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April 9, 2010

Mr. Steve Morgan, P.E.
Solid Waste Section
Florida Department of Environmental Protection Agency
Southwest District
13051 N. Telecom Parkway
Temple Terrace, Florida 33637-0926

Dept Of Environmental Protection
APR 13 2010
Southwest District

Subject: **Request for Additional Information No. 1**
Certification of Construction – Phase II Construction
Sarasota Central County Solid Waste Disposal Complex Class I LF
Construction Permit No. 130542-006-SC/01
WACS ID No.: SWD/58/51614

Dear Mr. Morgan:

HDR Engineering, Inc. (HDR) submits herein responses to the Florida Department of Environmental Protection Agency's (FDEP) Request for Additional Information (RAI) No. 1, including the responses to the comments by John Morris, P.G. regarding Attachment F, for the Certification of Construction – Phase II Construction, dated March 16, 2010 and March 26, 2010 for the Sarasota Central County Solid Waste Disposal Complex Class I Landfill – Phase II construction project.

Please call us if you require any clarifications or information relating to this RAI No. 1.

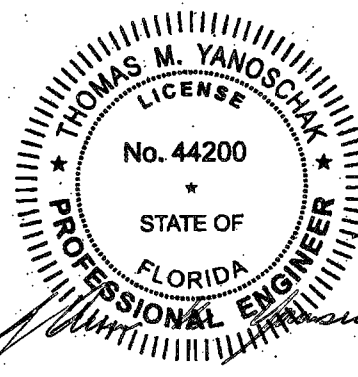
Sincerely,
HDR Engineering, Inc.

HDR Engineering, Inc.

Richard A. Siemering
Solid Waste Senior Project Manager

Thomas M. Yanoschak, P.E.
Senior Project Manager
P.E. No. 44200
CA 4213

cc: L. Rose, Sarasota County



4/19/10

**Responses to Request for Additional Information (RAI) No. 1,
Dated March 16, 2010
Steve Morgan's comments on the Certification of Construction of Phase II and
supporting documents for the Sarasota Central County Solid Waste Disposal
Complex Class I Landfill**

Provided below are responses to Steve Morgan's comments.

FDEP COMMENTS

COMMENT

CERTIFICATION OF CONSTRUCTION COMPLETION REPORT

1. Please revise the narrative in this report, where applicable, based on responses to comments provided regarding the attachments to the report.

RESPONSE

Provided herein are the responses to the FDEP staff comments and any narrative revision have been included in the Attachments to this response. All of the comments have been addressed as shown below.

Attachment A – Ardaman & Associates, Inc. Construction Quality Assurance Report

Please provide the following additional information and revisions to this Construction Completion Report. Please either provide a complete revised report or provide replacement pages with revisions noted (deletions may be struckthrough [~~struckthrough~~] and additions may be underlined [underlined] or a similar method may be used) and each page numbered with the document title and date of revision. The report will be review in its entirety upon receipt of the request information and revisions.

COMMENT

2. Please revise the narrative in this report, where applicable, based on responses to comments provided regarding the attachments to the report.

RESPONSE

The narrative report, tables, appendices, and/or drawings have been revised, where applicable, based on the responses to the comments. Refer to the responses for details on the revisions.

SOUTHWEST DISTRICT
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COMMENT

3. Section 3.2: Some of the TRI Environmental, Inc. MQC test results for GCL are identified as being for Bentofix 34 NWL 45 GCL and Bentofix NWL 45 GCL. Please verify whether a different GCL product than the BentoLiner NWL 45 indicated in this section was used on the project and revise this section, as appropriate.

RESPONSE

All GCL delivered to the site and used in the project was GSE BentoLiner NWL-45. TRI has revised their reports to indicate the samples tested were from rolls of BentoLiner (not Bentofix) NWL-45 and Appendix 1 in Attachment A has been revised accordingly.

COMMENT

4. Section 4.1:

a. Specific Condition #B.10.j. of Construction Permit No. 130542-006-SC/01 required that SPLP testing for arsenic be conducted on the subgrade soils at a frequency of one test per 10,000 CY of material. Please verify that these tests were conducted, provide copies of the test results, and revise this section of the report, as appropriate.

RESPONSE

The frequency referenced in Specific Condition #B.10.j. was one test per 50,000 CY. A discussion of this testing has been added as Appendix 24 in Volume VI dated April 2, 2010 in Attachment B.

Dept. Of Environmental Protection

COMMENT

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4. Section 4.1:

Southwest District

b. Please revise Section 1.0 of the HDR Certification Report to list the elimination of scarification as a construction deviation.

RESPONSE

Refer to page 2 in Attachment C for the revision to Section 1.0 of the HDR Certification Report. The revision lists the elimination of scarification as a construction deviation and provides an explanation for the deviation.

COMMENT

4. Section 4.1:

c. Specific Condition #B.10.f. of Construction Permit No. 130542-006-SC/01 required that the soil CQA testing frequencies for the final subgrade be doubled for the first five acres of liner system construction. Please verify that this required frequency was followed and revise this section of the report, as applicable, to discuss testing conducted on the first five acres.

RESPONSE

The density test frequency was doubled for the first five acres. Section 4.1 on page 12 in the revised Volume I dated April 6, 2010 in Attachment D, has been revised to clarify this.

COMMENT

5. Tables 6 and 7 – Geomembrane Field Seam Destructive Test Summaries:

a. Please provide copies of the lab reports for the destructive test results reported in these tables.

RESPONSE

Copies of the lab reports for the destructive test results reported in the tables have been added in Appendix 25 in Volume VII dated April 2, 2010 in Attachment E. These lab reports have also been referenced in Section 3.4, on page 8 in the revised Volume I dated April 6, 2010 in Attachment D.

COMMENT

6. Tables 6 and 7 – Geomembrane Field Seam Destructive Test Summaries:

b. Please explain the abbreviation “SE”, the significance of the number following the abbreviations, and the difference between “BRK” and “AD-BRK”.

RESPONSE

The explanation for the abbreviations, the significance of the number following the abbreviations and the difference between “BRK” and “AD-BRK” has been added to Section 3.4 on page 8 in the revised Volume I dated April 6, 2010 and also to Tables 6 and 7 in the revised Volume I dated April 6, 2010 in Attachment D.

COMMENT

5. Tables 6 and 7 – Geomembrane Field Seam Destructive Test Summaries:

c. **Specific Condition B.11.c.(2) of Construction Permit No. 130542-006-SC/01 and Specification Section 2775-3.2.D.2.b. require that all destructive tests failures shall be FTB failures. However destructive tests DT-S171, DT-S190, DT-S229, DT-P124A, DT-P144, DT-P160, DT-P161, DT-P214, and DT-P240A, which each reported one non-FTB failure in peel, and DT-P179, which reported three non-FTB failures in peel, were considered passing tests. Please verify and explain and revise this section, as appropriate.**

RESPONSE

The specification section cited above refers to the contractor's field Construction Quality Control (CQC) testing. The acceptance criteria for the laboratory Construction Quality Assurance (CQA) testing is in Specific Condition B.11.c.(2) and Specification Section 2775-3.2.D.2.d. (as modified by the Minor Modification Permit Application dated April 23, 2009. This requires that four (4) out of five (5) specimens meet the specified seam strength and fail as Film Tear Bond (FTB). Although a minimum strength requirement for the fifth sample is not stated in the specification, a minimum of 80% of the required seam strength was chosen for the project which is consistent with the requirements of GRI Test Method GM19, "Seam Strength and Related Properties of Thermally Bonded Polyolefin Geomembranes."

Refer to the revised Section 3.4 in the revised Volume I dated April 6, 2010 in Attachment D, for clarification of how a non-FTB failure was defined. Therefore, the following destructive tests are summarized as follows:

- DT-S171 – has 1 non-FTB failure and its strength is 112% of the required seam strength, so the sample passes.
- DT-S190 - has 1 non-FTB failure and its strength is 104% of the required seam strength, so the sample passes.
- DT-S229 - has 1 non-FTB failure and its strength is 191% of the required seam strength, so the sample passes.
- DT-P124A - has no non-FTB failures, so the sample passes. (An AD-BRK failure with less than 25% peel [this one had 10%] is a FTB failure.)
- DT-P144 - has 1 non-FTB failure and its strength is 99% of the required seam strength, so the sample passes.
- DT-P160 - has no non-FTB failures, so the sample passes.
- DT-P161 - has 1 non-FTB failure and its strength is 150% of the required seam strength, so the sample passes.
- DT-P214 - has no non-FTB failures, so the sample passes.
- DT-P240A - has no non-FTB failures, so the sample passes.

- DT-P179 – has 1 non-FTB failure and its strength is 134% of the required seam strength, so the sample passes.

COMMENT

6. Appendix 1 - MQC Test Results for GCL:

- a. It appears that copies of only a select number of the GCL Quality Certificates were included in Appendix 1. Please verify and explain.**

RESPONSE

GSE issues a variety of quality certificates for the BentoLiner product. In Appendix 1, in Volume II of the Ardaman report dated February 10, 2010, the first page is for index flux testing of 27 rolls. The pages after that are the certificates for each shipment. GSE does not issue a separate certificate for each roll. For each shipment, the following certificates were included:

- One BentoLiner Manufacturing Certification (BMC) that covers all the rolls in the shipment.
- Several (the number varies depending on the number of rolls in the shipment) Quality Control Certificates (QCC) that list the tests performed on individual rolls in that shipment, except for the index flux (permeability) tests. Tests are not performed on each roll, since the testing frequency (1/40,000 ft², 1/100,000 ft² or 1/100,000 lb) does not require them. In general, the various required tests were required at a frequency of about 1 per every 18, 24 or 59 rolls, depending on the test.

The BMC and QCC's for each shipment are grouped together. Also included in Appendix I in Volume II of the Ardaman & Associates, Inc. (Ardaman) report dated February 10, 2010, after the certificates for each shipment are the additional tests performed by TRI Environmental, at the request of the contractor.

Since all of the MQC Certificates are in Appendix 1, no revision to the report has been made regarding the above.

COMMENT

7. Appendix 21 – Geomembrane Installation:

a. Repair Log Secondary Liner: Please check the information provided for the following repairs and revise the log or panel placement Drawing RD-5, as appropriate:

- 1) Repair 688 is identified as being for Destructive Test DT-S160 on Drawing RD-5.

RESPONSE

Refer to the revised repair log on page 18 of 29 dated April 2, 2010 in Attachment F that has been revised to correctly list DT-S160. Drawing RD-5 is correct, therefore no revision was required.

COMMENT

7. Appendix 21 – Geomembrane Installation:

a. Repair Log Secondary Liner: Please check the information provided for the following repairs and revise the log or panel placement Drawing RD-5, as appropriate:

- 2) Repair 888 and Destructive Test DT-S202 does not appear to be shown on the Drawing DT-5.

RESPONSE

R-888 was shown on drawing RD-5, but DT-S202 (at same location) was not shown on drawing RD-5. DT-S202 has been added to Drawing RD-5. Refer to revised Volume I dated April 6, 2010 in Attachment D.

COMMENT

7. Appendix 21 – Geomembrane Installation:

b. Repair Log Primary Liner: Please check the information provided for the following repairs and revise the log or panel placement Drawing RD-6, as appropriate:

- 1) Repair 218 and Destructive Test DT-P60 does not appear to be shown on the Drawing DT-6.

RESPONSE

DT-P60 and R-218 have been added to Drawing RD-6. Refer to revised Volume I dated April 6, 2010 in Attachment D.

COMMENT

7. Appendix 21 – Geomembrane Installation:

b. **Repair Log Primary Liner:** Please check the information provided for the following repairs and revise the log or panel placement Drawing RD-6, as appropriate:

2) Repair 668 appears to be identified as Repair 688 on Drawing RD-6.

RESPONSE

R-688 at panels 205/206 was incorrectly identified. It should have been identified as R-668. Drawing RD-6 has been revised to show this correction. Refer to revised Volume I dated April 6, 2010 in Attachment D.

COMMENT

Attachment C – Phase II Class I Landfill As-Built Drawings

8. It appears that only as-built drawings related to surveying the subgrade, protective soil layer and piping installation were provided. Please provide as-built record drawings for the construction details of the project depicted on Sheets C-09 through C-19, C-31, and C-32 of the February 2009 Conformed Construction Drawings.

RESPONSE

Signed and sealed as-built record drawings (Sheets C-09 through C-19, C-31, and C-32 of the February 2009 Conformed Construction Drawings) are submitted for your review, in Attachment G, under separate cover.

COMMENT

Attachment C – Phase II Class I Landfill As-Built Drawings

9. Please provide as-built record drawings for the installed bottom liner temporary gas vents and the Cells 3 and 4 dewatering system.

RESPONSE

Signed and sealed as-built record drawing for the installed bottom liner temporary gas vents (detail 3 on Sheet C-09A) in Attachment G, under separate cover, and the dewatering system for Cells 3 and 4 in Attachment H, under separate cover, are submitted for your review.

COMMENT

Attachment F – Ardaman & Associates, Inc. Installation of Groundwater Monitoring Wells, Gas Probe, and Staff Gauges for CCSWDC Phase II

10. Comments regarding Attachment F shall be provided by John Morris, P.G., via memorandum, under separate cover. Responses to each of the items in John Morris' memorandum are required. You may call Mr. Morris at (813) 632-7600, extension 336, to discuss the items in his memorandum.

RESPONSE

Refer to the responses to comments by John Morris, P.G., regarding ground water on the next page.

**Responses to John Morris's memorandum on the Groundwater Monitoring Wells,
Gas Probe, and Staff Gauges, dated March 26, 2010,
Of the Certification of Construction of Phase II and supporting documents for the
Sarasota Central County Solid Waste Disposal Complex Class I Landfill**

Provided below are responses to John Morris's comments.

FDEP COMMENTS

COMMENT

**Attachment F – Ardaman & Associates, Inc. Installation of Groundwater
Monitoring Wells, Gas Probe, and Staff Gauges for CCSWDC Phase II**

1. **Specific Condition #E.1.a.**
Information Submitted: Appendix III of the installation Report included Field Calibration Worksheets and DEP Form #FD 9000-24 [Groundwater Sampling Log] that were completed for the initial sampling event conducted between June 30, 2009 at wells MW-15 through MW-20.

Deficiency:

- Field Calibration Worksheet showed a failed post-sampling calibration for turbidity on July 2, 2009 [MW-15 and MW-16].
- Field Calibration Worksheet showed a failed post-sampling calibration for conductivity and turbidity on July 7, 2009 [MW-17; resampling for analysis of nitrate only at MW-18 and MW-19].
- Ground Water Sampling Log for MW-19 on June 30, 2009 indicated turbidity values measured during the well purging [90 to 110 NTU] were outside the calibration range.
- Ground Water Sampling Log for MW-20 on June 30, 2009 indicated conductivity values measured during the well purging [1506 to 1531 $\mu\text{mhos/cm}$] were outside the calibration range.
- Ground Water Sampling Log for MW-15 on July 2, 2009 indicated conductivity values measured during the well purging [3078 to 3152 $\mu\text{mhos/cm}$] were outside the calibration range.
- Ground Water Sampling Log for MW-16 on July 2, 2009 indicated conductivity values measured during the well purging [3125 to 3149 $\mu\text{mhos/cm}$] were outside the calibration range.
- Ground Water Sampling Log for MW-17 on July 7, 2009 indicated conductivity values measured during the well purging [1615 to 1640 $\mu\text{mhos/cm}$] and the turbidity values measured during well purging [140 to 200 NTU] were outside the calibration range.

- Ground Water Sampling Log for MW-19 on July 7, 2009 indicated turbidity values measured during well purging [40 to 43 NTU] were outside the calibration range.
- Ground Water Sampling Log for MW-20 on July 7, 2009 indicated conductivity values measured during the well purging [1545 to 1548 $\mu\text{mhos/cm}$] were outside the calibration range.

Corrective Actions:

- Ensure that appropriate calibration standards are available that bracket the anticipated range of field parameters for future sampling events [Section 2.1.5 of FT 1000 – General Field Testing and Measurement].
- Conduct continuing calibration verifications at an appropriate frequency on equipment used for field measurements during well purging to meet acceptance criteria [Section 2.2.5 of FT 100 – General Field Testing Measurements].
- Provide the supplemental information presented in Section 3.6 of FS 2212 [FS 2200 – Ground Water Sampling] to determine if elevated turbidity values [>20 NTU] measured during future sampling events are representative of naturally occurring conditions.

RESPONSE

Deficiencies as stated are noted. Appropriate calibration standards will be available to adequately bracket the anticipated range of parameters for both turbidity and conductivity for future events. Equipment will be recalibrated more frequently during the sampling event to meet acceptance criteria.

With regard to elevated turbidity values measured during the first sampling event, values may not be representative of naturally occurring conditions due to site activities at that time, and general lack of well volume and production to sufficiently develop the wells. Turbidity will be evaluated during future events to determine if the values are representative of naturally occurring conditions.

COMMENT

2. Specific Condition #E.3./#E.5.b./#F.3.

Information Submitted: Appendix I of the Installation Report included:

- Well Construction Permit #785263 issued by the Southwest Florida Water management District.
- DEP Form #62-522.900(3) for wells MW-15 through MW-20, and for gas probe GP-9.
- Boring Logs that describe lithology encountered during the installation of wells MW-15 through MW-20.

Deficiency: None. It is noted that wells MW-15 through MW-20 were installed with screened intervals very close the proposed range of 14 to 24 feet NGVD as indicated in Table 2-2 of the document entitled "Central County Solid Waste Disposal Complex, Water Quality Monitoring Plan Addendum." It is also noted that a water column of ~2 to ~4 feet was encountered during the water levels measured between June 30, 2009 and July 7, 2009, and on August 6, 2009. Water levels for future sampling events will be evaluated to determine if the new wells are appropriately conducted to allow the collection of representative ground water samples.

Corrective Actions: None requested at this time.

RESPONSE

No response required.

COMMENT

3. Specific Conditions #E.4./#E.4.b.

Information Submitted: Appendix III of the Installation Report included the report of results prepared by PEL for the sampling events conducted between June 30, 2009 and July 9, 2009 at wells MW-15 through MW-20. Appendix IV of the installation Report provided Table 2 entitled "Ground Water Analytical Data Summary – Detects."

Deficiency: Eight parameters referenced in Rule 62-701.510(8)(d), F.A.C. [the parameters listed in 40 CFR Part 258, Appendix II] were omitted from the PEL report. Elevated method detection limits for selected parameters listed in 40 CFR Part 258, Appendix II were reported, including: one metal; one volatile organic compound; and, 13 semi-volatile organic compounds. The method detection limits reported for these parameters did not demonstrate compliance with ground water standards [Chapter 62-550, F.A.C.] or ground water minimum criteria [Chapter 62-777, F.A.C., Table I]. Please refer to the attached table for the list of these parameters.

Corrective Actions: Please coordinate with the laboratory to determine if the results for the June/July 2009 initial sampling event can be reported at lower detection limits to demonstrate compliance with ground water standards or minimum criteria, and to indicate if the omitted parameters were analyzed but not included in the report of results. In the event that the laboratory can report at lower detection limits and/or can provide results for the omitted parameters, please submit a revised report of results. For any parameter that cannot be reported at sufficiency lower detection limits and/or for any omitted parameter, please conduct a supplemental sampling event using an

appropriate analytical method and submit the results with the responses to these comments.

The letter prepared by Sarasota County dated December 10, 2009 indicated that as the analysis of bis(2-ethyl hexyl) phthalate was reported at concentrations that exceeded the ground water minimum criterion in five of the six new wells, the analysis of this parameter will be included in the next routine sampling event for confirmation purposes. Please indicate if resampling will be conducted to address the exceedances reported for aluminum, arsenic, iron, manganese, sodium, ammonia, chloride, sulfate, TDS or dieldrin. Please submit revisions to the "detects" table provided in Appendix IV of the Installation Report to include the results reported for dieldrin.

RESPONSE

The laboratory inadvertently omitted Sulfide and PCB's from the analysis. Due to the time since the sampling event, an additional event will be conducted for these analytes.

The metal Thallium was reported with an MDL above groundwater criteria. The additional sampling event will include this metal with an appropriate MDL.

The Volatile Organics omitted from the report, bromochloromethane, 1,3-dichloropropane, 2,2-dichloropropane and 1,1-dichloropropene could be extracted from the lab data. The MDL for 1,2-dibromo-3-chloropropane could be reported at a concentration below the Ground Water Criteria. We believe that cis-1,3-dichloroethene is a typo in the "Summary of Inadequate Results" table as the CAS number is that of 1,2-dichloroethene that is contained in the certificate of analysis and reported at an appropriate MDL. The revised Certificate of Analysis has been attached as Appendix III dated April 5, 2010 in Attachment I and replaces Appendix III of the August 13, 2009 report.

The semi volatile organics were run by Method 8270 as the recommended Method by 40 CFR 258, App. II, however several of the MDL's are above FDEP Guidance PQL's. The analyte 3-methyl phenol is reported in the Certificate of Analysis as 4-methyl phenol as the Method, cannot distinguish between the two. The MDL is adequate to meet groundwater criteria. Pentachlorophenol could be reported at an MDL which meets groundwater criteria. The remaining semi volatile organics listed, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chlorobenzilate, diallate, dibenz(a,h)anthracene, 2,4-dinitrotoluene, disulfoton, ideno(1,2,3-cd)pyrene, kepone and pentachloronitrobenzene must be run by alternate methods to meet the Guidance PQL's. The additional sampling event will include these analytes.

A revised "Groundwater Analytical Data Summary - Detects" table dated April 6, 2010, reflecting dieldrin is included in Appendix IV dated April 6, 2010 in Attachment J.

Enclosed in Attachment I and J are the revised Appendix III and Appendix IV, which replace the respective Appendices of our August 13, 2009 report, in their entirety.

COMMENT

4. Specific Conditions #E.5.d

Information Submitted: The Site Survey Drawing included in the Installation Report provided elevation and location information for the monitor wells [including new wells MW-15 through MW-20], piezometers and staff gauges at the facility.

Deficiency: The location information presented on the Site Survey Drawing was provided in northings and eastings, rather than the required degrees, minutes and seconds of latitude and longitude. The Site Survey Drawing did not provide a land surface elevation for the current monitor wells [MW-1R, MW-8A, CW-8A, MW-9, CW-9, MW-10R, CW-10R, MW_15, MW-16, MW-17, MW-18, MW_19 and MW-20], however land surface elevations were provided on the DEP forms for wells MW-15 through MW-20 [Appendix I of the Installation Report].

Corrective Actions: Please submit a revised Site Survey Drawing that provides latitude and longitude coordinates [in degrees, minutes and seconds] for the monitor wells, piezometers and staff gauges at the facility.

RESPONSE

Refer to Attachment K of this response for the revised Site Survey Drawing.

COMMENT

5. Specific Conditions #E.6./#F.3.

Information Submitted: The Abandonment Report provided Well Construction Permits #781339, #781344, #781350, and #781354 issued by the Southwest Florida Water Management District that documented the abandonment of the specified locations, including:

- Monitor wells [MW-11R, MW12],
- Compliance well [CW-11R],
- Piezometers [P-S1, P-S2, P-D1 shallow, P-D1 deep, P-D2 shallow, P-D2 deep, P-S3, P-S4],
- Temporary wells [GW-1, GW-3, GW-4, GW-5, GW-6, GW-7, DGW-3, DGW-4],
- Gas probe [GW-1].

Deficiency: None.

Corrective Actions: None requested.

RESPONSE

No response required.

ATTACHMENT A

Appendix 1

FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION

APR 13 2010

SOUTHWEST DISTRICT
TAMPA

APPENDIX 1

Manufacturer's Quality Control Test Results for Geocomposite Clay Liner

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GSE BentoLiner
3150 1st. Ave
Spearfish, SD 57783

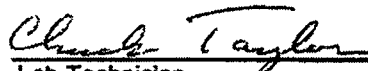
Quality Assurance Laboratory Test Results

Report Date
6/15/2009

Job Name: Sarasota County CCSWDC Phase 2
SO Number: 56347
Product: BentoLiner NWL-45
Test: Index Flux ASTM D5887

| DATE | LOT NUMBER | ROLL NUMBER | RESULT | Effective stress | Influent press. | Effluent press. |
|-----------|------------|-------------|--|------------------|-----------------|-----------------|
| 1/21/2009 | 29011411 | 502119911 | 8.37E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 2/25/2009 | 29022511 | 502121114 | 4.85E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 2/25/2009 | 29022511 | 502121162 | 4.62E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 3/17/2009 | 29031711 | 502122507 | 7.32E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 3/17/2009 | 29031711 | 502122547 | 3.01E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 3/19/2009 | 29031911 | 502122798 | 2.87E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 3/20/2009 | 29031911 | 502122854 | 4.51E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 3/25/2009 | 29032011 | 502122908 | 2.80E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 3/30/2009 | 29032011 | 502122956 | 6.95E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 3/31/2009 | 29033111 | 502122987 | 4.03E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 3/31/2009 | 29033111 | 502123035 | 7.91E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/1/2009 | 29040111 | 502123073 | 2.76E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/1/2009 | 29040111 | 502123121 | 9.64E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/2/2009 | 29040211 | 502123159 | 4.31E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/2/2009 | 29040211 | 502123207 | 9.07E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/2/2009 | 29040311 | 502123245 | 7.26E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/3/2009 | 29040311 | 502123300 | 6.12E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/3/2009 | 29040411 | 502123331 | 3.45E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/6/2009 | 29040411 | 502123375 | 6.02E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/6/2009 | 29040611 | 502123417 | 2.39E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/7/2009 | 29040611 | 502123464 | 3.27E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 4/8/2009 | 29040811 | 502123589 | 7.54E-09 m ³ /m ² /s | 10 psi | 77 psi | 75 psi |
| 4/8/2009 | 29040811 | 502123637 | 4.42E-09 m ³ /m ² /s | 10 psi | 77 psi | 75 psi |
| 4/9/2009 | 29040911 | 502123675 | 5.43E-09 m ³ /m ² /s | 10 psi | 77 psi | 75 psi |
| 6/4/2009 | 29060411 | 502127212 | 6.19E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 6/4/2009 | 29060411 | 502127244 | 3.48E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |
| 6/4/2009 | 29060511 | 502127282 | 7.80E-09 m ³ /m ² /s | 5 psi | 77 psi | 75 psi |

Approved By:


Lab Technician

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 107
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

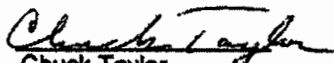
GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|--|-----------------|---------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft² |
| Peel Strength | ASTM D6496 | 1/40,000 ft² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft² |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29011411; 29032011

ROLL # 502119635- 502119644, 502119911- 502119913, 502119915- 502119921;
502122884- 502122970


Chuck Taylor
Lab Technician

Date:

4-16-09

GSE BentoLiner®, Inc.

QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29011411 | 502119635 | 1/14/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | |
|------------------|----------------|---|--------------------------|
| Type | | BentoLiner NWL-45 | |
| Mass | ASTM D5993 | 4995 g/m ² | 1.023 lb/ft ² |
| Grab Strength | ASTM D4632 | 1058.7 N | 238 lbs |
| Grab Elongation | ASTM D4632 | | 156 % |
| Tensile Strength | ASTM D6768 | 8.9 kN/m | 50.6 ppi |
| Peel Strength | ASTM D4632 mod | 306.9 N | 69 lbs |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.7 ppi |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | |
| Permeability | ASTM D5084 | <5E-9 cm/s | |

Top Layer

| | | |
|---------|--|--|
| Type | | Non-woven |
| Layer # | | 070703300B |
| Mass | | 315 g/m ² 9.28 oz/yd ² |

Bottom Layer

| | | |
|---------|--|--|
| Type | | Scrim Non-woven |
| Layer # | | 081001215B |
| Mass | | 233 g/m ² 6.87 oz/yd ² |

Bentonite

| | | |
|--------------------------------------|------------|--|
| Shipment Lot # | | 1285025 |
| Moisture Content | ASTM D4643 | 8.9 % |
| Swell Index | ASTM D5890 | 27.0 ml |
| Fluid Loss | ASTM D5891 | 14.6 ml |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4082 g/m ² 0.836 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29011411 | 502119911 | 1/21/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | |
|------------------|----------------|---|--------------------------|
| Type | | BentoLiner NWL-45 | |
| Mass | ASTM D5993 | 4975 g/m ² | 1.019 lb/ft ² |
| Grab Strength | ASTM D4632 | 1045.3 N | 235 lbs |
| Grab Elongation | ASTM D4632 | | 111 % |
| Tensile Strength | ASTM D6768 | 11.8 kN/m | 67.6 ppi |
| Peel Strength | ASTM D4632 mod | 360.3 N | 81 lbs |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.9 ppi |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | |
| Permeability | ASTM D5084 | <5E-9 cm/s | |

Top Layer

| | | |
|---------|----------------------|-------------------------|
| Type | | Non-woven |
| Layer # | | 080917300B |
| Mass | 311 g/m ² | 9.18 oz/yd ² |

Bottom Layer

| | | |
|---------|----------------------|-------------------------|
| Type | | Scrim Non-woven |
| Layer # | | 090106215B |
| Mass | 214 g/m ² | 6.31 oz/yd ² |

Bentonite

| | | |
|--------------------------------------|------------|--|
| Shipment Lot # | | 1291205 |
| Moisture Content | ASTM D4643 | 9.8 % |
| Swell Index | ASTM D5890 | 25.0 ml |
| Fluid Loss | ASTM D5891 | 16.8 ml |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4052 g/m ² 0.830 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29032011 | 502122884 | 3/20/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4814 g/m ² | 0.986 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1054.2 N | 237 lbs | |
| Grab Elongation | ASTM D4632 | | 128 % | |
| Tensile Strength | ASTM D6768 | 10.9 kN/m | 62.1 ppi | |
| Peel Strength | ASTM D4632 mod | 435.9 N | 98 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 18.1 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090221301B | | |
| Mass | 332 g/m ² | 9.80 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090306215B | | |
| Mass | 216 g/m ² | 6.38 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323998 | | |
| Moisture Content | ASTM D4643 | 9.2 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3906 g/m ² | 0.800 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29032011 | 502122900 | 3/20/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4707 g/m ² | 0.964 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1143.2 N | 257 lbs | |
| Grab Elongation | ASTM D4632 | | 109 % | |
| Tensile Strength | ASTM D6768 | 12.7 kN/m | 72.7 ppi | |
| Peel Strength | ASTM D4632 mod | 364.8 N | 82 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.1 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090221301B | | |
| Mass | 332 g/m ² | 9.80 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090306215B | | |
| Mass | 216 g/m ² | 6.38 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323999 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3799 g/m ² | 0.778 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29032011 | 502122908 | 3/25/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4951 g/m ² | 1.014 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1098.7 N | 247 lbs | |
| Grab Elongation | ASTM D4632 | | 116 % | |
| Tensile Strength | ASTM D6768 | 11.3 kN/m | 64.6 ppi | |
| Peel Strength | ASTM D4632 mod | 320.3 N | 72 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.3 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090221301B | | |
| Mass | 332 g/m ² | 9.80 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090303215B | | |
| Mass | 220 g/m ² | 6.50 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323999 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4013 g/m ² | 0.822 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29032011 | 502122924 | 3/30/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4804 g/m ² | 0.984 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1321.1 N | 297 lbs | |
| Grab Elongation | ASTM D4632 | | 123 % | |
| Tensile Strength | ASTM D6768 | 12.2 kN/m | 69.7 ppi | |
| Peel Strength | ASTM D4632 mod | 378.1 N | 85 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.8 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090221301B | | |
| Mass | 332 g/m ² | 9.80 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090303215B | | |
| Mass | 220 g/m ² | 6.50 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324001 | | |
| Moisture Content | ASTM D4643 | 10.2 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3862 g/m ² | 0.791 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29032011 | 502122940 | 3/30/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | |
|------------------|----------------|---|--------------------------|
| Type | | BentoLiner NWL-45 | |
| Mass | ASTM D5993 | 4829 g/m ² | 0.989 lb/ft ² |
| Grab Strength | ASTM D4632 | 1178.8 N | 265 lbs |
| Grab Elongation | ASTM D4632 | | 119 % |
| Tensile Strength | ASTM D6768 | 13.0 kN/m | 74.2 ppi |
| Peel Strength | ASTM D4632 mod | 253.5 N | 57 lbs |
| Peel Strength | ASTM D6496 | 928.2 N/m | 9.8 ppi |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | |
| Permeability | ASTM D5084 | <5E-9 cm/s | |

Top Layer

| | | |
|---------|--|--|
| Type | | Non-woven |
| Layer # | | 090221301B |
| Mass | | 332 g/m ² 9.80 oz/yd ² |

Bottom Layer

| | | |
|---------|--|--|
| Type | | Scrim Non-woven |
| Layer # | | 090303215B |
| Mass | | 220 g/m ² 6.50 oz/yd ² |

Bentonite

| | | |
|--------------------------------------|------------|--|
| Shipment Lot # | | 1324001 |
| Moisture Content | ASTM D4643 | 10.2 % |
| Swell Index | ASTM D5890 | 28.0 ml |
| Fluid Loss | ASTM D5891 | 13.2 ml |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3882 g/m ² 0.795 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29032011 | 502122956 | 3/30/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4707 g/m ² | 0.964 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1138.7 N | 256 lbs | |
| Grab Elongation | ASTM D4632 | | 120 % | |
| Tensile Strength | ASTM D6768 | 11.1 kN/m | 63.6 ppi | |
| Peel Strength | ASTM D4632 mod | 440.4 N | 99 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 18.5 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090220301B | | |
| Mass | 333 g/m ² | 9.82 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090306215B | | |
| Mass | 216 g/m ² | 6.38 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324003 | | |
| Moisture Content | ASTM D4643 | 9.7 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3789 g/m ² | 0.776 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|---|-----------------|--------------------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft ² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft ² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft ² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft ² |
| Peel Strength | ASTM D6496 | 1/40,000 ft ² |
| Hydraulic Conductivity | ASTM D5084 | Weekly |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29022511

ROLL # 502121114- 502121199


Chuck Taylor
Lab Technician

Date: 4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29022511 | 502121114 | 2/25/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5190 g/m ² | 1.063 lb/ft ² | |
| Grab Strength | ASTM D4632 | 938.6 N | 211 lbs | |
| Grab Elongation | ASTM D4632 | | 126 % | |
| Tensile Strength | ASTM D6768 | 8.9 kN/m | 51.1 ppi | |
| Peel Strength | ASTM D4632 mod | 404.8 N | 91 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 16.9 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 070703300B | | |
| Mass | 315 g/m ² | 9.30 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090218215B | | |
| Mass | 229 g/m ² | 6.76 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1308002 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 26.0 ml | |
| Fluid Loss | ASTM D5891 | 14.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4243 g/m ² | 0.869 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29022511 | 502121130 | 2/25/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4838 g/m ² | 0.991 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1245.5 N | 280 lbs | |
| Grab Elongation | ASTM D4632 | | 133 % | |
| Tensile Strength | ASTM D6768 | 11.1 kN/m | 63.2 ppi | |
| Peel Strength | ASTM D4632 mod | 542.7 N | 122 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 22.85 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | | |
|---------|------------|----------------------|-------------------------|--|
| Type | Non-woven | | | |
| Layer # | 090220301B | | | |
| Mass | | 333 g/m ² | 9.82 oz/yd ² | |

Bottom Layer

| | | | | |
|---------|-----------------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | | |
| Layer # | 090218215B | | | |
| Mass | | 229 g/m ² | 6.76 oz/yd ² | |

Bentonite

| | | | | |
|--------------------------------------|------------|-----------------------|--------------------------|--|
| Shipment Lot # | 1308002 | | | |
| Moisture Content | ASTM D4643 | | 9.5 % | |
| Swell Index | ASTM D5890 | | 26.0 ml | |
| Fluid Loss | ASTM D5891 | | 14.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3906 g/m ² | 0.800 lb/ft ² | |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29022511 | 502121146 | 2/25/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4785 g/m ² | 0.980 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1267.7 N | 285 lbs | |
| Grab Elongation | ASTM D4632 | | 128 % | |
| Tensile Strength | ASTM D6768 | 11.9 kN/m | 68.1 ppi | |
| Peel Strength | ASTM D4632 mod | 382.5 N | 86 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.36 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090220301B | | |
| Mass | 333 g/m ² | 9.82 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090218215B | | |
| Mass | 229 g/m ² | 6.76 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1308003 | | |
| Moisture Content | ASTM D4643 | 9.1 % | |
| Swell Index | ASTM D5890 | 26.0 ml | |
| Fluid Loss | ASTM D5891 | 13.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3872 g/m ² | 0.793 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29022511 | 502121162 | 2/25/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4995 g/m ² | 1.023 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1272.2 N | 286 lbs | |
| Grab Elongation | ASTM D4632 | | 129 % | |
| Tensile Strength | ASTM D6768 | 12.1 kN/m | 69.0 ppi | |
| Peel Strength | ASTM D4632 mod | 289.1 N | 65 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.25 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090220301B | | |
| Mass | 333 g/m ² | 9.82 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090218215B | | |
| Mass | 229 g/m ² | 6.76 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1314654 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.0 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4048 g/m ² | 0.829 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29022511 | 502121171 | 2/26/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4741 g/m ² | 0.971 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1325.6 N | 298 lbs | |
| Grab Elongation | ASTM D4632 | | 123 % | |
| Tensile Strength | ASTM D6768 | 13.4 kN/m | 76.3 ppi | |
| Peel Strength | ASTM D4632 mod | 342.5 N | 77 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.21 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090220301B | | |
| Mass | 333 g/m ² | 9.82 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090218215B | | |
| Mass | 229 g/m ² | 6.76 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1314654 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.0 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3818 g/m ² | 0.782 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29022511 | 502121187 | 2/26/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4951 g/m ² | 1.014 lb/ft ² | |
| Grab Strength | ASTM D4632 | 903.0 N | 203 lbs | |
| Grab Elongation | ASTM D4632 | | 119 % | |
| Tensile Strength | ASTM D6768 | 13.4 kN/m | 76.7 ppi | |
| Peel Strength | ASTM D4632 mod | 378.1 N | 85 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 16.51 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090220301B | | |
| Mass | 333 g/m ² | 9.82 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090218215B | | |
| Mass | 229 g/m ² | 6.76 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1314650 | | |
| Moisture Content | ASTM D4643 | 10.2 % | |
| Swell Index | ASTM D5890 | 26.0 ml | |
| Fluid Loss | ASTM D5891 | 16.0 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3979 g/m ² | 0.815 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE Bentoliner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|---|-----------------|--------------------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft ² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft ² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft ² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft ² |
| Peel Strength | ASTM D6496 | 1/40,000 ft ² |
| Hydraulic Conductivity | ASTM D5084 | Weekly |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29031711

ROLL # 502122507- 502122592


Chuck Taylor
Lab Technician

Date: 4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29031711 | 502122507 | 3/17/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5117 g/m ² | 1.048 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1089.8 N | 245 lbs | |
| Grab Elongation | ASTM D4632 | | 123 % | |
| Tensile Strength | ASTM D6768 | 9.9 kN/m | 56.6 ppi | |
| Peel Strength | ASTM D4632 mod | 440.4 N | 99 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 19.1 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090310301B | | |
| Mass | 337 g/m ² | 9.94 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323977 | | |
| Moisture Content | ASTM D4643 | 9.6 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4155 g/m ² | 0.851 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29031711 | 502122523 | 3/17/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4614 g/m ² | 0.945 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1080.9 N | 243 lbs | |
| Grab Elongation | ASTM D4632 | | 120 % | |
| Tensile Strength | ASTM D6768 | 10.8 kN/m | 61.6 ppi | |
| Peel Strength | ASTM D4632 mod | 369.2 N | 83 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 16.1 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090310301B | | |
| Mass | 337 g/m ² | 9.94 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090224215B | | |
| Mass | 214 g/m ² | 6.32 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323978 | | |
| Moisture Content | ASTM D4643 | 9.1 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 12.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3725 g/m ² | 0.763 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29031711 | 502122539 | 3/17/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4878 g/m ² | 0.999 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1316.7 N | 296 lbs | |
| Grab Elongation | ASTM D4632 | | 138 % | |
| Tensile Strength | ASTM D6768 | 11.9 kN/m | 67.9 ppi | |
| Peel Strength | ASTM D4632 mod | 293.6 N | 66 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 11.9 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090310301B | | |
| Mass | 337 g/m ² | 9.94 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090224215B | | |
| Mass | 214 g/m ² | 6.32 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323978 | | |
| Moisture Content | ASTM D4643 | 9.1 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 12.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3965 g/m ² | 0.812 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29031711 | 502122555 | 3/17/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4878 g/m ² | 0.999 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1303.3 N | 293 lbs | |
| Grab Elongation | ASTM D4632 | | 137 % | |
| Tensile Strength | ASTM D6768 | 12.4 kN/m | 70.6 ppi | |
| Peel Strength | ASTM D4632 mod | 293.6 N | 66 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090310301B | | |
| Mass | 337 g/m ² | 9.94 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323979 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3945 g/m ² | 0.808 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29031711 | 502122571 | 3/17/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4834 g/m ² | 0.990 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1183.2 N | 266 lbs | |
| Grab Elongation | ASTM D4632 | | 134 % | |
| Tensile Strength | ASTM D6768 | 11.2 kN/m | 63.7 ppi | |
| Peel Strength | ASTM D4632 mod | 409.2 N | 92 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 17.6 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090310301B | | |
| Mass | 337 g/m ² | 9.94 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 2011117108 | | |
| Mass | 219 g/m ² | 6.45 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323980 | | |
| Moisture Content | ASTM D4643 | 9.6 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3901 g/m ² | 0.799 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29031711 | 502122587 | 3/17/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4838 g/m ² | 0.991 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1765.9 N | 397 lbs | |
| Grab Elongation | ASTM D4632 | | 103 % | |
| Tensile Strength | ASTM D6768 | 11.7 kN/m | 67.0 ppi | |
| Peel Strength | ASTM D4632 mod | 351.4 N | 79 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.6 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090310301B | | |
| Mass | 337 g/m ² | 9.94 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090224215B | | |
| Mass | 214 g/m ² | 6.32 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323980 | | |
| Moisture Content | ASTM D4643 | 9.6 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3911 g/m ² | 0.801 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications.

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|------------------------------|-----------------|---------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft² |
| Peel Strength | ASTM D6496 | 1/40,000 ft² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft² |

**certified to meet the required specification of < 5E-9 cm/sec*

| | | |
|------------|------------|--------|
| Index Flux | ASTM D5887 | Weekly |
|------------|------------|--------|

**certified to meet the required specification of < 1E-8 m³/m²/sec*

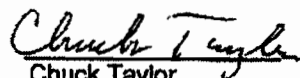
| | | |
|----------------|------------|--------------|
| Internal Shear | ASTM D6243 | Periodically |
|----------------|------------|--------------|

**hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf*

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29031911

ROLL # 502122798- 502122883


Chuck Taylor
Lab Technician

Date: 4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29031911 | 502122798 | 3/19/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5756 g/m ² | 1.179 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1080.9 N | 243 lbs | |
| Grab Elongation | ASTM D4632 | | 113 % | |
| Tensile Strength | ASTM D6768 | 10.4 kN/m | 59.5 ppi | |
| Peel Strength | ASTM D4632 mod | 378.1 N | 85 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090310301B | | |
| Mass | 337 g/m ² | 9.94 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090224215B | | |
| Mass | 214 g/m ² | 6.32 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323994 | | |
| Moisture Content | ASTM D4643 | 9.8 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 14.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4741 g/m ² | 0.971 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29031911 | 502122814 | 3/19/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4765 g/m ² | 0.976 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1276.6 N | 287 lbs | |
| Grab Elongation | ASTM D4632 | | 118 % | |
| Tensile Strength | ASTM D6768 | 12.7 kN/m | 72.6 ppi | |
| Peel Strength | ASTM D4632 mod | 369.2 N | 83 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.9 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B | | |
| Mass | 344 g/m ² | 10.16 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090224215B | | |
| Mass | 214 g/m ² | 6.32 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323996 | | |
| Moisture Content | ASTM D4643 | 10.1 % | |
| Swell Index | ASTM D5890 | 32.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3823 g/m ² | 0.783 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29031911 | 502122822 | 3/20/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4858 g/m ² | 0.995 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1232.2 N | 277 lbs | |
| Grab Elongation | ASTM D4632 | | 123 % | |
| Tensile Strength | ASTM D6768 | 11.3 kN/m | 64.3 ppi | |
| Peel Strength | ASTM D4632 mod | 351.4 N | 79 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B | | |
| Mass | 344 g/m ² | 10.16 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090224215B | | |
| Mass | 214 g/m ² | 6.32 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323996 | | |
| Moisture Content | ASTM D4643 | 10.1 % | |
| Swell Index | ASTM D5890 | 32.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3906 g/m ² | 0.800 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29031911 | 502122838 | 3/20/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4716 g/m ² | 0.966 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1036.4 N | 233 lbs | |
| Grab Elongation | ASTM D4632 | | 101 % | |
| Tensile Strength | ASTM D6768 | 12.2 kN/m | 69.4 ppi | |
| Peel Strength | ASTM D4632 mod | 302.5 N | 68 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|-----------|----------------------|--------------------------|
| Type | Non-woven | | |
| Layer # | | | 090316301B |
| Mass | | 344 g/m ² | 10.16 oz/yd ² |

Bottom Layer

| | | | |
|---------|-----------------|----------------------|-------------------------|
| Type | Scrim Non-woven | | |
| Layer # | | | 090303215B |
| Mass | | 220 g/m ² | 6.50 oz/yd ² |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323996 | | |
| Moisture Content | ASTM D4643 | | 10.1 % |
| Swell Index | ASTM D5890 | | 32.0 ml |
| Fluid Loss | ASTM D5891 | | 13.6 ml |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3774 g/m ² | 0.773 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29031911 | 502122854 | 3/20/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5102 g/m ² | 1.045 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1156.5 N | 260 lbs | |
| Grab Elongation | ASTM D4632 | | 107 % | |
| Tensile Strength | ASTM D6768 | 11.3 kN/m | 64.5 ppi | |
| Peel Strength | ASTM D4632 mod | 271.3 N | 61 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 11.4 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090221301B | | |
| Mass | 332 g/m ² | 9.80 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323995 | | |
| Moisture Content | ASTM D4643 | 11.2 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4091 g/m ² | 0.838 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29031911 | 502122870 | 3/20/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4926 g/m ² | 1.009 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1098.7 N | 247 lbs | |
| Grab Elongation | ASTM D4632 | | 124 % | |
| Tensile Strength | ASTM D6768 | 11.1 kN/m | 63.3 ppi | |
| Peel Strength | ASTM D4632 mod | 302.5 N | 68 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.1 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090221301B | | |
| Mass | 332 g/m ² | 9.80 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090306215B | | |
| Mass | 216 g/m ² | 6.38 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1323998 | | |
| Moisture Content | ASTM D4643 | 9.2 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4008 g/m ² | 0.821 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

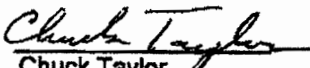
GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|--|-----------------|---------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft² |
| Peel Strength | ASTM D6496 | 1/40,000 ft² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft² |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29033111

ROLL # 502122971- 502123056


Chuck Taylor
Lab Technician

Date: 4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29033111 | 502122971 | 3/31/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4858 g/m ² | 0.995 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1227.7 N | 276 lbs | |
| Grab Elongation | ASTM D4632 | | 119 % | |
| Tensile Strength | ASTM D6768 | 13.2 kN/m | 75.1 ppi | |
| Peel Strength | ASTM D4632 mod | 400.3 N | 90 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 16.7 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090220301B | | |
| Mass | 333 g/m ² | 9.82 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090306215B | | |
| Mass | 216 g/m ² | 6.38 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324004 | | |
| Moisture Content | ASTM D4643 | 10.0 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 12.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3916 g/m ² | 0.802 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29033111 | 502122987 | 3/31/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4946 g/m ² | 1.013 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1276.6 N | 287 lbs | |
| Grab Elongation | ASTM D4632 | | 142 % | |
| Tensile Strength | ASTM D6768 | 12.4 kN/m | 70.7 ppi | |
| Peel Strength | ASTM D4632 mod | 293.6 N | 66 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.4 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B | | |
| Mass | 344 g/m ² | 10.16 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090303215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324004 | | |
| Moisture Content | ASTM D4643 | 10.0 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 12.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3979 g/m ² | 0.815 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29033111 | 502123003 | 3/31/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5000 g/m ² | 1.024 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1192.1 N | 268 lbs | |
| Grab Elongation | ASTM D4632 | | 125 % | |
| Tensile Strength | ASTM D6768 | 12.3 kN/m | 70.4 ppi | |
| Peel Strength | ASTM D4632 mod | 298.0 N | 67 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.3 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B | | |
| Mass | 344 g/m ² | 10.16 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090303215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324006 | | |
| Moisture Content | ASTM D4643 | 8.0 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 14.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4106 g/m ² | 0.841 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29033111 | 502123019 | 3/31/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| Type | BentoLiner NWL-45 | | | |
|------------------|-------------------|---|--------------------------|--|
| Mass | ASTM D5993 | 4829 g/m ² | 0.989 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1241.1 N | 279 lbs | |
| Grab Elongation | ASTM D4632 | | 139 % | |
| Tensile Strength | ASTM D6768 | 11.9 kN/m | 67.7 ppi | |
| Peel Strength | ASTM D4632 mod | 298.0 N | 67 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 11.8 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B | | |
| Mass | 344 g/m ² | 10.16 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090306215B | | |
| Mass | 216 g/m ² | 6.38 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324006 | | |
| Moisture Content | ASTM D4643 | 8.0 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 14.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3950 g/m ² | 0.809 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29033111 | 502123035 | 3/31/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5102 g/m ² | 1.045 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1005.3 N | 226 lbs | |
| Grab Elongation | ASTM D4632 | | 116 % | |
| Tensile Strength | ASTM D6768 | 9.9 kN/m | 56.3 ppi | |
| Peel Strength | ASTM D4632 mod | 400.3 N | 90 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 16.7 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B | | |
| Mass | 344 g/m ² | 10.16 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090303215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324007 | | |
| Moisture Content | ASTM D4643 | 9.1 % | |
| Swell Index | ASTM D5890 | 30.0 ml | |
| Fluid Loss | ASTM D5891 | 13.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4160 g/m ² | 0.852 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29033111 | 502123042 | 4/1/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4829 g/m ² | 0.989 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1138.7 N | 256 lbs | |
| Grab Elongation | ASTM D4632 | | 117 % | |
| Tensile Strength | ASTM D6768 | 12.1 kN/m | 69.0 ppi | |
| Peel Strength | ASTM D4632 mod | 413.7 N | 93 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 17.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090313301B | | |
| Mass | 347 g/m ² | 10.23 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrib Non-woven | | |
| Layer # | 090303215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324007 | | |
| Moisture Content | ASTM D4643 | 9.1 % | |
| Swell Index | ASTM D5890 | 30.0 ml | |
| Fluid Loss | ASTM D5891 | 13.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3808 g/m ² | 0.780 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE Bentoliner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|--|-----------------|---------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft² |
| Peel Strength | ASTM D6496 | 1/40,000 ft² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft² |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29040111

ROLL # 502123057- 502123142


Chuck Taylor
Lab Technician

Date: 4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 09040111 | 502123057 | 4/1/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4682 g/m ² | 0.959 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1187.7 N | 267 lbs | |
| Grab Elongation | ASTM D4632 | | 122 % | |
| Tensile Strength | ASTM D6768 | 12.5 kN/m | 71.4 ppi | |
| Peel Strength | ASTM D4632 mod | 395.9 N | 89 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 16.4 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|-----------|----------------------|--------------------------|
| Type | Non-woven | | |
| Layer # | | 090313301B | |
| Mass | | 347 g/m ² | 10.23 oz/yd ² |

Bottom Layer

| | | | |
|---------|-----------------|----------------------|-------------------------|
| Type | Scrim Non-woven | | |
| Layer # | | 090303215B | |
| Mass | | 220 g/m ² | 6.50 oz/yd ² |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324008 | | |
| Moisture Content | ASTM D4643 | 9.6 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 14.0 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3755 g/m ² | 0.769 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|---------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 0040111 | 502123073 | 4/1/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4970 g/m ² | 1.018 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1290.0 N | 290 lbs | |
| Grab Elongation | ASTM D4632 | | 141 % | |
| Tensile Strength | ASTM D6768 | 12.2 kN/m | 69.9 ppi | |
| Peel Strength | ASTM D4632 mod | 258.0 N | 58 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 11.4 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ² /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|-----------|----------------------|--------------------------|
| Type | Non-woven | | |
| Layer # | | 090313301B | |
| Mass | | 347 g/m ² | 10.23 oz/yd ² |

Bottom Layer

| | | | |
|---------|-----------------|----------------------|-------------------------|
| Type | Scrim Non-woven | | |
| Layer # | | 090306215B | |
| Mass | | 216 g/m ² | 6.38 oz/yd ² |

Antonite

| | | | |
|-------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324008 | | |
| Moisture Content | ASTM D4643 | 9.6 % | |
| Cell Index | ASTM D5890 | 28.0 ml | |
| Liquid Loss | ASTM D5891 | 14.0 ml | |
| Antonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4018 g/m ² | 0.823 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040111 | 502123089 | 4/1/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4614 g/m ² | 0.945 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1187.7 N | 267 lbs | |
| Grab Elongation | ASTM D4632 | | 128 % | |
| Tensile Strength | ASTM D6768 | 11.4 kN/m | 65.1 ppi | |
| Peel Strength | ASTM D4632 mod | 329.2 N | 74 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.5 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090313301B | | |
| Mass | 347 g/m ² | 10.23 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090306215B | | |
| Mass | 216 g/m ² | 6.38 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324009 | | |
| Moisture Content | ASTM D4643 | 10.1 % | |
| Well Index | ASTM D5890 | 30.0 ml | |
| Liquid Loss | ASTM D5891 | 13.0 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3681 g/m ² | 0.754 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|---------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 0040111 | 502123105 | 4/1/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4897 g/m ² | 1.003 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1276.6 N | 287 lbs | |
| Grab Elongation | ASTM D4632 | | 136 % | |
| Tensile Strength | ASTM D6768 | 11.5 kN/m | 65.6 ppi | |
| Peel Strength | ASTM D4632 mod | 320.3 N | 72 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.4 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|-----------|----------------------|--------------------------|
| Type | Non-woven | | |
| Layer # | | 090313301B | |
| Mass | | 347 g/m ² | 10.23 oz/yd ² |

Bottom Layer

| | | | |
|---------|-----------------|----------------------|-------------------------|
| Type | Scrim Non-woven | | |
| Layer # | | 090306215B | |
| Mass | | 216 g/m ² | 6.38 oz/yd ² |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324010 | | |
| Moisture Content | ASTM D4643 | 10.1 % | |
| Cell Index | ASTM D5890 | 30.0 ml | |
| Liquid Loss | ASTM D5891 | 12.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3935 g/m ² | 0.806 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040111 | 502123121 | 4/1/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4936 g/m ² | 1.011 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1161.0 N | 261 lbs | |
| Grab Elongation | ASTM D4632 | | 121 % | |
| Tensile Strength | ASTM D6768 | 10.5 kN/m | 59.7 ppi | |
| Peel Strength | ASTM D4632 mod | 418.1 N | 94 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 17 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090313301B | | |
| Mass | 347 g/m ² | 10.23 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324010 | | |
| Moisture Content | ASTM D4643 | 10.1 % | |
| Swell Index | ASTM D5890 | 30.0 ml | |
| Liquid Loss | ASTM D5891 | 12.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3969 g/m ² | 0.813 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|---------|-----------|---------------|-------------------|------------------|-----------------|
| 9040111 | 502123137 | 4/1/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5000 g/m ² | 1.024 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1116.5 N | 251 lbs | |
| Grab Elongation | ASTM D4632 | | 121 % | |
| Tensile Strength | ASTM D6768 | 10.6 kN/m | 60.8 ppi | |
| Peel Strength | ASTM D4632 mod | 364.8 N | 82 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 16.1 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090313301B | | |
| Mass | 347 g/m ² | 10.23 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Antonite

| | | | |
|-------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324011 | | |
| Moisture Content | ASTM D4643 | 10.7 % | |
| Well Index | ASTM D5890 | 30.0 ml | |
| Fluid Loss | ASTM D5891 | 13.0 ml | |
| Antonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4004 g/m ² | 0.820 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-842-8531
FAX: 605-842-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|--|-----------------|---------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft² |
| Peel Strength | ASTM D6496 | 1/40,000 ft² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft² |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29040211

ROLL # 502123143- 502123228


Chuck Taylor
Lab Technician

Date: 4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040211 | 502123143 | 4/2/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4961 g/m ² | 1.016 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1169.9 N | 263 lbs | |
| Grab Elongation | ASTM D4632 | | 124 % | |
| Tensile Strength | ASTM D6768 | 11.5 kN/m | 65.7 ppi | |
| Peel Strength | ASTM D4632 mod | 289.1 N | 65 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.7 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B-1 | | |
| Mass | 355 g/m ² | 10.46 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324011 | | |
| Moisture Content | ASTM D4643 | 10.7 % | |
| Swell Index | ASTM D5890 | 30.0 ml | |
| Fluid Loss | ASTM D5891 | 13.0 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3969 g/m ² | 0.813 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040211 | 502123159 | 4/2/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4687 g/m ² | 0.960 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1049.8 N | 236 lbs | |
| Grab Elongation | ASTM D4632 | | 120 % | |
| Tensile Strength | ASTM D6768 | 11.9 kN/m | 68.0 ppi | |
| Peel Strength | ASTM D4632 mod | 280.2 N | 63 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 10.7 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B-1 | | |
| Mass | 355 g/m ² | 10.46 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324012 | | |
| Moisture Content | ASTM D4643 | 8.9 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3774 g/m ² | 0.773 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040211 | 502123175 | 4/2/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4975 g/m ² | 1.019 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1325.6 N | 298 lbs | |
| Grab Elongation | ASTM D4632 | | 135 % | |
| Tensile Strength | ASTM D6768 | 12.9 kN/m | 73.4 ppi | |
| Peel Strength | ASTM D4632 mod | 351.4 N | 79 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.1 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B-1 | | |
| Mass | 355 g/m ² | 10.46 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090306215B | | |
| Mass | 216 g/m ² | 6.38 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324012 | | |
| Moisture Content | ASTM D4643 | 8.9 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4043 g/m ² | 0.828 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040211 | 502123191 | 4/2/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | |
|------------------|-------------------|---|--------------------------|
| Type | BentoLiner NWL-45 | | |
| Mass | ASTM D5993 | 4726 g/m ² | 0.968 lb/ft ² |
| Grab Strength | ASTM D4632 | 1298.9 N | 292 lbs |
| Grab Elongation | ASTM D4632 | | 141 % |
| Tensile Strength | ASTM D6768 | 11.8 kN/m | 67.1 ppi |
| Peel Strength | ASTM D4632 mod | 298.0 N | 67 lbs |
| Peel Strength | ASTM D6496 | 928.2 N/m | 11.2 ppi |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | |
| Permeability | ASTM D5084 | <5E-9 cm/s | |

Top Layer

| | | |
|---------|----------------------|--------------------------|
| Type | Non-woven | |
| Layer # | 090324301B-1 | |
| Mass | 355 g/m ² | 10.46 oz/yd ² |

Bottom Layer

| | | |
|---------|----------------------|-------------------------|
| Type | Scrim Non-woven | |
| Layer # | 090306215B | |
| Mass | 216 g/m ² | 6.38 oz/yd ² |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324014 | | |
| Moisture Content | ASTM D4643 | 9.6 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3789 g/m ² | 0.776 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040211 | 502123207 | 4/2/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4853 g/m ² | 0.994 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1192.1 N | 268 lbs | |
| Grab Elongation | ASTM D4632 | | 136 % | |
| Tensile Strength | ASTM D6768 | 9.8 kN/m | 55.9 ppi | |
| Peel Strength | ASTM D4632 mod | 391.4 N | 88 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | | |
|---------|--------------|----------------------|--------------------------|--|
| Type | Non-woven | | | |
| Layer # | 090324301B-1 | | | |
| Mass | | 355 g/m ² | 10.46 oz/yd ² | |

Bottom Layer

| | | | | |
|---------|-----------------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | | |
| Layer # | 090306215B | | | |
| Mass | | 216 g/m ² | 6.38 oz/yd ² | |

Bentonite

| | | | | |
|--------------------------------------|------------|-----------------------|--------------------------|--|
| Shipment Lot # | 1324016 | | | |
| Moisture Content | ASTM D4643 | 9.5 % | | |
| Swell Index | ASTM D5890 | 27.0 ml | | |
| Fluid Loss | ASTM D5891 | 15.0 ml | | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3911 g/m ² | 0.801 lb/ft ² | |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040211 | 502123223 | 4/2/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5346 g/m ² | 1.095 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1209.9 N | 272 lbs | |
| Grab Elongation | ASTM D4632 | | 125 % | |
| Tensile Strength | ASTM D6768 | 11.7 kN/m | 66.6 ppi | |
| Peel Strength | ASTM D4632 mod | 342.5 N | 77 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.6 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B-1 | | |
| Mass | 355 g/m ² | 10.46 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324016 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 15.0 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4355 g/m ² | 0.892 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|------------------------------|-----------------|---------------------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft ² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft ² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft ² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft ² |
| Peel Strength | ASTM D6496 | 1/40,000 ft ² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft ² |

**certified to meet the required specification of < 5E-9 cm/sec*

| | | |
|------------|------------|--------|
| Index Flux | ASTM D5887 | Weekly |
|------------|------------|--------|

**certified to meet the required specification of < 1E-8 m³/m²/sec*

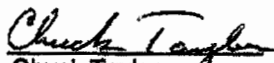
| | | |
|----------------|------------|--------------|
| Internal Shear | ASTM D6243 | Periodically |
|----------------|------------|--------------|

**hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf*

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29040311

ROLL # 502123229- 502123314


Chuck Taylor
Lab Technician

Date:

4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040311 | 502123229 | 4/2/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5000 g/m ² | 1.024 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1263.3 N | 284 lbs | |
| Grab Elongation | ASTM D4632 | | 132 % | |
| Tensile Strength | ASTM D6768 | 12.6 kN/m | 71.9 ppi | |
| Peel Strength | ASTM D4632 mod | 351.4 N | 79 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.6 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B-1 | | |
| Mass | 355 g/m ² | 10.46 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1324016 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 15.0 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4038 g/m ² | 0.827 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040311 | 502123245 | 4/2/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | |
|------------------|-------------------|---|--------------------------|
| Type | BentoLiner NWL-45 | | |
| Mass | ASTM D5993 | 4907 g/m ² | 1.005 lb/ft ² |
| Grab Strength | ASTM D4632 | 1174.3 N | 264 lbs |
| Grab Elongation | ASTM D4632 | | 124 % |
| Tensile Strength | ASTM D6768 | 11.9 kN/m | 67.8 ppi |
| Peel Strength | ASTM D4632 mod | 302.5 N | 68 lbs |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.3 ppi |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | |
| Permeability | ASTM D5084 | <5E-9 cm/s | |

Top Layer

| | | |
|---------|----------------------|-------------------------|
| Type | Non-woven | |
| Layer # | 090317301B-1 | |
| Mass | 335 g/m ² | 9.88 oz/yd ² |

Bottom Layer

| | | |
|---------|----------------------|-------------------------|
| Type | Scrim Non-woven | |
| Layer # | 090307215B | |
| Mass | 221 g/m ² | 6.52 oz/yd ² |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334136 | | |
| Moisture Content | ASTM D4643 | | 10.9 % |
| Swell Index | ASTM D5890 | | 28.0 ml |
| Fluid Loss | ASTM D5891 | | 13.0 ml |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3925 g/m ² | 0.804 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040311 | 502123261 | 4/2/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5097 g/m ² | 1.044 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1312.2 N | 295 lbs | |
| Grab Elongation | ASTM D4632 | | 139 % | |
| Tensile Strength | ASTM D6768 | 12.6 kN/m | 71.8 ppi | |
| Peel Strength | ASTM D4632 mod | 315.8 N | 71 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.4 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B-1 | | |
| Mass | 335 g/m ² | 9.88 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334138 | | |
| Moisture Content | ASTM D4643 | 10.2 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4121 g/m ² | 0.844 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040311 | 502123268 | 4/3/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4814 g/m ² | 0.986 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1143.2 N | 257 lbs | |
| Grab Elongation | ASTM D4632 | | 124 % | |
| Tensile Strength | ASTM D6768 | 12.2 kN/m | 69.8 ppi | |
| Peel Strength | ASTM D4632 mod | 262.4 N | 59 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 10.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B-1 | | |
| Mass | 335 g/m ² | 9.88 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334138 | | |
| Moisture Content | ASTM D4643 | 10.2 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3867 g/m ² | 0.792 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040311 | 502123284 | 4/3/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4707 g/m ² | 0.964 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1187.7 N | 267 lbs | |
| Grab Elongation | ASTM D4632 | | 113 % | |
| Tensile Strength | ASTM D6768 | 11.6 kN/m | 66.5 ppi | |
| Peel Strength | ASTM D4632 mod | 298.0 N | 67 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B-1 | | |
| Mass | 335 g/m ² | 9.88 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334137 | | |
| Moisture Content | ASTM D4643 | 11.0 % | |
| Swell Index | ASTM D5890 | 30.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3740 g/m ² | 0.766 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040311 | 502123300 | 4/3/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5053 g/m ² | 1.035 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1312.2 N | 295 lbs | |
| Grab Elongation | ASTM D4632 | | 121 % | |
| Tensile Strength | ASTM D6768 | 12.9 kN/m | 73.4 ppi | |
| Peel Strength | ASTM D4632 mod | 347.0 N | 78 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.4 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B-1 | | |
| Mass | 335 g/m ² | 9.88 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334137 | | |
| Moisture Content | ASTM D4643 | 11.0 % | |
| Swell Index | ASTM D5890 | 30.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4052 g/m ² | 0.830 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

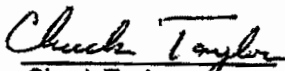
GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|---|-----------------|---------------------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft ² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft ² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft ² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft ² |
| Peel Strength | ASTM D6496 | 1/40,000 ft ² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft ² |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29040411

ROLL # 502123315- 502123400


Chuck Taylor
Lab Technician

Date:

4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040411 | 502123315 | 4/3/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5000 g/m ² | 1.024 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1254.4 N | 282 lbs | |
| Grab Elongation | ASTM D4632 | | 131 % | |
| Tensile Strength | ASTM D6768 | 11.9 kN/m | 68.0 ppi | |
| Peel Strength | ASTM D4632 mod | 289.1 N | 65 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-2 | | |
| Mass | 333 g/m ² | 9.81 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090224215B | | |
| Mass | 214 g/m ² | 6.32 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334139 | | |
| Moisture Content | ASTM D4643 | 11.1 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 12.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4008 g/m ² | 0.821 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040411 | 502123331 | 4/3/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4702 g/m ² | 0.963 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1103.2 N | 248 lbs | |
| Grab Elongation | ASTM D4632 | | 127 % | |
| Tensile Strength | ASTM D6768 | 10.8 kN/m | 61.7 ppi | |
| Peel Strength | ASTM D4632 mod | 244.7 N | 55 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 10.3 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-2 | | |
| Mass | 333 g/m ² | 9.81 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090307215B | | |
| Mass | 221 g/m ² | 6.52 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334139 | | |
| Moisture Content | ASTM D4643 | 11.1 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 12.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3730 g/m ² | 0.764 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040411 | 502123347 | 4/3/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5131 g/m ² | 1.051 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1183.2 N | 266 lbs | |
| Grab Elongation | ASTM D4632 | | 119 % | |
| Tensile Strength | ASTM D6768 | 11.5 kN/m | 65.4 ppi | |
| Peel Strength | ASTM D4632 mod | 342.5 N | 77 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.3 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-2 | | |
| Mass | 333 g/m ² | 9.81 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334139 | | |
| Moisture Content | ASTM D4643 | 11.1 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 12.8 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4131 g/m ² | 0.846 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040411 | 502123363 | 4/3/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4980 g/m ² | 1.020 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1058.7 N | 238 lbs | |
| Grab Elongation | ASTM D4632 | | 104 % | |
| Tensile Strength | ASTM D6768 | 12.7 kN/m | 72.8 ppi | |
| Peel Strength | ASTM D4632 mod | 324.7 N | 73 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.6 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-2 | | |
| Mass | 333 g/m ² | 9.81 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334140 | | |
| Moisture Content | ASTM D4643 | 10.3 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 12.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4023 g/m ² | 0.824 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040411 | 502123379 | 4/6/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5327 g/m ² | 1.091 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1236.6 N | 278 lbs | |
| Grab Elongation | ASTM D4632 | | 121 % | |
| Tensile Strength | ASTM D6768 | 11.3 kN/m | 64.6 ppi | |
| Peel Strength | ASTM D4632 mod | 329.2 N | 74 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B-1 | | |
| Mass | 335 g/m ² | 9.88 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334140 | | |
| Moisture Content | ASTM D4643 | 10.3 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 12.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4336 g/m ² | 0.888 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040411 | 502123395 | 4/6/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4863 g/m ² | 0.996 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1138.7 N | 256 lbs | |
| Grab Elongation | ASTM D4632 | | 116 % | |
| Tensile Strength | ASTM D6768 | 12.0 kN/m | 68.3 ppi | |
| Peel Strength | ASTM D4632 mod | 391.4 N | 88 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 17.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B-1 | | |
| Mass | 335 g/m ² | 9.88 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334142 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 30.0 ml | |
| Fluid Loss | ASTM D5891 | 14.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3945 g/m ² | 0.808 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

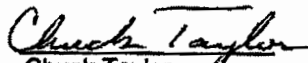
GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|--|-----------------|---------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft² |
| Peel Strength | ASTM D6496 | 1/40,000 ft² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft² |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29040611

ROLL # 502123401- 502123486


Chuck Taylor
Lab Technician

Date:

4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040611 | 502123401 | 4/6/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5175 g/m ² | 1.060 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1214.4 N | 273 lbs | |
| Grab Elongation | ASTM D4632 | | 125 % | |
| Tensile Strength | ASTM D6768 | 11.5 kN/m | 65.4 ppi | |
| Peel Strength | ASTM D4632 mod | 351.4 N | 79 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B-1 | | |
| Mass | 335 g/m ² | 9.88 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334142 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 30.0 ml | |
| Fluid Loss | ASTM D5891 | 14.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4228 g/m ² | 0.866 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040611 | 502123417 | 4/6/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4853 g/m ² | 0.994 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1089.8 N | 245 lbs | |
| Grab Elongation | ASTM D4632 | | 120 % | |
| Tensile Strength | ASTM D6768 | 11.2 kN/m | 63.9 ppi | |
| Peel Strength | ASTM D4632 mod | 311.4 N | 70 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.7 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-2 | | |
| Mass | 333 g/m ² | 9.81 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334141 | | |
| Moisture Content | ASTM D4643 | 10.4 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3901 g/m ² | 0.799 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040611 | 502123432 | 4/7/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5117 g/m ² | 1.048 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1214.4 N | 273 lbs | |
| Grab Elongation | ASTM D4632 | | 133 % | |
| Tensile Strength | ASTM D6768 | 11.0 kN/m | 62.8 ppi | |
| Peel Strength | ASTM D4632 mod | 400.3 N | 90 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 16.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-2 | | |
| Mass | 333 g/m ² | 9.81 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334141 | | |
| Moisture Content | ASTM D4643 | 10.4 % | |
| Swell Index | ASTM D5890 | 29.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4140 g/m ² | 0.848 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040611 | 502123448 | 4/7/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5268 g/m ² | 1.079 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1281.1 N | 288 lbs | |
| Grab Elongation | ASTM D4632 | | 128 % | |
| Tensile Strength | ASTM D6768 | 11.8 kN/m | 67.6 ppi | |
| Peel Strength | ASTM D4632 mod | 360.3 N | 81 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.7 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334143 | | |
| Moisture Content | ASTM D4643 | 9.3 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 12.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4316 g/m ² | 0.884 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040611 | 502123464 | 4/7/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| Type | BentoLiner NWL-45 | | | |
|------------------|-------------------|---|--------------------------|--|
| Mass | ASTM D5993 | 4951 g/m ² | 1.014 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1223.3 N | 275 lbs | |
| Grab Elongation | ASTM D4632 | | 133 % | |
| Tensile Strength | ASTM D6768 | 11.3 kN/m | 64.4 ppi | |
| Peel Strength | ASTM D4632 mod | 302.5 N | 68 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.7 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334143 | | |
| Moisture Content | ASTM D4643 | 9.3 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 12.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4023 g/m ² | 0.824 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040611 | 502123480 | 4/7/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4902 g/m ² | 1.004 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1192.1 N | 268 lbs | |
| Grab Elongation | ASTM D4632 | | 134 % | |
| Tensile Strength | ASTM D6768 | 11.3 kN/m | 64.8 ppi | |
| Peel Strength | ASTM D4632 mod | 324.7 N | 73 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.6 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090319215B | | |
| Mass | 212 g/m ² | 6.26 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334146 | | |
| Moisture Content | ASTM D4643 | 9.1 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 12.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3989 g/m ² | 0.817 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-842-8531
FAX: 605-842-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 86
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|--|-----------------|---------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft² |
| Peel Strength | ASTM D6496 | 1/40,000 ft² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft² |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29040811

ROLL # 502123573- 502123658


Chuck Taylor
Lab Technician

Date:

4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040811 | 502123573 | 4/8/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5117 g/m ² | 1.048 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1196.6 N | 269 lbs | |
| Grab Elongation | ASTM D4632 | | 121 % | |
| Tensile Strength | ASTM D6768 | 12.1 kN/m | 69.0 ppi | |
| Peel Strength | ASTM D4632 mod | 320.3 N | 72 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.1 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090318215B | | |
| Mass | 215 g/m ² | 6.33 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334151 | | |
| Moisture Content | ASTM D4643 | 9.6 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4160 g/m ² | 0.852 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040811 | 502123589 | 4/8/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5156 g/m ² | 1.056 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1192.1 N | 268 lbs | |
| Grab Elongation | ASTM D4632 | | 124 % | |
| Tensile Strength | ASTM D6768 | 11.2 kN/m | 63.9 ppi | |
| Peel Strength | ASTM D4632 mod | 395.9 N | 89 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 17 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090318215B | | |
| Mass | 215 g/m ² | 6.33 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334151 | | |
| Moisture Content | ASTM D4643 | 9.6 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4199 g/m ² | 0.860 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040811 | 502123605 | 4/8/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4912 g/m ² | 1.006 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1174.3 N | 264 lbs | |
| Grab Elongation | ASTM D4632 | | 131 % | |
| Tensile Strength | ASTM D6768 | 12.4 kN/m | 70.8 psi | |
| Peel Strength | ASTM D4632 mod | 329.2 N | 74 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 13.5 psi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090317301B | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090318215B | | |
| Mass | 215 g/m ² | 6.33 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334151 | | |
| Moisture Content | ASTM D4643 | 9.6 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 13.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3979 g/m ² | 0.815 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040811 | 502123621 | 4/8/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4619 g/m ² | 0.946 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1107.6 N | 249 lbs | |
| Grab Elongation | ASTM D4632 | | 125 % | |
| Tensile Strength | ASTM D6768 | 11.0 kN/m | 63.0 ppi | |
| Peel Strength | ASTM D4632 mod | 275.8 N | 62 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|-----------|----------------------|-------------------------|
| Type | Non-woven | | |
| Layer # | | 090317301B | |
| Mass | | 338 g/m ² | 9.98 oz/yd ² |

Bottom Layer

| | | | |
|---------|-----------------|----------------------|-------------------------|
| Type | Scrim Non-woven | | |
| Layer # | | 090318215B | |
| Mass | | 215 g/m ² | 6.33 oz/yd ² |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334152 | | |
| Moisture Content | ASTM D4643 | 9.8 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 14.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3774 g/m ² | 0.773 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040811 | 502123637 | 4/8/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | |
|------------------|-------------------|---|--------------------------|
| Type | BentoLiner NWL-45 | | |
| Mass | ASTM D5993 | 4970 g/m ² | 1.018 lb/ft ² |
| Grab Strength | ASTM D4632 | 1187.7 N | 267 lbs |
| Grab Elongation | ASTM D4632 | | 124 % |
| Tensile Strength | ASTM D6768 | 11.9 kN/m | 68.2 ppi |
| Peel Strength | ASTM D4632 mod | 306.9 N | 69 lbs |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.6 ppi |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | |
| Permeability | ASTM D5084 | <5E-9 cm/s | |

Top Layer

| | | | |
|---------|--------------|----------------------|-------------------------|
| Type | Non-woven | | |
| Layer # | 090316301B-1 | | |
| Mass | | 338 g/m ² | 9.98 oz/yd ² |

Bottom Layer

| | | | |
|---------|-----------------|----------------------|-------------------------|
| Type | Scrim Non-woven | | |
| Layer # | 090318215B | | |
| Mass | | 215 g/m ² | 6.33 oz/yd ² |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334152 | | |
| Moisture Content | ASTM D4643 | | 9.8 % |
| Swell Index | ASTM D5890 | | 28.0 ml |
| Fluid Loss | ASTM D5891 | | 14.2 ml |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4023 g/m ² | 0.824 lb/ft ² |

GSE BentoLiner®, Inc.

QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040811 | 502123653 | 4/8/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4594 g/m ² | 0.941 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1018.6 N | 229 lbs | |
| Grab Elongation | ASTM D4632 | | 124 % | |
| Tensile Strength | ASTM D6768 | 8.9 kN/m | 50.8 ppi | |
| Peel Strength | ASTM D4632 mod | 422.6 N | 95 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.5 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-1 | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090318215B | | |
| Mass | 215 g/m ² | 6.33 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334153 | | |
| Moisture Content | ASTM D4643 | 9.3 % | |
| Swell Index | ASTM D5890 | 30.0 ml | |
| Fluid Loss | ASTM D5891 | 14.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3701 g/m ² | 0.758 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 48
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|------------------------------|-----------------|---------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft² |
| Peel Strength | ASTM D6496 | 1/40,000 ft² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft² |

**certified to meet the required specification of < 5E-9 cm/sec*

| | | |
|------------|------------|--------|
| Index Flux | ASTM D5887 | Weekly |
|------------|------------|--------|

**certified to meet the required specification of < 1E-8 m³/m²/sec*

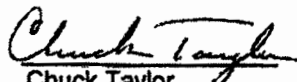
| | | |
|----------------|------------|--------------|
| Internal Shear | ASTM D6243 | Periodically |
|----------------|------------|--------------|

**hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf*

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29040911

ROLL # 502123659- 502123706


Chuck Taylor
Lab Technician

Date:

4-16-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040911 | 502123659 | 4/8/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4878 g/m ² | 0.999 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1049.8 N | 236 lbs | |
| Grab Elongation | ASTM D4632 | | 108 % | |
| Tensile Strength | ASTM D6768 | 10.5 kN/m | 59.8 ppi | |
| Peel Strength | ASTM D4632 mod | 422.6 N | 95 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.8 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | | |
|---------|--------------|----------------------|-------------------------|--|
| Type | Non-woven | | | |
| Layer # | 090316301B-1 | | | |
| Mass | | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | | |
|---------|-----------------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | | |
| Layer # | 090318215B | | | |
| Mass | | 215 g/m ² | 6.33 oz/yd ² | |

Bentonite

| | | | | |
|--------------------------------------|------------|-----------------------|--------------------------|--|
| Shipment Lot # | 1334153 | | | |
| Moisture Content | ASTM D4643 | 9.3 % | | |
| Swell Index | ASTM D5890 | 30.0 ml | | |
| Fluid Loss | ASTM D5891 | 14.6 ml | | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3955 g/m ² | 0.810 lb/ft ² | |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29040911 | 502123675 | 4/9/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4692 g/m ² | 0.961 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1178.8 N | 265 lbs | |
| Grab Elongation | ASTM D4632 | | 110 % | |
| Tensile Strength | ASTM D6768 | 11.5 kN/m | 65.6 ppi | |
| Peel Strength | ASTM D4632 mod | 418.1 N | 94 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 17.9 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-1 | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090318215B | | |
| Mass | 215 g/m ² | 6.33 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334155 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3779 g/m ² | 0.774 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29040911 | 502123691 | 4/9/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5034 g/m ² | 1.031 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1076.5 N | 242 lbs | |
| Grab Elongation | ASTM D4632 | | 114 % | |
| Tensile Strength | ASTM D6768 | 10.9 kN/m | 62.5 ppi | |
| Peel Strength | ASTM D4632 mod | 347.0 N | 78 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.1 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-1 | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090318215B | | |
| Mass | 215 g/m ² | 6.33 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1334155 | | |
| Moisture Content | ASTM D4643 | 9.5 % | |
| Swell Index | ASTM D5890 | 28.0 ml | |
| Fluid Loss | ASTM D5891 | 13.2 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4091 g/m ² | 0.838 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 88
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|------------------------------|-----------------|---------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft² |
| Peel Strength | ASTM D6496 | 1/40,000 ft² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft² |

**certified to meet the required specification of $< 5E-9$ cm/sec*

| | | |
|------------|------------|--------|
| Index Flux | ASTM D5887 | Weekly |
|------------|------------|--------|

**certified to meet the required specification of $< 1E-8$ m³/m²/sec*

| | | |
|----------------|------------|--------------|
| Internal Shear | ASTM D6243 | Periodically |
|----------------|------------|--------------|

**hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf*

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29060411

ROLL # 502127196- 502127281


Chuck Taylor
Lab Technician

Date: 6-15-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29060411 | 502127196 | 6/4/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5000 g/m ² | 1.024 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1112.1 N | 250 lbs | |
| Grab Elongation | ASTM D4632 | | 131 % | |
| Tensile Strength | ASTM D6768 | 10.0 kN/m | 57.2 ppi | |
| Peel Strength | ASTM D4632 mod | 391.4 N | 88 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 17.6 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090316301B-1 | | |
| Mass | 338 g/m ² | 9.98 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090506215B | | |
| Mass | 226 g/m ² | 6.66 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1359523 | | |
| Moisture Content | ASTM D4643 | 9.2 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4062 g/m ² | 0.832 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29060411 | 502127212 | 6/4/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4809 g/m ² | 0.985 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1094.3 N | 246 lbs | |
| Grab Elongation | ASTM D4632 | | 121 % | |
| Tensile Strength | ASTM D6768 | 10.6 kN/m | 60.3 ppi | |
| Peel Strength | ASTM D4632 mod | 364.8 N | 82 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.8 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B | | |
| Mass | 328 g/m ² | 9.66 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090506215B | | |
| Mass | 226 g/m ² | 6.66 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1359523 | | |
| Moisture Content | ASTM D4643 | 9.2 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3896 g/m ² | 0.798 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29060411 | 502127228 | 6/4/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4663 g/m ² | 0.955 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1187.7 N | 267 lbs | |
| Grab Elongation | ASTM D4632 | | 114 % | |
| Tensile Strength | ASTM D6768 | 11.7 kN/m | 66.9 ppi | |
| Peel Strength | ASTM D4632 mod | 315.8 N | 71 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | | 090324301B | |
| Mass | 328 g/m ² | 9.66 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | | 090506215B | |
| Mass | 226 g/m ² | 6.66 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1359524 | | |
| Moisture Content | ASTM D4643 | 9.2 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3764 g/m ² | 0.771 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29060411 | 502127244 | 6/4/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4838 g/m ² | 0.991 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1290.0 N | 290 lbs | |
| Grab Elongation | ASTM D4632 | | 135 % | |
| Tensile Strength | ASTM D6768 | 11.2 kN/m | 64.1 ppi | |
| Peel Strength | ASTM D4632 mod | 280.2 N | 63 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.9 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B | | |
| Mass | 328 g/m ² | 9.66 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090506215B | | |
| Mass | 226 g/m ² | 6.66 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1359524 | | |
| Moisture Content | ASTM D4643 | 9.2 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3925 g/m ² | 0.804 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29060411 | 502127260 | 6/4/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4741 g/m ² | 0.971 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1338.9 N | 301 lbs | |
| Grab Elongation | ASTM D4632 | | 144 % | |
| Tensile Strength | ASTM D6768 | 12.0 kN/m | 68.8 ppi | |
| Peel Strength | ASTM D4632 mod | 258.0 N | 58 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 11.2 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B | | |
| Mass | 328 g/m ² | 9.66 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090506215B | | |
| Mass | 226 g/m ² | 6.66 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1359525 | | |
| Moisture Content | ASTM D4643 | 9.1 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3838 g/m ² | 0.786 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29060411 | 502127276 | 6/4/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4799 g/m ² | 0.983 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1312.2 N | 295 lbs | |
| Grab Elongation | ASTM D4632 | | 138 % | |
| Tensile Strength | ASTM D6768 | 12.2 kN/m | 69.7 ppi | |
| Peel Strength | ASTM D4632 mod | 333.6 N | 75 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 15.0 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B | | |
| Mass | 328 g/m ² | 9.66 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090506215B | | |
| Mass | 226 g/m ² | 6.66 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1359526 | | |
| Moisture Content | ASTM D4643 | 9.4 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3882 g/m ² | 0.795 lb/ft ² |

GSE BentoLiner®, Inc.

3150 1st Ave
Spearfish, SD 57783

TEL: 605-642-8531
FAX: 605-642-8539

BentoLiner® MANUFACTURING CERTIFICATION

CUSTOMER: GSI
PROJECT: Sarasota County CCSWDC Phase 2
ORDER NO.: SO 56347

SHIP DATE:
ROLLS: 40
PRODUCT TYPE: BentoLiner NWL-45

GSE BentoLiner® hereby certifies that the GSE BentoLiner® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed GSE BentoLiner's® specifications .

The GSE BentoLiner® product has been continuously inspected for the presence of needles and is certified to be needle free.

BENTONITE testing was performed as follows:

| | | |
|------------------|------------|-------------|
| Swell Index | ASTM D5890 | 1/60,000 lb |
| Moisture Content | ASTM D4643 | 1/60,000 lb |
| Fluid Loss | ASTM D5891 | 1/60,000 lb |

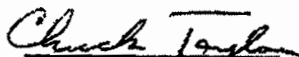
GEOSYNTHETIC CLAY LINER testing on the finished product was performed as follows:

| | | |
|---|-----------------|---------------------------|
| Bentonite Mass Per Unit Area | ASTM D5993 | 1/40,000 ft ² |
| Grab Tensile/Elongation | ASTM D4632 | 1/40,000 ft ² |
| Tensile Strength | ASTM D6768 | 1/40,000 ft ² |
| Peel Strength | ASTM D4632 Mod. | 1/40,000 ft ² |
| Peel Strength | ASTM D6496 | 1/40,000 ft ² |
| Hydraulic Conductivity | ASTM D5084 | 1/100,000 ft ² |
| <i>*certified to meet the required specification of < 5E-9 cm/sec</i> | | |
| Index Flux | ASTM D5887 | Weekly |
| <i>*certified to meet the required specification of < 1E-8 m³/m²/sec</i> | | |
| Internal Shear | ASTM D6243 | Periodically |
| <i>*hydrated 24 hours and sheared under 200 psf normal stress is certified to be 500 psf</i> | | |

The LOT and ROLL numbers for this shipment are as follows:

LOT# 29060511

ROLL # 502127282- 502127321


Chuck Taylor
Lab Technician

Date: 6-15-09

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29060511 | 502127282 | 6/4/2009 | BentoLiner NWL-45 | 110.0 33.53 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4936 g/m ² | 1.011 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1321.1 N | 297 lbs | |
| Grab Elongation | ASTM D4632 | | 137 % | |
| Tensile Strength | ASTM D6768 | 12.5 kN/m | 71.2 ppi | |
| Peel Strength | ASTM D4632 mod | 271.3 N | 61 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 12.3 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B | | |
| Mass | 328 g/m ² | 9.66 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090506215B | | |
| Mass | 226 g/m ² | 6.66 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1359526 | | |
| Moisture Content | ASTM D4643 | 9.4 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4008 g/m ² | 0.821 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length | Width |
|----------|-----------|---------------|-------------------|--------|--------|
| | | | | ft / m | ft / m |
| 29060511 | 502127293 | 6/5/2009 | BentoLiner NWL-45 | 150.0 | 15.5 |
| | | | | 45.72 | 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 5092 g/m ² | 1.043 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1138.7 N | 256 lbs | |
| Grab Elongation | ASTM D4632 | | 119 % | |
| Tensile Strength | ASTM D6768 | 11.5 kN/m | 65.8 ppi | |
| Peel Strength | ASTM D4632 mod | 315.8 N | 71 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 14.9 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Non-woven | | |
| Layer # | 090324301B | | |
| Mass | 328 g/m ² | 9.66 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090506215B | | |
| Mass | 226 g/m ² | 6.66 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1359526 | | |
| Moisture Content | ASTM D4643 | 9.4 % | |
| Swell Index | ASTM D5890 | 27.0 ml | |
| Fluid Loss | ASTM D5891 | 14.6 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 4155 g/m ² | 0.851 lb/ft ² |

GSE BentoLiner®, Inc.
QUALITY CONTROL CERTIFICATE

| Lot # | Roll # | Date Produced | Product | Length ft / m | Width ft / m |
|----------|-----------|---------------|-------------------|------------------|-----------------|
| 29060511 | 502127309 | 6/5/2009 | BentoLiner NWL-45 | 150.0 45.72 | 15.5 4.72 |

Finished Product

| | | | | |
|------------------|-------------------|---|--------------------------|--|
| Type | BentoLiner NWL-45 | | | |
| Mass | ASTM D5993 | 4669 g/m ² | 0.956 lb/ft ² | |
| Grab Strength | ASTM D4632 | 1258.8 N | 283 lbs | |
| Grab Elongation | ASTM D4632 | | 130 % | |
| Tensile Strength | ASTM D6768 | 13.3 kN/m | 76.0 ppi | |
| Peel Strength | ASTM D4632 mod | 360.3 N | 81 lbs | |
| Peel Strength | ASTM D6496 | 928.2 N/m | 16.6 ppi | |
| Index Flux | ASTM D5887 | <1E-8 m ³ /m ² /sec | | |
| Permeability | ASTM D5084 | <5E-9 cm/s | | |

Top Layer

| | | | |
|---------|----------------------|--------------------------|--|
| Type | Non-woven | | |
| Layer # | 090325301B | | |
| Mass | 340 g/m ² | 10.03 oz/yd ² | |

Bottom Layer

| | | | |
|---------|----------------------|-------------------------|--|
| Type | Scrim Non-woven | | |
| Layer # | 090506215B | | |
| Mass | 226 g/m ² | 6.66 oz/yd ² | |

Bentonite

| | | | |
|--------------------------------------|------------|-----------------------|--------------------------|
| Shipment Lot # | 1359528 | | |
| Moisture Content | ASTM D4643 | 9.8 % | |
| Swell Index | ASTM D5890 | 26.0 ml | |
| Fluid Loss | ASTM D5891 | 13.4 ml | |
| Bentonite Mass Per Unit Area @ 0% mc | ASTM D5993 | 3735 g/m ² | 0.765 lb/ft ² |



June 12, 2009
March 30, 2010

Revised

Mail To:

Mr. Ed Martin
Glover Construction

Bill To:

<= Same

email: emartin@gloverconstruction.com
cc email: jamesl@geo-synthetics.com

Dear Mr. Martin:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: Sarasota County Landfill, Phase II

TRI Job Reference Number: E2325-41-08

Material(s) Tested: 1 BentoLiner NWL-45 GCL(s)

Test(s) Requested: Mass/Unit Area (ASTM D 5993)
Tensile Properties (ASTM D 6768)
Peel Strength (ASTM D 6496)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

John M. Allen, P.E.
Division Director
Geosynthetic Services Division
www.GeosyntheticTesting.com



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502127210
TRI Log #: E2325-41-08

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-------------------------|------|------|------|------|---|---|---|---|----|------|--------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.85 | 0.85 | 0.83 | 0.80 | 0.76 | | | | | | 0.82 | 0.04 | 0.75 min |
| Moisture Content (%) | 9.0 | 9.0 | 9.0 | 9.1 | 9.0 | | | | | | 9.0 | 0.0 | |
| Tensile Strength (ASTM D 6768) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs/in) | 83.8 | 76.9 | 77.5 | 77.8 | 80.9 | | | | | | 79.4 | 2.9 | 45 min |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 16.4 | 16.5 | 15.6 | 15.1 | 15.0 | | | | | | 15.7 | 0.7 | 5.3 min |
| MD Machine Direction | TD Transverse Direction | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



April 27, 2009
March 30, 2010

Revised

Mail To:

Mr. Ed Martin
Glover Construction

Bill To:

<= Same

email: emartin@gloverconstruction.com
cc email: jamesl@geo-synthetics.com

Dear Mr. Martin:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: Sarasota County Landfill, Phase II

TRI Job Reference Number: E2325-21-08

Material(s) Tested: 1 BentoLiner NWL-45 GCL(s)

Test(s) Requested:
Mass/Unit Area (ASTM D 5993)
Bentonite - Fluid Loss (ASTM D 5891)
Bentonite - Swell Index (ASTM D 5890)
Tensile Properties (ASTM D 6768)
Peel Strength (ASTM D 6496)
Index Flux (ASTM D 5887)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

John M. Allen, P.E.
Division Director
Geosynthetic Services Division
www.GeosyntheticTesting.com



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502123691
TRI Log #: E2325-21-08

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|---|-----------------------|------|------|------|------|---|---|---|---|----|----------------|-----------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.90 | 0.94 | 0.85 | 0.83 | 0.86 | | | | | | 0.88 | 0.04 | 0.75 min |
| Moisture Content (%) | 9.9 | 9.9 | 10.0 | 10.0 | 10.0 | | | | | | 10.0 | 0.1 | |
| Bentonite - Fluid Loss (ASTM D 5891) | | | | | | | | | | | | | |
| Slurry temperature at test initiation (26 degrees C) | | | | | | | | | | | | | |
| Fluid Loss (mL) | 14.8 | | | | | | | | | | 15 | | 18 max |
| Note: Bentonite sample tested is taken from finished GCL product. | | | | | | | | | | | | | |
| Bentonite - Swell Index (ASTM D 5890) | | | | | | | | | | | | | |
| Water temperature at test initiation (22 degrees C) | | | | | | | | | | | | | |
| Swell index (mL/2g) | 29 | | | | | | | | | | 29 | | 24 min |
| Note: Bentonite sample tested is taken from finished GCL product. | | | | | | | | | | | | | |
| Tensile Strength (ASTM D 6768) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs/in) | 76.5 | 73.9 | 70.2 | 78.6 | 71.2 | | | | | | 74.1 | 3.5 | 45 min |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 15.3 | 16.0 | 15.8 | 12.2 | 16.4 | | | | | | 15.1 | 1.7 | 5.3 min |
| Index Flux (ASTM D 5887) - @ 5 psi | | | | | | | | | | | | | |
| Index Flux (m ³ /m ² /sec) | 3.1E-09 | | | | | | | | | | 3.1E-09 | | |
| Hydraulic Conductivity (m/sec) | 2.6E-11 | | | | | | | | | | 2.6E-11 | | 5.0E-11 max |
| MD Machine Direction TD Transverse Direction | | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



April 17, 2009
March 30, 2010

Revised

Mail To:

Mr. Ed Martin
Glover Construction

Bill To:

<= Same

email: emartin@gloverconstruction.com
cc email: jamesl@geo-synthetics.com

Dear Mr. Martin:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: Sarasota County Landfill, Phase II

TRI Job Reference Number: E2325-20-02

Material(s) Tested: 3 BentoLiner NWL-45 GCL(s)

Test(s) Requested: Mass/Unit Area (ASTM D 5993)
Tensile Properties (ASTM D 6768)
Peel Strength (ASTM D 6496)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

John M. Allen, P.E.
Division Director
Geosynthetic Services Division
www.GeosyntheticTesting.com



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502123363
TRI Log #: E2325-20-02

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-------------------------|------|------|------|------|---|---|---|---|----|------|--------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.93 | 0.93 | 0.83 | 0.83 | 0.76 | | | | | | 0.86 | 0.07 | 0.75 min |
| Moisture Content (%) | 9.3 | 9.2 | 9.3 | 9.2 | 9.2 | | | | | | 9.2 | 0.1 | |
| Tensile Strength (ASTM D 6768) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs/in) | 76.1 | 77.0 | 73.9 | 79.3 | 80.8 | | | | | | 77.4 | 2.7 | 45 min |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 12.5 | 14.6 | 14.7 | 13.5 | 14.1 | | | | | | 13.9 | 0.9 | 5.3 min |
| MD Machine Direction | TD Transverse Direction | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502123440
TRI Log #: E2325-20-02

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-------------------------|------|------|------|------|---|---|---|---|----|------|--------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.91 | 0.96 | 0.92 | 0.89 | 0.89 | | | | | | 0.91 | 0.03 | 0.75 min |
| Moisture Content (%) | 9.9 | 10.0 | 9.9 | 9.9 | 10.0 | | | | | | 9.9 | 0.1 | |
| Tensile Strength (ASTM D 6768) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs/in) | 73.8 | 72.2 | 86.6 | 86.6 | 72.0 | | | | | | 78.2 | 7.7 | 45 min |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 17.0 | 17.7 | 18.4 | 17.0 | 16.5 | | | | | | 17.3 | 0.7 | 5.3 min |
| MD Machine Direction | TD Transverse Direction | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502123621
TRI Log #: E2325-20-02

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-------------------------|------|------|------|------|---|---|---|---|----|------|--------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.83 | 0.81 | 0.85 | 0.79 | 0.85 | | | | | | 0.83 | 0.03 | 0.75 min |
| Moisture Content (%) | 9.7 | 9.7 | 9.8 | 9.7 | 9.5 | | | | | | 9.7 | 0.1 | |
| Tensile Strength (ASTM D 6768) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs/in) | 89.7 | 77.3 | 72.3 | 73.9 | 75.7 | | | | | | 77.8 | 6.9 | 45 min |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 12.9 | 13.7 | 11.4 | 13.8 | 12.9 | | | | | | 12.9 | 1.0 | 5.3 min |
| MD Machine Direction | TD Transverse Direction | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



March 18, 2009

March 30, 2010

Revised

Mail To:

Mr. Ed Martin
Glover Construction

Bill To:

<= Same

email: emartin@gloverconstruction.com

cc email: jamesl@geo-synthetics.com

Dear Mr. Martin:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: Sarasota County Landfill, Phase II

TRI Job Reference Number: E2325-07-08

Material(s) Tested: 2 BentoLiner NWL-45 GCL(s)

Test(s) Requested:
Mass/Unit Area (ASTM D 5993)
Bentonite - Fluid Loss (ASTM D 5891)
Bentonite - Swell Index (ASTM D 5890)
Grab Tensile Properties (ASTM D 4632, mod.)
Peel Strength (ASTM D 6496)
Index Flux (ASTM D 5887)
Internal Shear Strength (ASTM D 6243)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

John M. Allen, P.E.
Division Director
Geosynthetic Services Division
www.GeosyntheticTesting.com

GCL TEST RESULTS

TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502121114
TRI Log #: E2325-07-08

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. | |
|--|-----------------------|---------|------|-------|------|-----|-----|-----|-----|-----|------|-----------|-------------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.80 | 1.00 | 0.87 | 0.84 | 0.93 | | | | | | | 0.89 | 0.08 | 0.75 min |
| Moisture Content (%) | 10.1 | 10.2 | 10.2 | 10.3 | 10.2 | | | | | | | 10.2 | 0.1 | |
| Bentonite - Fluid Loss (ASTM D 5891) | | | | | | | | | | | | | | |
| Slurry temperature at test initiation (26 degrees C) | | | | | | | | | | | | | | |
| Fluid Loss (mL) | 12.6 | | | | | | | | | | | 13 | | 18 max |
| Note: Bentonite sample tested is taken from finished GCL product. | | | | | | | | | | | | | | |
| Bentonite - Swell Index (ASTM D 5890) | | | | | | | | | | | | | | |
| Water temperature at test initiation (22 degrees C) | | | | | | | | | | | | | | |
| Swell index (mL/2g) | 30 | | | | | | | | | | | 30 | | 24 min |
| Note: Bentonite sample tested is taken from finished GCL product. | | | | | | | | | | | | | | |
| Grab Tensile Properties (ASTM D 4632, mod.) | | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs) | 233 | 246 | 212 | 238 | 220 | 228 | 180 | 172 | 206 | 199 | | 213 | 25 | 150 min |
| TD - Tensile Strength (lbs) | 457 | 498 | 531 | 401 | 432 | 414 | 366 | 390 | 460 | 407 | | 436 | 51 | 150 min |
| MD - Elongation @ Max. Load (%) | 95 | 105 | 110 | 114 | 109 | 97 | 81 | 59 | 99 | 90 | | 96 | 16 | |
| TD - Elongation @ Max. Load (%) | 78 | 83 | 85 | 71 | 67 | 63 | 65 | 65 | 73 | 66 | | 72 | 8 | |
| Test performed using 4" wide grip faces. | | | | | | | | | | | | | | |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 5.9 | 10.0 | 15.6 | 17.0 | 15.3 | | | | | | | 12.8 | 4.7 | 5.3 min |
| Index Flux (ASTM D 5887) - tested at 10 psi confining stress and 2 psi head pressure | | | | | | | | | | | | | | |
| Index Flux (m ³ /m ² /sec) | 1.9E-09 | | | | | | | | | | | 1.9E-09 | | |
| Hydraulic Conductivity (m/sec) | 1.4E-11 | | | | | | | | | | | 1.4E-11 | | 5.0E-11 max |
| Internal Shear Strength - ASTM D 6243, modified via single point, shear at 0.04 lpm | | | | | | | | | | | | | | |
| Sample hydrated under | 200 | psf for | 24 | hours | | | | | | | | | | |
| Maximum Internal Shear Strength (psf) | 771 | | | | | | | | | | | 771.0 | | 500 min |
| MD Machine Direction TD Transverse Direction | | | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502121162
TRI Log #: E2325-07-08

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-----------------------|------|------|------|------|-----|-----|-----|-----|-----|------|--------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.90 | 0.92 | 0.82 | 0.86 | 0.89 | | | | | | 0.88 | 0.04 | 0.75 min |
| Moisture Content (%) | 9.9 | 9.6 | 9.6 | 9.7 | 9.6 | | | | | | 9.7 | 0.1 | |
| Grab Tensile Properties (ASTM D 4632, mod.) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs) | 333 | 355 | 284 | 306 | 242 | 296 | 254 | 261 | 254 | 285 | 287 | 37 | 150 min |
| TD - Tensile Strength (lbs) | 488 | 474 | 497 | 542 | 427 | 397 | 384 | 349 | 347 | 393 | 430 | 67 | 150 min |
| MD - Elongation @ Max. Load (%) | 134 | 141 | 109 | 125 | 109 | 117 | 111 | 112 | 101 | 120 | 118 | 12 | |
| TD - Elongation @ Max. Load (%) | 82 | 89 | 82 | 87 | 73 | 75 | 75 | 65 | 72 | 75 | 78 | 7 | |
| Test performed using 4" wide grip faces. | | | | | | | | | | | | | |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 13.1 | 14.5 | 11.3 | 13.1 | 13.2 | | | | | | 13.0 | 1.1 | 5.3 min |
| MD Machine Direction TD Transverse Direction | | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



April 15, 2009
March 30, 2010

Revised

Mail To:

Mr. Ed Martin
Glover Construction

Bill To:

<= Same

email: emartin@gloverconstruction.com
cc email: jamesl@geo-synthetics.com

Dear Mr. Martin:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: **Sarasota County Landfill, Phase II**

TRI Job Reference Number: E2325-18-07

Material(s) Tested: 3 BentoLiner NWL-45 GCL(s)

Test(s) Requested: Mass/Unit Area (ASTM D 5993)
Bentonite - Fluid Loss (ASTM D 5891)
Bentonite - Swell Index (ASTM D 5890)
Grab Tensile Properties (ASTM D 4632, mod.)
Peel Strength (ASTM D 6496)
Index Flux (ASTM D 5887)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

John M. Allen, P.E.
Division Director
Geosynthetic Services Division
www.GeosyntheticTesting.com



GCL TEST RESULTS

TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502123090
TRI Log #: E2325-18-07

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-------------------------|------|------|------|------|-----|-----|-----|-----|-----|------|-----------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.80 | 0.81 | 0.74 | 0.77 | 0.78 | | | | | | 0.78 | 0.03 | 0.75 min |
| Moisture Content (%) | 9.8 | 9.8 | 9.9 | 9.9 | 9.8 | | | | | | 9.8 | 0.1 | |
| Grab Tensile Properties (ASTM D 4632, mod.) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs) | 338 | 349 | 534 | 516 | 254 | 275 | 258 | 244 | 327 | 312 | 341 | 104 | 150 min |
| TD - Tensile Strength (lbs) | 532 | 529 | 254 | 266 | 429 | 391 | 488 | 456 | 423 | 482 | 425 | 98 | 150 min |
| MD - Elongation @ Max. Load (%) | 123 | 129 | 85 | 75 | 112 | 121 | 111 | 102 | 123 | 122 | 110 | 18 | |
| TD - Elongation @ Max. Load (%) | 91 | 84 | 106 | 112 | 73 | 82 | 75 | 74 | 68 | 73 | 84 | 15 | |
| Test performed using 4" wide grip faces. | | | | | | | | | | | | | |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 15.7 | 16.0 | 15.4 | 14.9 | 9.4 | | | | | | 14.3 | 2.8 | 5.3 min |
| MD Machine Direction | TD Transverse Direction | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502123183
TRI Log #: E2325-18-07

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-----------------------|------|------|------|------|-----|-----|-----|-----|-----|------|--------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.84 | 0.84 | 0.80 | 0.79 | 0.81 | | | | | | 0.82 | 0.02 | 0.75 min |
| Moisture Content (%) | 10.3 | 10.3 | 10.3 | 10.4 | 10.2 | | | | | | 10.3 | 0.1 | |
| Grab Tensile Properties (ASTM D 4632, mod.) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs) | 344 | 312 | 225 | 308 | 269 | 247 | 295 | 211 | 325 | 309 | 285 | 44 | 150 min |
| TD - Tensile Strength (lbs) | 506 | 530 | 444 | 462 | 407 | 473 | 542 | 473 | 404 | 448 | 469 | 47 | 150 min |
| MD - Elongation @ Max. Load (%) | 137 | 115 | 93 | 123 | 118 | 109 | 116 | 95 | 127 | 120 | 115 | 14 | |
| TD - Elongation @ Max. Load (%) | 91 | 99 | 85 | 83 | 95 | 80 | 86 | 83 | 68 | 81 | 85 | 9 | |
| Test performed using 4" wide grip faces. | | | | | | | | | | | | | |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 13.8 | 14.3 | 12.8 | 13.6 | 15.2 | | | | | | 13.9 | 0.9 | 5.3 min |
| MD Machine Direction TD Transverse Direction | | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502123284
TRI Log #: E2325-18-07

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|---|-------------------------|------|------|------|------|-----|-----|-----|-----|-----|---------|-----------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.91 | 0.85 | 0.81 | 0.96 | 0.88 | | | | | | 0.88 | 0.06 | 0.75 min |
| Moisture Content (%) | 9.5 | 9.4 | 9.4 | 9.4 | 9.4 | | | | | | 9.4 | 0.0 | |
| Bentonite - Fluid Loss (ASTM D 5891) | | | | | | | | | | | | | |
| Slurry temperature at test initiation (26 degrees C) | | | | | | | | | | | | | |
| Fluid Loss (mL) | 13.6 | | | | | | | | | | 14 | | 18 max |
| Note: Bentonite sample tested is taken from finished GCL product. | | | | | | | | | | | | | |
| Bentonite - Swell Index (ASTM D 5890) | | | | | | | | | | | | | |
| Water temperature at test initiation (22 degrees C) | | | | | | | | | | | | | |
| Swell index (mL/2g) | 29 | | | | | | | | | | 29 | | 24 min |
| Note: Bentonite sample tested is taken from finished GCL product. | | | | | | | | | | | | | |
| Grab Tensile Properties (ASTM D 4632, mod.) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs) | 345 | 332 | 280 | 227 | 260 | 311 | 290 | 280 | 301 | 337 | 296 | 37 | 150 min |
| TD - Tensile Strength (lbs) | 505 | 565 | 426 | 398 | 532 | 456 | 499 | 441 | 439 | 540 | 480 | 56 | 150 min |
| MD - Elongation @ Max. Load (%) | 117 | 116 | 117 | 90 | 103 | 110 | 125 | 105 | 121 | 131 | 114 | 12 | |
| TD - Elongation @ Max. Load (%) | 95 | 103 | 81 | 76 | 91 | 71 | 86 | 86 | 78 | 95 | 86 | 10 | |
| Test performed using 4" wide grip faces. | | | | | | | | | | | | | |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 16.3 | 15.2 | 15.0 | 15.7 | 15.4 | | | | | | 15.5 | 0.5 | 5.3 min |
| Index Flux (ASTM D 5887) | | | | | | | | | | | | | |
| Index Flux (m ³ /m ² /sec) | 2.3E-09 | | | | | | | | | | 2.3E-09 | | |
| Hydraulic Conductivity (m/sec) | 1.9E-11 | | | | | | | | | | 1.9E-11 | | 5.0E-11 max |
| MD Machine Direction | TD Transverse Direction | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



April 23, 2009
March 30, 2010

Revised

Mail To:

Mr. Ed Martin
Glover Construction

Bill To:

<= Same

email: emartin@gloverconstruction.com
cc email: jamesl@geo-synthetics.com

Dear Mr. Martin:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: **Sarasota County Landfill, Phase II**

TRI Job Reference Number: E2325-16-05

Material(s) Tested: 2 BentoLiner NWL-45 GCL(s)

Test(s) Requested: Mass/Unit Area (ASTM D 5993)
Bentonite - Fluid Loss (ASTM D 5891)
Bentonite - Swell Index (ASTM D 5890)
Grab Tensile Properties (ASTM D 4632, mod.)
Peel Strength (ASTM D 6496)
Index Flux (ASTM D 5887)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

John M. Allen, P.E.
Division Director

www.GeosyntheticTesting.com



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502123019
TRI Log #: E2325-16-05

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-----------------------|------|------|------|------|-----|-----|-----|-----|-----|------|-----------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.86 | 0.76 | 0.78 | 0.82 | 0.82 | | | | | | 0.81 | 0.04 | 0.75 min |
| Moisture Content (%) | 9.1 | 9.2 | 9.2 | 9.3 | 9.3 | | | | | | 9.2 | 0.1 | |
| Grab Tensile Properties (ASTM D 4632, mod.) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs) | 350 | 360 | 203 | 323 | 300 | 272 | 261 | 271 | 319 | 315 | 297 | 47 | 150 min |
| TD - Tensile Strength (lbs) | 496 | 525 | 515 | 621 | 540 | 462 | 528 | 489 | 410 | 473 | 506 | 56 | 150 min |
| MD - Elongation @ Max. Load (%) | 147 | 127 | 91 | 127 | 115 | 115 | 109 | 124 | 121 | 124 | 120 | 14 | |
| TD - Elongation @ Max. Load (%) | 81 | 85 | 78 | 83 | 87 | 69 | 80 | 84 | 77 | 84 | 81 | 5 | |
| Test performed using 4" wide grip faces. | | | | | | | | | | | | | |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 18.3 | 17.0 | 17.4 | 16.0 | 15.4 | | | | | | 16.8 | 1.1 | 5.3 min |
| MD Machine Direction TD Transverse Direction | | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502122924
TRI Log #: E2325-16-05

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|---|-----------------------|------|------|------|------|-----|-----|-----|-----|-----|---------|-----------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.82 | 0.80 | 0.83 | 0.80 | 0.83 | | | | | | 0.82 | 0.02 | 0.75 min |
| Moisture Content (%) | 8.4 | 8.4 | 8.4 | 8.5 | 8.8 | | | | | | 8.5 | 0.2 | |
| Bentonite - Fluid Loss (ASTM D 5891) | | | | | | | | | | | | | |
| Slurry temperature at test initiation (25 degrees C) | | | | | | | | | | | | | |
| Fluid Loss (mL) | 13.4 | | | | | | | | | | 13 | | 18 max |
| Note: Bentonite sample tested is taken from finished GCL product. | | | | | | | | | | | | | |
| Bentonite - Swell Index (ASTM D 5890) | | | | | | | | | | | | | |
| Water temperature at test initiation (22 degrees C) | | | | | | | | | | | | | |
| Swell index (mL/2g) | 28 | | | | | | | | | | 28 | | 24 min |
| Note: Bentonite sample tested is taken from finished GCL product. | | | | | | | | | | | | | |
| Grab Tensile Properties (ASTM D 4632, mod.) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs) | 320 | 283 | 231 | 323 | 260 | 283 | 292 | 324 | 224 | 303 | 284 | 36 | 150 min |
| TD - Tensile Strength (lbs) | 463 | 458 | 470 | 415 | 442 | 405 | 477 | 508 | 494 | 484 | 462 | 33 | 150 min |
| MD - Elongation @ Max. Load (%) | 117 | 107 | 91 | 120 | 110 | 109 | 111 | 121 | 88 | 121 | 110 | 12 | |
| TD - Elongation @ Max. Load (%) | 73 | 73 | 77 | 64 | 72 | 72 | 86 | 83 | 75 | 83 | 76 | 7 | |
| Test performed using 4" wide grip faces. | | | | | | | | | | | | | |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 16.7 | 16.6 | 18.1 | 13.8 | 13.9 | | | | | | 15.8 | 1.9 | 5.3 min |
| Index Flux (ASTM D 5887) | | | | | | | | | | | | | |
| Index Flux (m ³ /m ² /sec) | 3.1E-09 | | | | | | | | | | 3.1E-09 | | |
| Hydraulic Conductivity (m/sec) | 2.6E-11 | | | | | | | | | | 2.6E-11 | | 5.0E-11 max |
| MD Machine Direction TD Transverse Direction | | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



April 3, 2009
March 30, 2010

Revised

Mail To:

Mr. Ed Martin
Glover Construction

Bill To:

<= Same

email: emartin@gloverconstruction.com
cc email: jamesl@geo-synthetics.com

Dear Mr. Martin:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: **Sarasota County Landfill, Phase II**

TRI Job Reference Number: E2325-15-03

Material(s) Tested: 1 BentoLiner NWL-45 GCL(s)

Test(s) Requested: Mass/Unit Area (ASTM D 5993)
Grab Tensile Properties (ASTM D 4632, mod.)
Peel Strength (ASTM D 6496)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

John M. Allen, P.E.
Division Director
Geosynthetic Services Division
www.GeosyntheticTesting.com



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502122838
TRI Log #: E2325-15-03

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-----------------------|------|------|------|------|-----|-----|-----|-----|-----|------|-----------|-------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.87 | 0.79 | 0.74 | 0.84 | 0.88 | | | | | | 0.82 | 0.06 | 0.75 min |
| Moisture Content (%) | 10.0 | 10.0 | 10.2 | 10.2 | 10.3 | | | | | | 10.1 | 0.1 | |
| Grab Tensile Properties (ASTM D 4632, mod.) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs) | 310 | 318 | 228 | 298 | 271 | 271 | 290 | 301 | 277 | 280 | 284 | 26 | 150 min |
| TD - Tensile Strength (lbs) | 492 | 490 | 493 | 476 | 430 | 437 | 416 | 327 | 384 | 442 | 439 | 54 | 150 min |
| MD - Elongation @ Max. Load (%) | 125 | 118 | 97 | 119 | 113 | 117 | 111 | 112 | 101 | 107 | 112 | 9 | |
| TD - Elongation @ Max. Load (%) | 81 | 71 | 83 | 81 | 75 | 66 | 67 | 59 | 65 | 81 | 73 | 8 | |
| Test performed using 4" wide grip faces. | | | | | | | | | | | | | |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 14.5 | 11.9 | 15.5 | 14.7 | 12.6 | | | | | | 13.8 | 1.5 | 5.3 min |
| MD Machine Direction TD Transverse Direction | | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



March 26, 2009

March 30, 2010

Revised

Mail To:

Mr. Ed Martin
Glover Construction

Bill To:

<= Same

email: emartin@gloverconstruction.com

cc email: jamesl@geo-synthetics.com

Dear Mr. Martin:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: Sarasota County Landfill, Phase II

TRI Job Reference Number: E2325-13-02

Material(s) Tested: 1 BentoLiner NWL-45 GCL(s)

Test(s) Requested: Mass/Unit Area (ASTM D 5993)
Grab Tensile Properties (ASTM D 4632, mod.)
Peel Strength (ASTM D 6496)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

John M. Allen, P.E.
Division Director
Geosynthetic Services Division
www.GeosyntheticTesting.com



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502122555
TRI Log #: E2325-13-02

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-----------------------|------|------|------|------|-----|-----|-----|-----|-----|------|--------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.84 | 0.87 | 0.87 | 0.87 | 0.87 | | | | | | 0.86 | 0.01 | 0.75 min |
| Moisture Content (%) | 9.6 | 9.6 | 9.7 | 9.6 | 9.6 | | | | | | 9.6 | 0.0 | |
| Grab Tensile Properties (ASTM D 4632, mod.) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs) | 304 | 356 | 300 | 369 | 284 | 268 | 234 | 245 | 343 | 277 | 298 | 46 | 150 min |
| TD - Tensile Strength (lbs) | 466 | 436 | 452 | 449 | 493 | 477 | 479 | 414 | 445 | 420 | 453 | 26 | 150 min |
| MD - Elongation @ Max. Load (%) | 115 | 127 | 117 | 140 | 116 | 114 | 105 | 109 | 120 | 112 | 118 | 10 | |
| TD - Elongation @ Max. Load (%) | 86 | 89 | 79 | 75 | 80 | 79 | 77 | 80 | 81 | 89 | 82 | 5 | |
| Test performed using 4" wide grip faces. | | | | | | | | | | | | | |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 11.6 | 14.7 | 13.3 | 12.2 | 14.2 | | | | | | 13.2 | 1.3 | 5.3 min |
| MD Machine Direction TD Transverse Direction | | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.



June 20, 2009
March 30, 2010

Revised

Mail To:

Mr. Ed Martin
Glover Construction

Bill To:

<= Same

email: emartin@gloverconstruction.com
cc email: jamesl@geo-synthetics.com

Dear Mr. Martin:

Thank you for consulting TRI/Environmental, Inc. (TRI) for your geosynthetics testing needs. TRI is pleased to submit this final report for laboratory testing.

Project: Sarasota County Landfill, Phase II

TRI Job Reference Number: E2325-43-08

Material(s) Tested: 1 BentoLiner NWL-45 GCL(s)

Test(s) Requested: Mass/Unit Area (ASTM D 5993)
Tensile Properties (ASTM D 6768)
Peel Strength (ASTM D 6496)

If you have any questions or require any additional information, please call us at 1-800-880-8378.

Sincerely,

John M. Allen, P.E.
Division Director
Geosynthetic Services Division
www.GeosyntheticTesting.com



GCL TEST RESULTS
TRI Client: Glover Construction
Project: Sarasota County Landfill, Phase II

Material: BentoLiner NWL-45 GCL
Sample Identification: 502127309
TRI Log #: E2325-43-08

| PARAMETER | TEST REPLICATE NUMBER | | | | | | | | | | MEAN | STD. DEV. | PROJ. SPEC. |
|--|-------------------------|------|------|------|------|---|---|---|---|----|------|--------------|----------------|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| Bentonite - Mass/Unit Area (ASTM D 5993, result @ 0% M.C.) | | | | | | | | | | | | | |
| Bentonite mass/unit area (lbs/ft ²) | 0.83 | 0.84 | 0.76 | 0.71 | 0.73 | | | | | | 0.77 | 0.06 | 0.75 min |
| Moisture Content (%) | 9.0 | 9.0 | 9.0 | 8.9 | 8.9 | | | | | | 9.0 | 0.1 | |
| Tensile Strength (ASTM D 6768) | | | | | | | | | | | | | |
| MD - Tensile Strength (lbs/in) | 81.6 | 77.5 | 78.6 | 75.9 | 76.9 | | | | | | 78.1 | 2.2 | 45 min |
| Peel Strength (ASTM D 6496) | | | | | | | | | | | | | |
| MD - Peel Strength (lbs/in) | 13.8 | 14.4 | 14.8 | 14.1 | 15.2 | | | | | | 14.5 | 0.6 | 5.3 min |
| MD Machine Direction | TD Transverse Direction | | | | | | | | | | | | |

The testing is based upon accepted industry practice as well as the test method listed. Test results reported herein do not apply to samples other than those tested. TRI neither accepts responsibility for nor makes claim as to the final use and purpose of the material. TRI observes and maintains client confidentiality. TRI limits reproduction of this report, except in full, without prior approval of TRI.

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ATTACHMENT B

**Volume VI
(Under Separate Cover)**

ATTACHMENT C

Page 2 of HDR Certification of Construction Narrative

Florida Department of Environmental Protection (FDEP), Southwest District and in accordance with Chapter 62-701, Solid Waste Management Facilities, and Florida Administrative Code (FAC). A copy of the Phase II construction permit is provided in Attachment B of this report.

The permit covers the Phase II Class I Landfill Expansion which includes the construction of Cells 1-4; leachate collection/detection and transmission systems, stormwater management systems, and other ancillary construction associated with the development of the expansion.

Cells 1-4 of Phase II were constructed in general accordance with the above mentioned permit and associated permit drawings. Minor deviations from the approved permit documents were required to facilitate construction or to update the documents to comply with current industry standards. These minor deviations are summarized below:

- Cells 1-4 were constructed all at once instead of the staged initial construction of Cells 1-2 as shown in the permit documents;
- The minimum required thickness of the leachate collection and leak detection geocomposite was revised from 330 mil to 300 mil as approved in the amended permit dated June 24, 2009;
- The Water Quality Monitoring Plan Addendum was revised to delete interim monitoring wells and gas probe located west of Cell 2 as approved in the amended permit dated June 24, 2009;
- High Density Polyethylene (HDPE) geomembrane minimum fusion and extrusion seam strength requirements under both peel and shear conditions were revised to meet current industry standards as approved in the amended permit dated June 24, 2009;
- The carbonate content test for leachate collection stone was changed from ASTM D4373 to D3042 which represents a more appropriate test method for stone;
- An incorrect reference to the #100 sieve in the Protective Cover specification Section 02240 was revised to correctly reference the #200 sieve;
- Geosynthetic Clay Liner (GCL) hydraulic conductivity tests were performed at a confining stress of 5 psi at the request of FDEP instead of 10 psi as stated in the permit documents;
- The GCL at the Phase II/Phase I tie-in was placed under the existing Phase I geomembrane instead of over the geomembrane as shown in the construction detail;
- Destructive testing of repairs was required for every 500 linear feet of extrusion weld instead of every 10 repairs as shown in the permit documents;
- The location of gas probe (GP-9) was located further west than the location shown on the permit drawings due to site limitations;
- Temporary gas vents were installed near the interface between Cells 2 and 3 to relieve soil gas pressure building up beneath the liner system (minor permit modification pending); and
- A geosynthetic rain cover was installed within Cells 1-4 and a rainwater dewatering system is being installed within Cells 3 and 4 (minor permit modification pending); and
- The area in Cells 1-4 was not scarified due to the placement of additional backfill prior to placement of the GCL. The contractor cleared and grubbed the area in Cells 1-4, then placed additional backfill material in order to meet the proposed grades and prior to placing the GCL.

ATTACHMENT D

**Revised Ardaman & Associates Report - Volume I
(Under Separate Cover)**

ATTACHMENT E

**Revised Ardaman & Associates Report - Volume VII
(Under Separate Cover)**

ATTACHMENT F

Revised Ardaman & Associates Repair Log



REPAIR LOG SECONDARY LINER

| Project Name: | | CCSWDC (Sarasota Landfill) | Last Updated: | 12/19/2009 |
|--------------------|------------------|--|----------------------------------|-------------|
| Ardaman Field Rep: | | Allen Watson / Antonio J Vargas | File Number: | 08-7709 |
| Repair No. | Seam / Panel No. | Location | Repair Type (Patch, Cap,DT,Boot) | Repair Size |
| 664 | S171/172 | 287 N of south end of seam | Patch | 2x2 |
| 665 | S173/174 | 0 N of south end of seam | Patch | 2x2 |
| 666 | S179/180 | 476 N of south end of seam | DT-S151 | 5x2 |
| 667 | S180/181 | 255 N of south end of seam | DT-S152 | 4x2 |
| 668 | S178/179 | 253 N of south end of seam | Patch | 3x2 |
| 669 | S181/182 | 35 N of south end of seam | DT-S153 | 5x2 |
| 670 | S178/179 | 405 N of south end of seam | Patch | 5x2 |
| 671 | S161/176 | 502 N of south end of seam | Patch | 4x2 |
| 672 | S161/176 | 370 N of south end of seam | Patch | 3x2 |
| 673 | S161/176 | 315 N of south end of seam | Patch | 2x2 |
| 674 | S142/151/183/186 | Junction | Patch | 6x3 |
| 675 | S183/185/186/187 | Junction | Patch | 5x4 |
| 676 | S125/143 | 440 N of south end of seam | Patch | 5x2 |
| 677 | S143/144 | 440 N of south end of seam | Patch | 5x2 |
| 678 | S160/168/184/188 | Junction | Cap | 14x6 |
| 679 | S184/185/187/188 | Junction | Patch | 5x4 |
| 680 | S184/185 | 1 N of south end of seam | Patch | 2x2 |
| 681 | S142/183 | 75 N of south end of seam | DT-S154 | 4x2 |
| 682 | S183/185 | 245 N of south end of seam | DT-S155 | 4x2 |
| 683 | S160/184 | 350 N of south end of seam | DT-S157 | 4x2 |
| 684 | S184/185 | 438 N of south end of seam | DT-S156 | 5x2 |
| 685 | S160/R-678 | 5 W (Butt Seam) | DT-S162 | 5x2 |
| 686 | S187/188 | 75 N of south end of seam | DT-S158 | 5x2 |
| 687 | S151/186 | 130 N of south end of seam | DT-S159 | 4x2 |
| 688 | S186/187 | 315 N of south end of seam | DT-S167 160 | 5x2 |
| 689 | S168 | 240 N, 5 W of south east corner of panel | Patch | 4x2 |
| 690 | S168 | 220 N, 3 W of south east corner of panel | Patch | 2x2 |
| 691 | S168/188 | 465 N of south east corner of panel | DT-S161 | 5x2 |
| 692 | S178/179 | 310 N of south east corner of panel | DT-S150A | 5x2 |
| 693 | S178/179 | 290 N of south east corner of panel | DT-S150B | 5x2 |
| 694 | S114/189 | 28 N of south east corner of panel | Patch | 4x2 |
| 695 | S189/190 | 194 N of south east corner of panel | Patch | 5x3 |
| 696 | S190/191/192 | Junction | Patch | 2x2 |
| 697 | S191/193 | 239 N of south east corner of panel | Cap | 20x2 |
| 698 | S191/192/193 | Junction | Patch | 2x2 |
| 699 | S191/192 | 10 E (Butt Seam) | Patch | 2x2 |
| 700 | S192/193/194 | Junction | Cap | 9x2 |
| 701 | S193/194/195 | Junction | Patch | 5x2 |
| 702 | S114/189 | 338 N of south east corner of panel | DT-S163 | 6x2 |

ATTACHMENT G

**As-Built Drawings
(Under Separate Cover)**

ATTACHMENT H

**Dewatering System for Cells 3 and 4
(Under Separate Cover)**

ATTACHMENT I

**Revised Ardaman & Associates Appendix III
(Under Separate Cover)**

ATTACHMENT J

Revised Ardaman & Associates Appendix IV

APPENDIX IV



Ardaman & Associates, Inc.
Geotechnical, Environmental, and
Materials Consultants

TABLE 2: GROUNDWATER ANALYTICAL DATA SUMMARY - DETECTS (Revised 04/06/10)

Project Name: CCSWDC Phase 2 - (Sarasota CCSWDC)

FDEP Permit #130542-006-SC-1

| DETECTED PARAMETERS | LAB METHOD | UNITS | MW-15 | Trip Blank-2 | MW-16 | Trip Blank-3 | MW-17 | Trip Blank | MW-18 | Trip Blank-1 | MW-19 | Trip Blank-2 | MW-20 | Trip Blank-1 | GCTLs |
|---|---------------|-------|-----------|--------------|-----------|--------------|-----------|------------|----------|--------------|-----------|--------------|-----------|--------------|---------|
| | | | 07/02/09 | 07/02/09 | 07/02/09 | 07/02/09 | 07/07/09 | 07/07/09 | 07/01/09 | 07/01/09 | 06/30/09 | 6/30/09 | 06/30/09 | 06/30/09 | |
| TDS | 160.1 | mg/L | 3,000 | | 1,970 | | 192 | | 292 | | 756 | | 1030 | | 500 |
| Chloride | 300.1 | mg/L | 122 | | 308 | | 75.7 | | 3.1 | | 67.8 | | 87.9 | | 250 |
| Sulfate | 300.1 | mg/L | 1,010 | | 9.2 | | 4.7 | | 1.3 | | 10.1 I | | 3.3 | | 250 |
| Alkalinity, total (as CaCO ₃) | 310.1 | mg/L | 966 | | 1,370 | | 640 | | 259 | | 143 | | 779 | | NR |
| Aluminum | 6010 | ug/L | 139 | | 146 | | 568 | | 112 | | 6,390 | | 101 | | 200 |
| Arsenic | 6010 | ug/L | 28.7 | | 32.4 | | 42.7 | | 7.85 I | | 54.1 | | 23.7 | | 10 |
| Barium | 6010 | ug/L | 182 | | 165 | | 91.1 | | 28.1 | | 43 | | 71.8 | | 2,000 |
| Calcium | 6010 | ug/L | 569,000 V | | 289,000 V | | 164,000 V | | 78,700 V | | 31,100 V | | 149,000 V | | NR |
| Chromium | 6010 | ug/L | 2.95 I | | 3.21 I | | 4.71 I | | 1.75 I | | 11.4 | | 1.98 I | | 100 |
| Iron | 6010 | ug/L | 33,600 | | 73,600 | | 136,000 | | 20,700 | | 46,100 | | 20,700 | | 300 |
| Magnesium | 6010 | ug/L | 103,000 | | 105,000 | | 22,400 | | 11,100 | | 8,960 | | 84,400 | | NR |
| Manganese | 6010 | ug/L | 669 | | 80.2 | | 22.5 | | 15.8 | | 12 | | 35.4 | | 50 |
| Potassium | 6010 | ug/L | 14,300 | | 5,430 | | 3,670 | | 750 | | 3,460 | | 293 I | | NR |
| Sodium | 6010 | ug/L | 58,000 | | 260,000 | | 52,800 | | 3,120 | | 42,900 | | 39,500 | | 160,000 |
| Vanadium | 6010 | ug/L | 7.75 I | | 5.53 I | | 3.86 I | | 1.53 I | | 31.8 | | 1.28 I | | 49 |
| Dieldrin | 8081 | ug/L | 0.003 U | | 0.0031 U | | 0.0032 I | | 0.003 U | | 0.003 U | | 0.003 U | | 0.002 |
| Acetone | 8260 | ug/L | 5.6 U | 5.6 U | 12.1 | 5.8 I | 6.2 I | 5.6 U | 5.6 U | 5.6 U | 5.6 J3U | 7.5 J3 I | 5.6 J3U | 5.9 J3 I | 6,300 |
| Methylene chloride | 8260 | ug/L | 0.52 U | 7.6 | 0.52 U | 7.4 | 0.52 U | 0.52 U | 0.52 U | 6.9 | 0.52 J3MU | 7.3 J3M | 0.52 J3MU | 7.4 J3M | 5 |
| Bis(2-ethylhexyl)phthalate | 8270 | ug/L | 11.9 | | 9.6 | | 5.1 U | | 11.3 | | 6.8 | | 7 | | 6 |
| Nitrogen, ammonia (as N) | SM4500 | mg/L | 3.36 | | 12.2 | | 15 | | 1.6 I | | 21 | | 0.56 | | 2.8 |

Notes: GCTLs = Groundwater Cleanup Target Levels, Chapter 62-777, F.A.C., Table I.

TDS = Total Dissolved Solids

mg/L = Milligrams per liter

ug/L = Micrograms per liter

NA = Not analyzed.

NR = Not regulated at time of rule adoption.

* = Value based on the sum total xylenes.

** = Starting with the 1/22/08 sampling event, 8021 aromatic parameters were analyzed by using method 8260.

U = Indicates that the compound was analyzed but not detected above the method detection limit (MDL).

I = The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit.

J3 = Estimated value; value not accurate. The reported value did not meet the established quality control criteria for either precision or accuracy but falls within the NELAC marginal exceedance range.

J3M = Estimated value; value not accurate. The reported value did not meet the established quality control criteria for either precision or accuracy and falls beyond the NELAC range for marginal exceedances.

J3R = Estimated value; value not accurate. The RPD for the LCSD exceeds the laboratory established control limits.

V = Indicates that the analyte was detected in both the sample and the associated method blank. Note: The value in the blank shall not be subtracted from associated samples.

Bold = Analyte detected.

Shaded = Analyte concentration exceeds GCTL.

ATTACHMENT K

Revised Site Survey Drawing

ATTENTION



**AN OVERSIZED
DRAWING HAS BEEN
SCANNED SEPARTELY.
PLEASE SEE:**

- **SARASOTA CCSWDC PHASE II CONSTRUCTION
CERTIFICATION RAI#1 RESPONSE ATTACHMENT K-
REVISED SITE SURVEY DRAWING**