
3	10A	7/24/2018	15:02	G & W	0.3m	DG	DS	
4	10D	7/24/2018	14:15	G & W	0.3m	DG	DS	
5	10C	7/24/2018	14:00	G & W	0.3m	DG	DS	
6	10B	7/24/2018	14:02	G & W	0.3m	DG	DS	
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM G & W - GRIND WELD
P - PATCH C - CAP

GEOMEMBRANE REPAIR LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

NO.	TIME	TECH. ID
TX-29	10:45	CM

MACHINE NUMBER EXT-21

DATE July 26, 2018

SHEET NUMBER 17

	DEFECT CODE	REPAIR DATE	APPROX. TIME	REPAIR TYPE	APPROX. DIMENSION	WELD TECH.	MON.	REMARKS
1	10P	7/26/2018	11:39	P	1.0m X 1.5m	GM	DS	
2	10Q	7/26/2018	12:00	P	1.0m X 3.0m	GM	DS	
3	10R	7/26/2018	12:32	P	7.3m X 2.0m	GM	DS	
4	10S	7/26/2018	14:05	P	1.0m X 0.5m	GM	DS	
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

REPAIR TYPE : RS - RECONSTRUCTED SEAM
P - PATCH
G & W - GRIND WELD
C - CAP

Appendix B-II

Geomembrane Seam and Repair Vacuum Test Summary

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 1

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	2G	07/14/18	DP	N	Y	CB	
22	2H	07/14/18	DP	N	Y	CB	
23	2J	07/14/18	DP	N	Y	CB	
24	4B	07/14/18	DP	N	Y	CB	
25	3A	07/14/18	DP	N	Y	CB	
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 2

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1	NTI/P5	WEOS-EEPS		07/15/18	DP	N		Y	Y	CB	
2	NTI/P4	WEOS-EEOS		07/15/18	DP	N		Y	Y	CB	
3	NTI/P2	WEOS-4H		07/15/18	DP	N		Y	Y	CB	
4	NTI/P3	EEOS-WEOS		07/15/18	DP	N		Y	Y	CB	
5	NTI/P2	4H-EEOS		07/15/18	DP	N		Y	Y	CB	
6	NTI/P1	WEOS-4J		07/15/18	DP	N		Y	Y	CB	
7	NTI/P1	4J-EEOS		07/15/18	DP	N		Y	Y	CB	
8	ETI/P1	NEOS-4N		07/15/18	DP	N		Y	Y	CB	
9	ETI/P1	4N-1T		07/15/18	DP	N		Y	Y	CB	
10	ETI/P1	36.2m-1T		07/15/18	DP	N		Y	Y	CB	
11	ETI/P1	2F-36.2m		07/15/18	DP	N		Y	Y	CB	
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	3J	07/15/18	DP	N	Y	CB	
22	3H	07/15/18	DP	N	Y	CB	
23	3K	07/15/18	DP	N	Y	CB	
24	3L	07/15/18	DP	N	Y	CB	
25	3Q	07/15/18	DP	N	Y	CB	
26	3R	07/15/18	DP	N	Y	CB	
27	3S	07/15/18	DP	N	Y	CB	
28	3T	07/15/18	DP	N	Y	CB	
29	3U	07/15/18	DP	N	Y	CB	
30	3V	07/15/18	DP	N	Y	CB	
31	3W	07/15/18	DP	N	Y	CB	
32	3X	07/15/18	DP	N	Y	CB	
33	5A	07/15/18	DP	N	Y	CB	
34	5B	07/15/18	DP	N	Y	CB	
35	5C	07/15/18	DP	N	Y	CB	
36	5D	07/15/18	DP	N	Y	CB	
37	4M	07/15/18	DP	N	Y	CB	
38	5E	07/15/18	DP	N	Y	CB	
39	5F	07/15/18	DP	N	Y	CB	
40	3G	07/15/18	DP	N	Y	CB	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 3

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	2L	07/15/18	DP	N	Y	CB	
22	1H	07/15/18	DP	N	Y	CB	
23	1M	07/15/18	DP	N	Y	CB	
24	3F	07/15/18	DP	N	Y	CB	
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 4

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	4A	07/15/18	DP	N	Y	CB	
22	4H	07/15/18	DP	N	Y	CB	
23	4F	07/15/18	DP	N	Y	CB	
24	3E	07/15/18	DP	N	Y	CB	
25	5A	07/15/18	DP	N	Y	CB	
26	5B	07/15/18	DP	N	Y	CB	
27	5C	07/15/18	DP	N	Y	CB	
28	5G	07/15/18	DP	N	Y	CB	
29	3B	07/15/18	DP	N	Y	CB	
30	3M	07/15/18	DP	N	Y	CB	
31	4J	07/15/18	DP	N	Y	CB	
32	4K	07/15/18	DP	N	Y	CB	
33	1A	07/15/18	DP	N	Y	CB	
34	1D	07/15/18	DP	N	Y	CB	
35	4N	07/15/18	DP	N	Y	CB	
36	3D	07/15/18	DP	N	Y	CB	
37	1P	07/15/18	DP	N	Y	CB	
38	1S	07/15/18	DP	N	Y	CB	
39	1T	07/15/18	DP	N	Y	CB	
40	1U	07/15/18	DP	N	Y	CB	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 5

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	4Q	07/15/18	DP	N	Y	CB	
22	2D	07/15/18	DP	N	Y	CB	
23	3A	07/15/18	DP	N	Y	CB	
24	2F	07/15/18	DP	N	Y	CB	
25	2A	07/15/18	DP	N	Y	CB	
26	2C	07/15/18	DP	N	Y	CB	
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 6

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1	NTI/P24	EEOS-4S		07/16/18	DP	N		Y	Y	CB	
2	P10/P11	WEOS-EEOS		07/16/18	DP	N		Y	Y	CB	
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	6A	07/16/18	DP	N	Y	CB	
22	4D	07/16/18	DP	N	Y	CB	
23	3N	07/16/18	DP	N	Y	CB	
24	3P	07/16/18	DP	N	Y	CB	
25	3C	07/16/18	DP	N	Y	CB	
26	4F	07/16/18	DP	N	Y	CB	
27	4L	07/16/18	DP	N	Y	CB	
28	1C	07/16/18	DP	N	Y	CB	
29	1F	07/16/18	DP	N	Y	CB	
30	1E	07/16/18	DP	N	Y	CB	
31	1J	07/16/18	DP	N	Y	CB	
32	1N	07/16/18	DP	N	Y	CB	
33	1L	07/16/18	DP	N	Y	CB	
34	1P	07/16/18	DP	N	Y	CB	
35	1R	07/16/18	DP	N	Y	CB	
36	1T	07/16/18	DP	N	Y	CB	
37	2B	07/16/18	DP	N	Y	CB	
38	1X	07/16/18	DP	N	Y	CB	
39	1V	07/16/18	DP	N	Y	CB	
40	4R	07/16/18	DP	N	Y	CB	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 7

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	4G	07/16/18	DP	N	Y	CB	
22	4T	07/16/18	DP	N	Y	CB	
23	1Q	07/16/18	DP	N	Y	CB	
24	1K	07/16/18	DP	N	Y	CB	
25	1W	07/16/18	DP	N	Y	CB	
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 8

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	2N	07/18/18	DP	N	Y	CB	
22	2P	07/18/18	DP	N	Y	CB	
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 9

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	5K	07/20/18	KH	N	Y	CB	
22	2U	07/20/18	KH	N	Y	CB	
23	2V	07/20/18	KH	N	Y	CB	
24	2X	07/20/18	KH	N	Y	CB	
25	6Q	07/20/18	KH	N	Y	CB	
26	2K	07/20/18	KH	N	Y	CB	
27	2R	07/20/18	KH	N	Y	CB	
28	4U	07/20/18	KH	N	Y	CB	
29	4V	07/20/18	KH	N	Y	CB	
30	4W	07/20/18	KH	N	Y	CB	
31	4X	07/20/18	KH	N	Y	CB	
32	5H	07/20/18	KH	N	Y	CB	
33	5J	07/20/18	KH	N	Y	CB	
34	5M	07/20/18	KH	N	Y	CB	
35	6V	07/20/18	KH	N	Y	CB	
36	5N	07/20/18	KH	N	Y	CB	
37	6W	07/20/18	KH	N	Y	CB	
38	5P	07/20/18	KH	N	Y	CB	
39	7B	07/20/18	KH	N	Y	CB	
40	5Q	07/20/18	KH	N	Y	CB	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 10

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	5L	07/20/18	KH	N	Y	CB	
22	6M	07/20/18	KH	N	Y	CB	
23	6N	07/20/18	KH	N	Y	CB	
24	6P	07/20/18	KH	N	Y	CB	
25	2T	07/20/18	KH	N	Y	CB	
26	2W	07/20/18	KH	N	Y	CB	
27	6L	07/20/18	KH	N	Y	CB	
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

VACUUM BOX NUMBER 01 SHEET NUMBER 11

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1	P26/P44	WEOS-EEOS		07/20/18	KH	N		Y	Y	CB	
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	7C	07/20/18	KH	N	Y	CB	
22	6X	07/20/18	KH	N	Y	CB	
23	2S	07/20/18	KH	N	Y	CB	
24	7D	07/20/18	KH	N	Y	CB	
25	5S	07/20/18	KH	N	Y	CB	
26	5R	07/20/18	KH	N	Y	CB	
27	5T	07/20/18	KH	N	Y	CB	
28	6T	07/20/18	KH	N	Y	CB	
29	6S	07/20/18	KH	N	Y	CB	
30	6B	07/20/18	KH	N	Y	CB	
31	6U	07/20/18	KH	N	Y	CB	
32	6V	07/20/18	KH	N	Y	CB	
33	7E	07/20/18	KH	N	Y	CB	
34	7A	07/20/18	KH	N	Y	CB	
35	5V	07/20/18	KH	N	Y	CB	
36	5U	07/20/18	KH	N	Y	CB	
37	7H	07/20/18	KH	N	Y	CB	
38	7G	07/20/18	KH	N	Y	CB	
39	7E	07/20/18	KH	N	Y	CB	
40	P31e	07/20/18	KH	N	Y	CB	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 12

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1	S29/S30	7J-WEOS		07/20/18	KH	N		Y	Y	DS	
2	S30/S31	7M-WEOS		07/20/18	KH	N		Y	Y	DS	
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	7L	07/20/18	KH	N	Y	DS	
22	7J	07/20/18	KH	N	Y	DS	
23	4V	07/20/18	KH	N	Y	DS	
24	4W	07/20/18	KH	N	Y	DS	
25	7N	07/20/18	KH	N	Y	DS	
26	7M	07/20/18	KH	N	Y	DS	
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 13

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1	P56/P57	SEOS-NEOS		7/22/18	DP	N		Y	Y	CB	
2	P52/P53	9E-9F		7/22/18	DP	N		Y	Y	CB	
3	P51/P52	9M-8N		7/22/18	DP	N		Y	Y	CB	
4	P52/P53	9F-8M		7/22/18	DP	N		Y	Y	CB	
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	7Q	07/23/18	DP	N	Y	CB	
22	7P	07/23/18	DP	N	Y	CB	
23	8P	07/23/18	DP	N	Y	CB	
24	7X	07/23/18	DP	N	Y	CB	
25	7V	07/23/18	DP	N	Y	CB	
26	7U	07/23/18	DP	N	Y	CB	
27	7T	07/23/18	DP	N	Y	CB	
28	9N	07/23/18	DP	N	Y	CB	
29	7R	07/23/18	DP	N	Y	CB	
30	7S	07/23/18	DP	N	Y	CB	
31	8K	07/23/18	DP	N	Y	CB	
32	8L	07/23/18	DP	N	Y	CB	
33	8M	07/23/18	DP	N	Y	CB	
34	9D	07/23/18	DP	N	Y	CB	
35	8N	07/23/18	DP	N	Y	CB	
36	9H	07/23/18	DP	N	Y	CB	
37	9G	07/23/18	DP	N	Y	CB	
38	9F	07/23/18	DP	N	Y	CB	
39	9E	07/23/18	DP	N	Y	CB	
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 14

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	8D	07/23/18	DP	N	Y	CB	
22	8F	07/23/18	DP	N	Y	CB	
23	8Q	07/23/18	DP	N	Y	CB	
24	8C	07/23/18	DP	N	Y	CB	
25	9Q	07/23/18	DP	N	Y	CB	
26	9K	07/23/18	DP	N	Y	CB	
27	9J	07/23/18	DP	N	Y	CB	
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 15

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1	P50/P62	9P-9K		7/23/18	DP	N		Y	Y	CB	
2	P49/P50	SEOS-NEOS		7/23/18	DP	N		Y	Y	CB	
3	P50/P62	EEOS-WEOS		7/23/18	DP	N		Y	Y	CB	
4	P64/P68	NEOS-SEOS		7/23/18	DP	N		Y	Y	CB	
5	P66/P69	SEOS-NEOS		7/23/18	DP	N		Y	Y	CB	
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	8K	07/23/18	DP	N	Y	CB	
22	8J	07/23/18	DP	N	Y	CB	
23	9A	07/23/18	DP	N	Y	CB	
24	9B	07/23/18	DP	N	Y	CB	
25	8H	07/23/18	DP	N	Y	CB	
26	8G	07/23/18	DP	N	Y	CB	
27	8E	07/23/18	DP	N	Y	CB	
28	9C	07/23/18	DP	N	Y	CB	
29	8X	07/23/18	DP	N	Y	CB	
30	9S	07/23/18	DP	N	Y	CB	
31	9P	07/23/18	DP	N	Y	CB	
32	8A	07/23/18	DP	N	Y	CB	
33	9L	07/23/18	DP	N	Y	CB	
34	9M	07/23/18	DP	N	Y	CB	
35	8S	07/23/18	DP	N	Y	CB	
36	8R	07/23/18	DP	N	Y	CB	
37	8T	07/23/18	DP	N	Y	CB	
38	8U	07/23/18	DP	N	Y	CB	
39	8V	07/23/18	DP	N	Y	CB	
40	8W	07/23/18	DP	N	Y	CB	

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 01 SHEET NUMBER 16

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1	ETI/P1	2F-SEOS		07/25/18	CM	N		Y	Y	CB	
2	ETI/P25	NEOS-6B		07/25/18	CM	N		Y	Y	CB	
3	ETI/P25	6B-6C		07/25/18	CM	N		Y	Y	CB	
4	ETI/P25	6C-6D		07/25/18	CM	N		Y	Y	CB	
5	ETI/P25	6D-6E		07/25/18	CM	N		Y	Y	CB	
6	ETI/P25	6E-6F		07/25/18	CM	N		Y	Y	CB	
7	ETI/P25	6F-6G		07/25/18	CM	N		Y	Y	CB	
8	ETI/P25	6G-6H		07/25/18	CM	N		Y	Y	CB	
9	ETI/P25	6H-6J		07/25/18	CM	N		Y	Y	CB	
10	ETI/P25	6J-6K		07/25/18	CM	N		Y	Y	CB	
11	ETI/P25	6K-SEOS		07/25/18	CM	N		Y	Y	CB	
12	ETI/P44	9R-NEOS		07/25/18	CM	N		Y	Y	CB	
13	ETI/SPB	9V-9U		07/25/18	CM	N		Y	Y	CB	
14	SPB/P51	9U-SEOS		07/25/18	CM	N		Y	Y	CB	
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	2E	07/25/18	CM	N	Y	CB	
22	2Q	07/25/18	CM	N	Y	CB	
23	6B	07/25/18	CM	N	Y	CB	
24	5W	07/25/18	CM	N	Y	CB	
25	6C	07/25/18	CM	N	Y	CB	
26	6E	07/25/18	CM	N	Y	CB	
27	6F	07/25/18	CM	N	Y	CB	
28	6G	07/25/18	CM	N	Y	CB	
29	6H	07/25/18	CM	N	Y	CB	
30	6J	07/25/18	CM	N	Y	CB	
31	6K	07/25/18	CM	N	Y	CB	
32	7M	07/25/18	CM	N	Y	CB	
33	9R	07/25/18	CM	N	Y	CB	
34	9S	07/25/18	CM	N	Y	CB	
35	9V	07/25/18	CM	N	Y	CB	
36	5X	07/25/18	CM	N	Y	CB	
37	9U	07/25/18	CM	N	Y	CB	
38	9T	07/25/18	CM	N	Y	CB	
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

VACUUM BOX NUMBER 01 SHEET NUMBER 17

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1	NTI-P24	4S-10P		07/26/18	CP	N		Y	Y	DS	
2	NTI-P24	10P-10Q		07/26/18	CP	N		Y	Y	DS	
3	NTI-P24	10Q-10R		07/26/18	CP	N		Y	Y	DS	
4	NTI-P24	10R-10S		07/26/18	CP	N		Y	Y	DS	
5	NTI-P24	10S-WEOS		07/26/18	CP	N		Y	Y	DS	
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	10P	07/26/18	CP	N	Y	DS	
22	10Q	07/26/18	CP	N	Y	DS	
23	10R	07/26/18	CP	N	Y	DS	
24	10S	07/26/18	CP	N	Y	DS	
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

Appendix B-12

- Geomembrane Secondary Summary
- Double Composite Liner Summary

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/13/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 1

DESCRIPTION	PANEL NUMBER	S1				PANEL NUMBER	S2				PANEL NUMBER	S3			
ROLL NUMBER		14					14					14			
DEPLOYED LENGTH		12m					13.3m					11.7m			
AMBIENT AIR TEMP.		31C					31C					31C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	59	60	60		60	59	59	60		60	60	60	60	
	60	60	60	60		60	60	59	60		60	60	59	61	
	61	61	60	61		61	60	61	61		61	60	60	60	
AVERAGE	60	60	60	60		60	60	60	60		60	60	60	60	

DESCRIPTION	PANEL NUMBER	S4				PANEL NUMBER	S5				PANEL NUMBER	S6			
ROLL NUMBER		14					14					14			
DEPLOYED LENGTH		11.3m					11.1m					10.8m			
AMBIENT AIR TEMP.		31C					31C					31C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	60	59	60		60	60	60	61		61	61	60	61	
	61	60	60	61		61	60	60	60		60	60	60	60	
	60	59	59	60		60	61	60	61		61	60	59	59	
AVERAGE	60	60	59	60		60	60	60	61		61	60	60	60	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/13/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 2

DESCRIPTION	PANEL NUMBER	S7			PANEL NUMBER	S8			PANEL NUMBER	S9		
ROLL NUMBER		14				14				14		
DEPLOYED LENGTH		9.7				9.5				40m		
AMBIENT AIR TEMP.		31C				31C				31C		
OBSERVED OVERLAP		150 mm				150 mm				150 mm		
REMARKS												
MONITOR		DS				DS				DS		
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	60	60	60	60	60	60	60	61	61	60	61	62
	60	60	61	61	61	60	60	60	60	59	60	61
	60	59	60	61	61	60	59	60	60	59	61	61
AVERAGE	60	60	60	61	61	60	60	60	60	59	61	61

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
ROLL NUMBER												
DEPLOYED LENGTH												
AMBIENT AIR TEMP.												
OBSERVED OVERLAP												
REMARKS												
MONITOR												
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/14/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 3

DESCRIPTION	PANEL NUMBER	S10			PANEL NUMBER	S11			PANEL NUMBER	S12		
ROLL NUMBER		16				11				11		
DEPLOYED LENGTH		7.3m				16.3m				6.6m		
AMBIENT AIR TEMP.		25C				25C				25C		
OBSERVED OVERLAP		150 mm				150 mm				150 mm		
REMARKS												
MONITOR		DS				DS				DS		
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	61	60	60	60	60	60	60	61	61	60	60	60
	61	60	60	60	60	60	59	60	60	59	60	60
	60	59	59	60	60	59	60	60	60	59	59	60
AVERAGE	61	60	60	60	60	60	60	60	60	59	60	60

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
ROLL NUMBER												
DEPLOYED LENGTH												
AMBIENT AIR TEMP.												
OBSERVED OVERLAP												
REMARKS												
MONITOR												
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/17/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 4

DESCRIPTION	PANEL NUMBER	S13				PANEL NUMBER	S14				PANEL NUMBER	S15			
ROLL NUMBER		11					11					11			
DEPLOYED LENGTH		12.1m					12.2m					12.2m			
AMBIENT AIR TEMP.		26C					26C					26C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	60	60	60		60	58	59	60		60	60	61	60	
	60	59	60	61		60	60	60	60		60	60	60	61	
	61	60	60	61		61	61	60	61		61	60	60	60	
AVERAGE	60	60	60	61		60	60	60	60		60	60	60	60	

DESCRIPTION	PANEL NUMBER	S16				PANEL NUMBER	S17				PANEL NUMBER	S18			
ROLL NUMBER		11					11					11			
DEPLOYED LENGTH		13.2m					13m					13.2m			
AMBIENT AIR TEMP.		26C					26C					26C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	60	59	60		60	60	58	59		60	60	59	60	
	61	60	60	60		60	60	60	60		61	60	59	60	
	60	60	61	61		61	61	60	60		61	60	60	60	
AVERAGE	60	60	60	60		60	60	59	60		61	60	59	60	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/17/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 5

DESCRIPTION	PANEL NUMBER	S19				PANEL NUMBER	S20				PANEL NUMBER	S21			
ROLL NUMBER		11					11					11			
DEPLOYED LENGTH		14.8m					15.3m					12.2m			
AMBIENT AIR TEMP.		26C					26C					26C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	61	60	60	60		60	59	60	60		60	60	59	60	
	60	60	59	60		60	60	59	60		60	59	60	60	
	61	61	60	60		60	59	59	60		60	59	58	60	
AVERAGE	61	60	60	60		60	59	59	60		60	59	59	60	

DESCRIPTION	PANEL NUMBER	S22				PANEL NUMBER	S23				PANEL NUMBER	S24			
ROLL NUMBER		9					11					11			
DEPLOYED LENGTH		15.7m					13m					13.2m			
AMBIENT AIR TEMP.		26C					26C					26C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	60	61	60		60	59	59	60		60	59	59	60	
	60	59	60	61		61	60	59	60		60	60	58	60	
	61	60	60	61		61	60	60	62		62	60	61	60	
AVERAGE	60	60	60	61		61	60	59	61		61	60	59	60	

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/17/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 6

DESCRIPTION	PANEL NUMBER	S25			PANEL NUMBER	S26			PANEL NUMBER			
ROLL NUMBER		9				9						
DEPLOYED LENGTH		17.9m				17.9m						
AMBIENT AIR TEMP.		26C				26C						
OBSERVED OVERLAP		150 mm				150 mm						
REMARKS												
MONITOR		DS				DS						
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	61	60	59	60	60	59	59	60				
	60	59	60	60	60	59	59	60				
	60	60	61	61	61	60	60	60				
AVERAGE	60	60	60	60	60	59	59	60	#DIV/0!	#####	#####	#####

DESCRIPTION	PANEL NUMBER				PANEL NUMBER				PANEL NUMBER			
ROLL NUMBER												
DEPLOYED LENGTH												
AMBIENT AIR TEMP.												
OBSERVED OVERLAP												
REMARKS												
MONITOR												
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
AVERAGE	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: **SECONDARY** PRIMARY
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/19/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 7

DESCRIPTION	PANEL NUMBER	S27				PANEL NUMBER	S28				PANEL NUMBER	S29			
ROLL NUMBER		36					40					40			
DEPLOYED LENGTH		16.5m					33m					33m			
AMBIENT AIR TEMP.		28C					28C					28C			
OBSERVED OVERLAP		150 mm					150 mm					150 mm			
REMARKS															
MONITOR		DS					DS					DS			
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	60	60	61		61	60	60	61		61	60	59	60	
	60	59	60	60		60	58	60	61		61	60	60	60	
	60	59	58	60		60	59	60	60		60	59	60	61	
AVERAGE	60	59	59	60		60	59	60	61		61	60	60	60	

DESCRIPTION	PANEL NUMBER	S30				PANEL NUMBER	S31				PANEL NUMBER				
ROLL NUMBER		40					36								
DEPLOYED LENGTH		33m					33m								
AMBIENT AIR TEMP.		28C					28C								
OBSERVED OVERLAP		150 mm					150 mm								
REMARKS															
MONITOR		DS					DS								
SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL		LEAD	L SIDE	R SIDE	TRAIL	
	60	58	59	60		60	59	60	60						
	60	60	61	61		61	60	60	60						
	61	60	60	60		60	59	59	60						
AVERAGE	60	59	60	60		60	59	60	60		#DIV/0!	#####	#####	#####	

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 13-Jul-18

SHEET NUMBER 1

[X] FUSION
[ ] EXTRUSION

MACHINE # WW-15

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-2	13:32	AM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	S1/S2	EEOS	WEOS	15:21	31C	AM	650	860		10.1	10.1		DS		07/13/18	DS
2	S2/S3	EEOS	WEOS	15:26	31C	AM	650	860		9.3	19.4		DS		07/13/18	DS
3	S3/S4	EEOS	WEOS	15:30	31C	AM	650	860		9.2	28.6		DS		07/13/18	DS
4	S4/S5	EEOS	WEOS	15:34	31C	AM	650	860		8.8	37.4		DS		07/13/18	DS
5	S5/S6	EEOS	WEOS	15:37	31C	AM	650	860		9.2	46.6		DS		07/13/18	DS
6	S6/S7	EEOS	WEOS	15:40	31C	AM	650	860		8.6	55.2		DS		07/13/18	DS
7	S7/S8	EEOS	WEOS	15:44	31C	AM	650	860		8.0	63.2		DS		07/13/18	DS
8	S8/S9	EEOS	WEOS	15:54	31C	AM	650	860		7.4	70.6		DS		07/13/18	DS
9																
10																
11																
12																
13																
14																
15																
16																
17																

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

DAILY TOTAL 70.6
DESTRUCTIVE LENGTH CARRY - OVER 70.6

** COLUMNS TO BE USED
BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 14-Jul-18

SHEET NUMBER 2

X	FUSION
	EXTRUSION

MACHINE # WW-11

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-9	8:42	DM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	S9/S11	EEOS	WEOS	9:20	28C	DM	600	440		4.6	4.6		DS		07/14/18	DS
2	S11/S12	EEOS	WEOS	9:22	28C	DM	600	440		3.4	18.0		DS		07/14/18	DS
3	S12/S10	EEOS	WEOS	9:23	28C	DM	600	440		3.3	11.3		DS		07/14/18	DS
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 11.3

DESTRUCTIVE LENGTH CARRY - OVER 33.9

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 17-Jul-18

SHEET NUMBER 3

[X] FUSION
[ ] EXTRUSION

MACHINE # WW-27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-13	17:05	GS

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	S1/S13	EEOS	WEOS	17:20	26C	GS	600	840		12.1	244/11		DS		07/17/18	DS
2	S13/S14	EEOS	WEOS	17:23	26C	GS	600	840		12.0	23.0		DS		07/17/18	DS
3	S14/S15	EEOS	WEOS	17:28	26C	GS	600	840		12.0	35.0		DS		07/17/18	DS
4	S15/S16	EEOS	WEOS	17:34	26C	GS	600	840		13.0	48.0		DS		07/17/18	DS
5	S17/S18	EEOS	WEOS	17:40	26C	GS	600	840		13.0	61.0		DS		07/17/18	DS
6	S19/S20	EEOS	WEOS	17:46	26C	GS	600	840		15.0	76.0		DS		07/17/18	DS
7	S21/S22	EEOS	WEOS	17:53	26C	GS	600	840		15.0	91.0		DS		07/17/18	DS
8	S23/S24	EEOS	WEOS	18:03	26C	GS	600	840		18.0	109.0		DS		07/17/18	DS
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 110.1

DESTRUCTIVE LENGTH CARRY - OVER 109.0

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 17-Jul-18

SHEET NUMBER 4

[X] FUSION
[ ] EXTRUSION

MACHINE # WW-15

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-14	17:04	AS

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	S16/S17	EEOS	WEOS	17:38	26C	AS	550	860		13.0	141.1		DS		07/17/18	DS
2	S18/S19	EEOS	WEOS	17:42	26C	AS	550	860		14.8	155.9		DS		07/17/18	DS
3	S20/S21	EEOS	WEOS	17:49	26C	AS	550	860		15.0	170.9		DS		07/17/18	DS
4	S22/S23	EEOS	WEOS	17:56	26C	AS	550	860		15.7	186.6		DS		07/17/18	DS
5	S24/S25	EEOS	WEOS	18:04	26C	AS	550	860		17.9	204.5		DS		07/17/18	DS
6	S25/S26	EEOS	WEOS	18:12	26C	AS	550	860		17.9	222.4		DS		07/19/18	DS
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 94.3

DESTRUCTIVE LENGTH CARRY - OVER 222.4

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

DATE 19-Jul-18

SHEET NUMBER 5

X	FUSION
	EXTRUSION

MACHINE # WW-27

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-21	8:21	GC
TF-22	15:58	GC

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	S26/S27	EEOS	WEOS	11:21	28C	GC	600	860		15.0	74.0		AFK		07/19/18	DS
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
								DAILY TOTAL		15.0						
								DESTRUCTIVE LENGTH CARRY - OVER			74.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED
BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 19-Jul-18

SHEET NUMBER 6

[X] FUSION
[ ] EXTRUSION

MACHINE # WW-1

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-22	15:50	GC

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED WELDED (m)	LENGTH FROM PREVIOUS DESTR. (m)	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	S27/S28	EEOS	WEOS	16:30	28C	GC	600	860		15.0	96.0		AFK		07/19/18	DS
2	S28/S29	EEOS	WEOS	16:38	28C	GC	600	860		33.0	129.0		AFK		07/19/18	DS
3	S30/S31	WEOS	EEOS	17:05	28C	GC	600	860		33.0	162.0		AFK		07/19/18	DS
4	S29/S30	EEOS	WEOS	18:20	28C	GC	600	860		33.0	195.0		AFK		07/19/18	DS
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
									DAILY TOTAL	114.0						
									DESTRUCTIVE LENGTH CARRY - OVER		195.0					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 22-Jul-18

Sheet Number 1

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	S1/S2	EEOS	WEOS	1	DP	15:55	16:00	44	44	Y	P		Y	CB	
2	S2/S3	EEOS	WEOS	1	DP	15:56	16:01	36	36	Y	P		Y	CB	
3	S3/S4	EEOS	WEOS	2	DP	15:57	16:02	40	40	Y	P		Y	CB	
4	S4/S5	EEOS	WEOS	1	DP	16:05	16:10	40	39	Y	P		Y	CB	
5	S6/S7	EEOS	WEOS	2	DP	16:02	16:07	45	42	Y	P		Y	CB	
6	S7/S8	EEOS	WEOS	1	DP	16:12	16:17	30	30	Y	P		Y	CB	
7	S8/S9	EEOS	WEOS	1	DP	16:12	16:17	39	37	Y	P		Y	CB	
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 14-Jul-18

Sheet Number 2

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	S9/S10	WEOS	EEOS	1	DP	9:32	9:27	40	37	Y	P		Y	CB	
2	S10/S11	WEOS	EEOS	2	DP	9:24	9:29	39	37	Y	P		Y	CB	
3	S11/S12	WEOS	EEOS	3	DP	9:25	9:30	39	37	Y	P		Y	CB	
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 14-Jul-18

Sheet Number 3

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	S13/S14	WEOS	EEOS	1	DP	17:30	17:35	35	33	Y	P		Y	DS	
2	S14/S15	WEOS	EEOS	1	DP	17:40	17:45	45	43	Y	P		Y	AFK	
3	S15/S16	WEOS	EEOS	1	DP	17:47	17:52	45	43	Y	P		Y	AFK	
4	S16/S17	WEOS	EEOS	2	DP	17:48	17:53	44	42	Y	P		Y	AFK	
5	S17/S18	WEOS	EEOS	3	DP	17:50	17:55	45	42	Y	P		Y	AFK	
6	S18/S19	WEOS	EEOS	1	DP	17:59	18:04	45	43	Y	P		Y	AFK	
7	S19/S20	WEOS	EEOS	2	DP	18:01	18:06	45	43	Y	P		Y	AFK	
8	S20/S21	WEOS	EEOS	3	DP	18:02	18:07	45	44	Y	P		Y	AFK	
9	S21/S22	WEOS	EEOS	1	DP	18:11	18:16	45	42	Y	P		Y	CAZ	
10	S22/S23	WEOS	EEOS	2	DP	18:13	18:18	44	43	Y	P		Y	CAZ	
11	S23/S24	WEOS	EEOS	3	DP	18:14	18:19	45	43	Y	P		Y	CAZ	
12	S24/S25	WEOS	EEOS	1	DP	18:21	18:26	45	43	Y	P		Y	CAZ	
13	S1/S13	WEOS	EEOS	2	DP	18:29	18:29	45	43	Y	P		Y	CAZ	
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 19-Jul-18

Sheet Number 4

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	S25/S26	EEOS	2N	1	DP	8:52	8:57	49	48	Y	P	N		DS	
2	S25/S26	WEOS	2N	2	DP	8:55	9:00	45	43	Y	P		Y	DS	
3	S36/S37	EEOS	6W	1	DP	19:15	9:18	46	44	Y	P		Y	DS	
4	S33/S34	EEOS	WEOS	1	DP	10:38	10:43	50	48	Y	P		Y	DS	
5	S26/S27	EEOS	WEOS	1	DP	11:29	11:34	44	43	Y	P		Y	CB	
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 19-Jul-18

Sheet Number 5

	SEAM, NUMBER	SEAM SECTION * FROM	SEAM SECTION * TO	PRESS GAUGE NUMBER	TECH ID	TIME START	TIME FINISH	PRESSURE INITIAL	PRESSURE FINAL	OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE NO	SEAM COMPLETE YES	MON	REMARKS
1	S27/S28	WEOS	EEOS	1	DP	17:20	17:25	42	41	Y	P		Y	DS	
2	S28/S29	WEOS	7F	1	DP	17:29	17:34	40	38	Y	P	N		DS	
3	S29/S29	7F	EEOS	1	DP	18:15	18:20	42	40	Y	P		Y	DS	
4	S30/S31	EEOS	WEOS	1	DP	19:01	19:06	41	39	Y	P		Y	DS	7H-WEOS EXTR.
5	S29/S30	EEOS	7J	1	DP	19:15	19:20	41	40	Y	P		Y	DS	7J-WEOS EXTR.
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GEOMEMBRANE PANEL DEPLOYMENT LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

GEOMEMBRANE: SECONDARY **PRIMARY**
SUBGRADE CONDITIONS: Good
REMARKS:

DATE: 7/24/18
TRANSPORT EQUIPMENT Backhoe and Spreader Bar
SHEET NUMBER: 1

DESCRIPTION	PANEL NUMBER D1	PANEL NUMBER D2	PANEL NUMBER D3
ROLL NUMBER	42	38	3
DEPLOYED LENGTH	18.4 m	18.5 m	14.9 m
AMBIENT AIR TEMP.	18C	18C	18C
OBSERVED OVERLAP	150 mm	150 mm	150 mm
REMARKS			
MONITOR	DS	DS	DS

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	61	60	60	61	61	60	60	60	60	59	59	60
	60	60	59	60	60	59	60	61	61	60	59	60
	61	61	60	60	60	59	59	61	61	60	60	60
AVERAGE	61	60	60	60	60	59	60	61	61	60	59	60

DESCRIPTION	PANEL NUMBER D4	PANEL NUMBER	PANEL NUMBER
ROLL NUMBER	42		
DEPLOYED LENGTH	4.6 m		
AMBIENT AIR TEMP.	18		
OBSERVED OVERLAP	150 mm		
REMARKS			
MONITOR	DS		

SHEET THICKNESS	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL	LEAD	L SIDE	R SIDE	TRAIL
	60	59	59	60								
	60	59	60	61								
	60	60	60	61								
AVERAGE	60	59	60	61	#DIV/0!	#####	#####	#####	#DIV/0!	#####	#####	#####

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

DATE 24-Jul-18

SHEET NUMBER 1

X	FUSION
	EXTRUSION

MACHINE # WW-11

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TF-34	9:09	DM

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	D1/D2	WEOS	EEOS	10:15	19C	DM	430	600		18.0	186 m		DS		07/24/18	DS
2	D3/D4	NEOS	SEOS	10:30	19C	DM	430	600		7.0	193m		DS		07/24/18	DS
3	D2/D3	WEOS	EEOS	10:36	19C	DM	430	600		14.9	207.9		DS		07/24/18	DS
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
									DAILY TOTAL	39.9						
									DESTRUCTIVE LENGTH CARRY - OVER		212.5 m					

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

[ ] FUSION
[x] EXTRUSION

MACHINE # EXT-21

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX-28	13:50	DG

DATE 7/24/18

SHEET NUMBER 1

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P49/D4	NEOS	SEOS	14:02	18C	DG	459	490		2.0			DS		07/24/18	CB
2	P60/D4	NEOS	SEOS	14:05	18C	DG	459	490		3.6			DS		07/24/18	CB
3	P60/D4	WEOS	EEOS	14:13	18C	DG	459	490		1.1			DS		07/24/18	CB
4	P59/D4	WEOS	EEOS	14:14	18C	DG	459	490		2.2			DS		07/24/18	CB
5	P59/D3	WEOS	EEOS	14:15	18C	DG	459	490		4.5			DS		07/24/18	CB
6	P59/D3	WEOS	EEOS	14:20	18C	DG	459	490		6.8			DS		07/24/18	CB
7	P57/D3	WEOS	EEOS	14:24	18C	DG	459	490		3.5			DS		07/24/18	CB
8	P57/D3	SEOS	NEOS	14:27	18C	DG	459	490		2.9			DS		07/24/18	CB
9	P49/D3	SEOS	NEOS	14:29	18C	DG	459	490		1.7			DS		07/24/18	CB
10	P49/D2	SEOS	NEOS	14:31	18C	DG	459	490		5.8			DS		07/24/18	CB
11	P48/D2	SEOS	NEOS	14:36	18C	DG	459	490		1.7			DS		07/24/18	CB
12	P48/D1	SEOS	NEOS	14:37	18C	DG	459	490		5.7			DS		07/24/18	CB
13	P47/D1	SEOS	NEOS	14:41	18C	DG	459	490		1.8			DS		07/24/18	CB
14	P47/D1	EEOS	WEOS	14:43	18C	DG	459	490		17.7			DS		07/24/18	CB
15	P47/D1	NEOS	SEOS	14:56	18C	DG	459	490		2.0			DS		07/24/18	CB
16	P48/D1	NEOS	SEOS	14:58	18C	DG	459	490		5.6			DS		07/24/18	CB
17	P48/D2	NEOS	SEOS	15:02	18C	DG	459	490		1.5			DS		07/24/18	CB
								DAILY TOTAL		70.1						
								DESTRUCTIVE LENGTH CARRY - OVER								

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS).
A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED
BY THE DATA REVIEWED ONLY

GEOMEMBRANE SEAM PRESSURE TEST LOG

PROJECT NUMBER: 0366-001-00-400
OWNER: Waste Connections
LOCATION: Prairie Green IWMF

PROJECT TITLE: Cell 15 Construction
CONTRACTOR: Titan Environmental

Date : 7/24/2018

Sheet Number 1

	SEAM, NUMBER	SEAM SECTION *		PRESS GAUGE NUMBER	TECH ID	TIME		PRESSURE		OBS. TEST	RESULTS PASS/ P	SEAM COMPLETE		MON	REMARKS
		FROM	TO			START	FINISH	INITIAL	FINAL			NO	YES		
1	D1/D2	WEOS	EEOS	1	DG	10:25	10:30	39	39	Y	P		Y	DS	
2	D2/D3	WEOS	EEOS	1	DP	15:06	15:11	40	38	Y	P		Y	DS	
3	D3/D4	NEOS	SEOS	2	DP	15:06	15:11	45	42	Y	P		Y	DS	
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF.PT.)

GE0MEMBRANE SEAM LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

[ ] FUSION
[x] EXTRUSION

MACHINE # EXT-21

PASSING TRIAL SEAMS

NO.	TIME	TECH ID
TX-28	13:50	DG

DATE 7/24/18

SHEET NUMBER 2

	SEAM NUMBER	SEAM SECTION * START POINT	SEAM SECTION * FINISH POINT	APPROX. START TIME	AMB. AIR TEMP. C	WELD TECH.	PREHEAT OR MACH. SPEED	MACHINE TEMPERATURES DIGITAL SET WEDGE OR BARREL NOZZLE	MACHINE TEMPERATURES INDICATOR WEDGE OR BARREL NOZZLE	APPROX. LENGTH WELDED	LENGTH FROM PREVIOUS DESTR.	DESTR. NUMBER	MON.	REMARKS	** NON - DESTRUCIVE TEST DATE	** NON - DESTRUCIVE MON.
1	P49/D2	NEOS	SEOS	15:03	18C	DG	459	490		5.6			DS		07/24/18	CB
2	D2/D4	EEOS	SEOS	15:08	18C	DG	459	490		4.6			DS		07/24/18	CB
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																

DAILY TOTAL 10.2

DESTRUCTIVE LENGTH CARRY - OVER

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS). A REPAIR NUMBER, OR A POINT LOCATION ON THE SEAM

** COLUMNS TO BE USED BY THE DATA REVIEWED ONLY

GEOMEMBRANE SEAM VACUUM TEST LOG

PROJECT NUMBER: 0366-001-00-400
PROJECT TITLE: Cell 15 Construction
OWNER: Waste Connections
CONTRACTOR: Titan Environmental
LOCATION: Prairie Green IWMF

VACUUM BOX NUMBER 1 SHEET NUMBER _____

SEAMS

	SEAM NUMBER	SEAM SECTION * FROM	TO	TEST DATE	TECH ID	DEFECTS **	SEAM COMPLETE NO	YES	OBS. TEST	MON.	REMARKS
1	P49/D4	NEOS-SEOS		07/24/18	DP	N		Y	Y	CB	
2	P60/D4	NEOS-SEOS		07/24/18	DP	N		Y	Y	CB	
3	P60/D4	WEOS-EEOS		07/24/18	DP	N		Y	Y	CB	
4	P59/D4	WEOS-EEOS		07/24/18	DP	N		Y	Y	CB	
5	P59/D3	WEOS-EEOS		07/24/18	DP	N		Y	Y	CB	
6	P59/D3	WEOS-EEOS		07/24/18	DP	N		Y	Y	CB	
7	P57/D3	WEOS-EEOS		07/24/18	DP	N		Y	Y	CB	
8	P57/D3	SEOS-NEOS		07/24/18	DP	N		Y	Y	CB	
9	P49/D3	SEOS-NEOS		07/24/18	DP	N		Y	Y	CB	
10	P49/D2	SEOS-NEOS		07/24/18	DP	N		Y	Y	CB	
11	P48/D2	SEOS-NEOS		07/24/18	DP	N		Y	Y	CB	
12	P48/D1	SEOS-NEOS		07/24/18	DP	N		Y	Y	CB	
13	P47/D1	SEOS-NEOS		07/24/18	DP	N		Y	Y	CB	
14	P47/D1	EEOS-WEOS		07/24/18	DP	N		Y	Y	CB	
15	P47/D1	NEOS-SEOS		07/24/18	DP	N		Y	Y	CB	
16	P48/D1	NEOS-SEOS		07/24/18	DP	N		Y	Y	CB	
17	P48/D2	NEOS-SEOS		07/24/18	DP	N		Y	Y	CB	
18	P49/D2	NEOS-SEOS		07/24/18	DP	N		Y	Y	CB	
19	D2/D4	EEOS-WEOS		07/24/18	DP	N		Y	Y	CB	
20											

REPAIRS

	DEFECT CODE	TEST DATE	TECH ID	DEFECTS **	OBS. TEST	MON.	REMARKS
21	10D	07/24/18	DP	N	Y	CB	
22	9W	07/24/18	DP	N	Y	CB	
23	9X	07/24/18	DP	N	Y	CB	
24	10A	07/24/18	DP	N	Y	CB	
25	10B	07/24/18	DP	N	Y	CB	
26	10C	07/24/18	DP	N	Y	CB	
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

* REFERENCE SEAM ENDPOINTS FROM AN END OF SEAM (EOS), A REPAIR NUMBER,
OR A POINT LOCATION ON THE SEAM (I.E. REFERENCE POINT, DISTANCE, DIRECTION FROM REF. PT.)

** RECORD QUANTITY OF LEAKS DETECTED AND REFERENCE NEW DEFECT CODE IN REMARKS.

Appendix C

Construction Photo Summary

Winter Excavation of Cell 15

Winter Excavation of Cell 15

Excavation and conditioning of the cell floor looking North.

Compaction of Cell floor

Removing sand from east tie-in to Cell 13

West Separation Berm tie into Cell 14

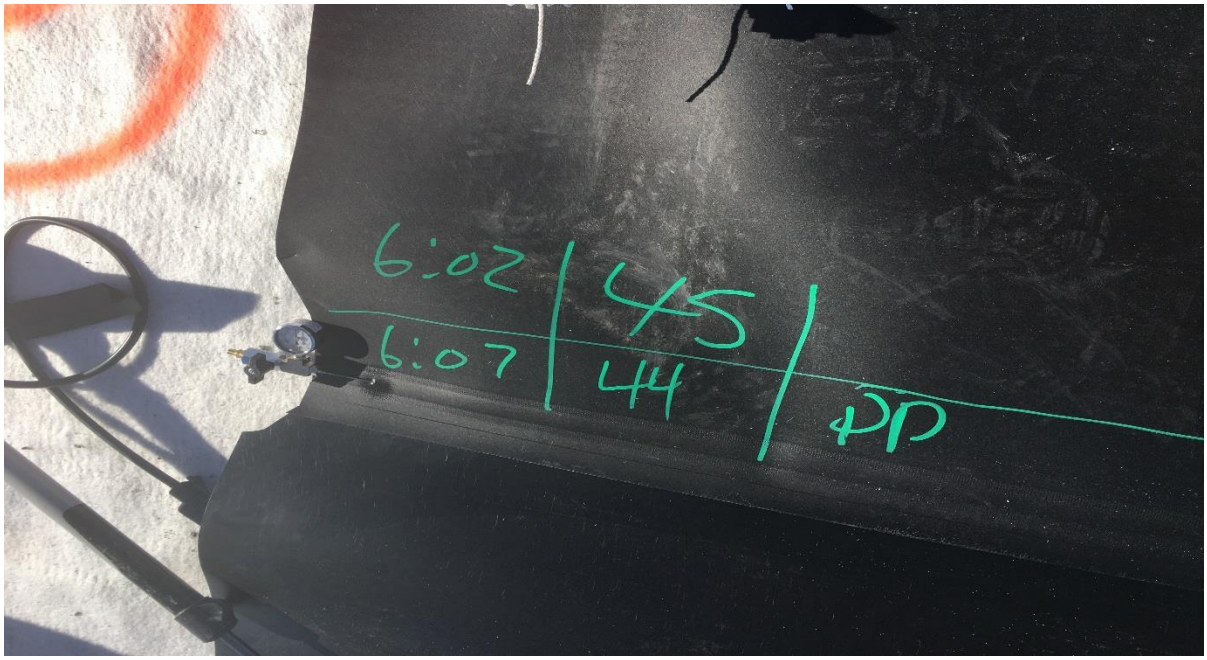
Trimming South Permanent Berm

Preparing Cell floor for GCL deployment

GCL deployment

HDPE deployment and tie into Cell 13

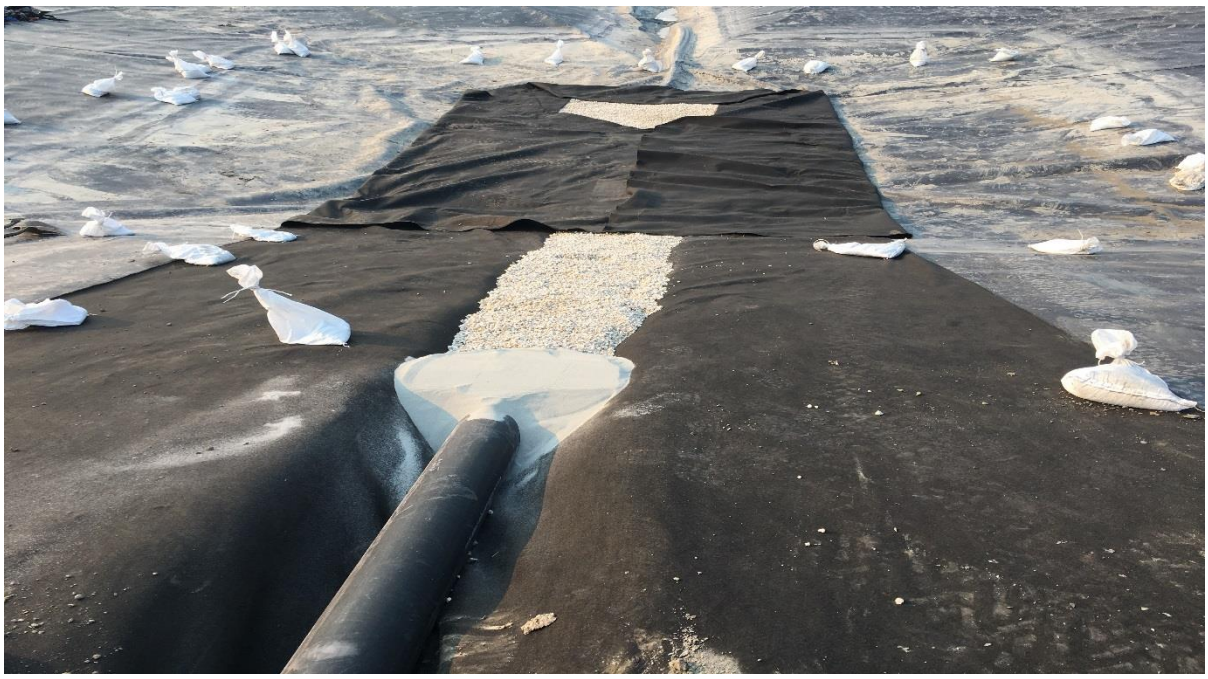
Fusion welding of seam



Air pressure test of seam

Installation of Subliner Sampler Pipe

Placement of Sub-liner stone in Sump



19mm clean stone and bentonite seal for Sub-liner Pipe

Completed Sub-liner Pipe installation

Deployment of GCL and HDPE geomembrane of South Permanent Berm

Installation of Geocomposite

Completed Sump and Geocomposite on Floor

Leachate Collection Trench pipe and Geocomposite

Sand Drainage layer installation

Leachate Collection pipes in Sump

Installation of Leachate Collection 50 mm clean stone in sump

Completed Cell 15