Construction Certification Report
Pond No. 3 North Vertical Expansion

NPDES Permit No. 0002186
Sherburne County (Sherco) Generating Plant
Northern States Power Company
(dba Xcel Energy, Inc.)

Prepared for
Xcel Energy, Inc.

February 2009

Prepared by

McCain and Associates, Inc.

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Table of Contents

List of Tables

List of Figures

List of Appendices

Certification

2008 Pond No. 3 North Vertical Expansion

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Darren S. Schwake, P.E.

License No. 24730

Date: 3-6-2009

Section 1 - Introduction

This Construction Certification Report (Report) presents the results of field observations and testing work performed during the 2008 construction of Pond 3 North (Pond 3N) Vertical Expansion at Xcel Energy's (Xcel) Sherburne County Generating Plant (Sherco or the Plant) in Becker, Minnesota. Pond 3N covers approximately 50 acres and is the north half of scrubber solids Pond No. 3 (Pond 3). The original phase of Pond 3 development was the construction of Pond 3N in 2004 to a finished elevation of 976 (operational elevation of 970). This report documents the second phase of development, consisting of extending Pond 3N vertically to a finished elevation of 999 (operational elevation of 993). Future development of Pond 3 consists of constructing the south half of Pond 3 (Pond 3S), and subsequent vertical extensions of the entire pond.

Pond 3N receives decanted water from the existing scrubber solids pond (Pond 2) and is currently used for water storage to manage the chemistry of water used in the Plant air quality control system and to provide surge capacity for storm water from the Plant site. Pond 3N does not receive scrubber solids other than some carry-over from Pond 2. As Pond 2 reaches capacity, Pond 3 will augment and ultimately replace Pond 2 as the primary means for scrubber solids disposal.

The 2008 Pond 3N construction consisted primarily of constructing earth embankments and liner installation. The south embankment was raised from elevation 976 to 997, and lined with a composite liner system to elevation 995. Composite liner was also installed on the west slope from elevation 972 to 1010. The composite liner consisted of a geosynthetic clay liner (GCL) overlain by a high density polyethylene (HDPE) geomembrane. Embankments on the north and east sides were raised from elevation 976 to 999 utilizing a clay-core and bottom ash/random fill upstream embankment configuration. Bottom ash placement occurred only within interior areas of the pond. Other activities during Pond 3N construction included granular drainage material placement, clay anchor installation, piping, electronic leak location testing, erosion control installation, establishment of access roads, and site restoration activities. Construction activities are more completely described in subsequent sections of this report.

Construction was performed in accordance with NPDES Permit No. 0002186, and "Construction Drawings and Specifications, 2008 Pond No. 3 North Vertical Expansion, Bottom Ash Pond Dredging and Excavation, and Unit 3 AQCS Landfill Final Cover, Sherburne County Generating Plant (Sherco), Northern States Power Company (dba Xcel Energy, Inc.)", prepared by McCain and Associates, Inc.(McCain), and dated March 2008. The prime contractor was Veit & Company, Inc. (Veit), and composite liner installation was performed by Clean Air and Water, LLC (CAAW) as a subcontractor to Veit. Excavation activities began in April 2008 and the construction was completed in November 2008. Deviations from the Specifications and Drawings are noted on the enclosed Record Drawings and are described in the following sections of this Report.

Xcel Energy performed construction management activities and the following companies provided services to complete the Pond 3N Project:

Company	Activity or Products
McCain and Associates, Inc. (McCain)	Design, QA/QC
Veit & Company, Inc. (Veit)	Earthwork
Clean Air & Water, LLC. (CAAW)	Geomembrane Installation (Subcontractor to Veit)
GSE Lining Technology	Geomembrane Supplier
Foth Infrastructure & Environment, LLC. (Foth)	Geomembrane Leak Location Testing
Neaton Bros.	Turf Establishment (Subcontractor to Veit)
Braun Intertec Corporation	Soil Testing
Soil Engineering Testing (SET)	Laboratory Clay Testing
Bogart, Peterson & Associates, Inc	Survey Verification (Subcontractor to Veit)
Ulteig Engineers, Inc.	Survey Verification

Construction observation was performed during the project and consisted of observing and recording activities of the prime contractor and subcontractors, answering questions and interpreting information contained in the drawings and specifications as requested by the contractor, and directing testing and quality control activities performed by independent testing firms and construction subcontractors. Additional related construction work was completed by Veit in 2008 under the same contract, but is not described in this Report. The additional work included excavation of bottom ash from the Bottom Ash Pond and placement of the bottom ash in Pond 2 to build interior dikes. In addition, final cover on the Unit 3 Landfill was constructed, but is described in a separate report.

Section 2 - Construction Methods and Materials

Methods of construction, equipment, and materials used for the project are described below. Appendix A contains photographs depicting the various stages of construction. Record Drawings in Appendix H, along with survey data in Appendix G, show details of the project as-constructed.

2.1 Granular Drainage Material Screening and Stockpiling

The drainage sand used for the project was taken from existing granular drainage material stockpiles southeast of Pond 3N. The material in those stockpiles was produced in the fall of 2006, as part of a previous construction project in which clean sand was excavated and segregated from the Pond 3S footprint and screened to a maximum particle size of 3/8-inch. The screened sand was tested and stockpiled for use in future construction projects at the plant.

Samples of the screened sand were collected and analyzed during the 2008 Pond 3N project to verify compliance with project specifications. Sampling and analysis of the granular drainage material is discussed in Section 3.2.5.

2.2 Topsoil Stripping and Stockpiling

Prior to embankment construction, topsoil from the pond slopes was stripped and stockpiled at the base of the slopes using dozers. Topsoil was stripped from the random fill borrow area northeast of Pond 3N using scrapers and was stockpiled north of Pond 3N. Topsoil on all pond slopes and embankments was a minimum of 6-inches thick, and ranged from 9-inches to 3-feet in the borrow area.

2.3 Borrow Area Development

To construct the Pond 3N vertical expansion, random fill material was excavated from a borrow area located northeast of Pond 3N (see Record Drawings in Appendix H). Prior to excavation, soil samples were taken from six different test pits within the borrow area ranging from one to fifteen feet in depth. After stripping and stockpiling the topsoil, rooting soil was excavated and stockpiled west of the borrow area for future use in pond capping projects. After stripping and stockpiling the rooting soil, random fill was excavated using scrapers, backhoes, and off-road haul trucks. Excavation started at the southeast corner and progressed north, turned west around the existing topsoil stockpile, and worked to the west and south. Due to a lower than expected yield of bottom ash from the Bottom Ash Pond excavation project, additional borrow material was needed to construct the upstream embankments, and the borrow area was extended beyond the original limits. As a result, the road originally designed around the toe of the north and east embankments was eliminated and a 15-feet wide bench was established between the embankment toe and the borrow area as shown on the Record Drawings. The borrow area was excavated to elevation 940 with three horizontal to 1 vertical sideslopes. Excavated material consisted primarily of sand, with some areas containing gravel and cobbles.

Random fill soil samples collected from the borrow area were tested as discussed in Section 3.2.2.

2.4 Embankment Construction and Subgrade Preparation

Material excavated from the borrow area was used to construct the Pond 3N ramps and embankments. During embankment construction, fill was placed in maximum 12-inch loose lifts, and compacted to at least 95 percent Standard Proctor density using a vibratory smooth drum roller. Water was added during placement and compaction as needed to meet compaction requirements. An independent soil testing firm retained by Xcel, Braun Intertec Corporation, performed in-place density testing during embankment construction to verify compliance with project requirements. Compaction testing was performed to meet the required rate of one test per 3,000 cubic yards. A summary of the Standard Proctor tests and field density testing performed during Pond 3N construction is presented in Tables 1 and 2. Testing locations are presented in Figure 1, 2, and 3. Complete data for Standard Proctor and field compaction testing are included in Appendix B.

The southeast ramp and south embankment were constructed concurrently up to the base of the weir at elevation 960. Above elevation 960, the ramp and embankment were constructed independently to finished grade. The north and east embankments were constructed with random fill from the base up to elevation 972. At elevation 972, the existing clay was exposed, and embankment construction continued with random fill and clay on the exterior of the pond, and bottom ash and random fill inside the pond. Details of the upstream embankment construction are included in Section 2.11. The final grades on the embankments were surveyed to verify design grades were achieved with the allowable tolerances.

2.5 Clay Anchor Construction

A 5-foot deep clay anchor was constructed in the southeast corner of the pond from elevation 972 to 995, and was connected to the existing inclined clay barrier. The clay anchor was used to anchor the composite liner, and provides a low permeability connection for the transition from composite liner to the inclined clay barrier in the upstream embankment. The clay anchor at elevation 995 was extended south beyond the Pond 3N composite liner limit to provide access for future Pond 3S connection. Details of the clay anchor are shown on the Record Drawings in Appendix H.

The clay anchor was constructed with clay from the off-site clay borrow source south of Monticello (Anderson Pit). The clay was placed in maximum 9-inch loose lifts and compacted to at least 100 percent Standard Proctor density at or above the optimum moisture content. Moisture was added as needed during placing and compacting to achieve the proper moisture content. After the required compaction was achieved, a 2-foot deep by 2-foot wide trench was dug into the clay to provide anchorage for the composite liner. Once the composite liner was installed, the anchor trench was backfilled with clay and compacted as specified. In-place density and moisture content testing, and laboratory testing of the clay was performed by Xcel's independent soil testing firms. The test results for clay used in the clay anchor are summarized in Table 3, 4, and 5, with complete test data located in Appendix C. Locations of tests are shown on Figures 4 through 7.

A 5-foot deep clay anchor was originally planned to be constructed along the entire west slope at elevation 995 to connect the Pond 3N composite liner to the Pond 2 clay slope liner. However, the west slope design was modified during the project to facilitate construction, and the portion of the clay anchor that had been installed prior to the design change was abandoned in place and not used. The design change extended the composite liner from elevation 995 to the top of the slope at elevation 1010, and the composite liner was anchored into the top of the existing Pond 2 inclined clay barrier, eliminating the need for a clay anchor along the west slope.

2.6 Composite Liner Construction

Composite liner was installed from elevation 972 to 995 on the south embankment, and from elevation 972 to 1010 on the west slope. The composite liner was connected to the existing Pond 3N composite liner along the south and west embankments as shown on the Record Drawings. The composite liner consisted of internally reinforced GCL with non-woven geotextiles on both sides overlain by textured 60-mil HDPE geomembrane. Composite liner installation began in the southeast corner of the pond and continued clockwise along the south embankment and west slope until reaching the northwest corner of the pond. GCL and geomembrane panels were oriented parallel to the slope, while seams perpendicular to the slopes were installed in rain lap fashion. During a typical day of liner installation, both GCL and geomembrane panels were deployed and seamed, so that all the GCL deployed during the day was covered with geomembrane by the end of the day. This protected the GCL from precipitation and prevented it from becoming fully hydrated prior to completion of liner installation and cover soil placement. GCL which had become hydrated or was damaged during deployment was replaced or not used.

The composite liner system was electronically leak tested after the granular drainage layer was placed to insure the integrity of the liner system. Electronic leak testing was completed in phases, and is discussed in Section 3.5.

2.6.1 Geosynthetic Clay Liner (GCL)

The GCL used throughout the project was Bentofix® NWL, manufactured by GSE, which is internally reinforced and contains non-woven geotextiles on both sides. GCL rolls were 15.5 feet wide by 150 feet long. Prior to deploying GCL, the installer inspected the subgrade and determined the subgrade was acceptable for installation by signing subgrade acceptance forms (contained in Appendix I).

The GCL was deployed using a backhoe with a spreader bar attached to the bucket that held the rolls at the top of the slope while the GCL was pulled by hand down-slope. Workers grabbed the end of the GCL panel and pulled it down the slope, face up, taking care to prevent the roll from becoming skewed with the adjacent panel or developing wrinkles or folds.

Adjacent GCL panels were overlapped a minimum of 6 inches along the edges. A lap line was marked on the GCL rolls during manufacturing to insure the proper overlap was achieved during deployment. Accessory granular bentonite was used along the edges of adjacent panels, at a rate of ¼ pound per lineal foot continuously along all seams or overlap areas. GCL panels were overlapped a minimum of 24-inches at the roll ends in rain-lap fashion and augmented with accessory granular bentonite. Damaged GCL was repaired by placing a patch over the damaged area, with a 12-inch minimum overlap around all parts of the damaged area, and augmented with granular bentonite around the perimeter of the patch. After granular bentonite was placed, panel ends were heat tacked together with a leister heat gun. The GCL panels were anchored at the top of the slope in a 2-foot deep anchor trench. Quality control testing performed during GCL installation is described in Section 3.3.

2.6.2 High Density Polyethylene (HDPE) Geomembrane

The HDPE geomembrane used on this project was manufactured by GSE. Geomembrane rolls were 22.5-feet wide by approximately 500 feet long. All geomembrane used was textured 60-mil.

Geomembrane was deployed in the same manner as the GCL. The geomembrane panels were anchored at the top of the slope in the same anchor trench used to anchor the GCL.

Adjacent geomembrane panels were overlapped and seamed together with a split-wedge fusion welder whenever possible. Patches, repairs, and areas inaccessible to the fusion welder were seamed with an extrusion welder. End seams perpendicular to the slope were placed in rain-lap fashion at 45 degree angles. Sandbags were used to temporarily anchor geomembrane panels to prevent wind uplift and damage to the geomembrane. Geomembrane boots were installed around the Pond 2 dewatering pipes and the Pond 2 decant pipe which penetrate the composite liner along the west slope of the pond. The boots were extruded and banded with stainless steel banding straps. Details of the pipe penetrations are shown in the Record Drawings.

The final configuration of geomembrane panels including locations of patches, seams, boots, and destructive tests is shown on the as-built panel layout and test reports in Appendix J. Quality control testing performed during liner installation is described in Section 3.4.

2.7 Weir Construction

During the 2004 Pond 3N construction, an overflow weir from elevation 960 to 972 was embedded into the east end of the south embankment and sealed off with a composite liner flap. The weir was constructed in order to hydraulically connect Pond 3N to the future Pond 3S. During the 2008 Pond 3N construction, the weir was extended from elevation 972 to the top of the finished embankment at elevation 995, and sealed off with composite flaps as described below.

Lower and upper flaps were constructed during 2008 to seal off the weir. The flaps are configured to provide complete containment of Pond 3N, and allow access for removal when building Pond 3S to connect the two ponds. The lower flap consists of composite liner, and was installed through the originally constructed weir. The lower flap is connected to the originally constructed pond liner from elevation 960 at the base of the weir to the top of the originally constructed south embankment liner at elevation 972. At elevation 972, the new lower flap is connected to the originally constructed flap, which provides complete containment of any pond water that leaks through the original flap. After installation of the lower flap, it was covered with granular drainage material and leak tested.

Once the lower flap was completed and leak tested, soil was placed in the upper portion of the weir to fill the weir, complete the south embankment, and form the foundation for the upper flap. The upper flap is comprised of composite liner, and is aligned with the rest of the south embankment liner along the three horizontal to one vertical pond slope. The upper flap is connected to the original flap at elevation 972 and to the south embankment liner from elevation 972 up to 995. The flap is anchored at the top of the slope at elevation 995. The upper flap was then covered with granular drainage material and leak tested.

Details of the weir and flaps are shown on the Record Drawings in Appendix H.

2.8 Granular Drainage Layer Placement

Placement of the granular drainage layer commenced after the composite liner was installed and tested. As liner installation progressed around the site, drainage layer placement followed such that both operations occurred simultaneously. The drainage layer was placed in a single 2-foot lift over the liner. The native material used for granular drainage material was screened and stockpiled in 2006 as discussed in Section 2.1. The material was tested for grain size, fines content, and permeability to assure compliance with project specifications. Testing of the granular drainage material is discussed in Section 3.2.5.

The contractor hauled granular drainage material from the stockpiles to the pond in off-road haul trucks. Granular drainage material was placed at least 4-feet thick along haul roads inside the pond to provide access for trucks. Drainage sand was dumped from the haul roads, and dozers utilizing GPS equipment worked to place the material over the liner by rolling the material off the edge of the previously placed material so that sand did not slide across the liner. Laborers worked ahead of the dozer, removing sandbags and hand spreading sand to prevent wrinkle propagation in the geomembrane. Whenever possible, drainage sand was placed during the coolest parts of the day when the geomembrane liner was smooth, and was placed from the bottom of the slopes. The sand was fine-graded to produce a smooth, uniform finished surface.

2.9 Slope Protection

To protect the liner system and drainage layer, 4-feet of cover soils (3.5-feet of random fill and 6-inches of topsoil), were placed over the 2 foot granular drainage layer, as shown on the Record Drawings. Random fill and topsoil was placed with off-roads trucks and dozers in a similar fashion to the granular drainage material. The topsoil was seeded and blanketed. On the upstream embankments, the random fill and bottom ash foundation material provides the slope protection.

2.10 Pond 2 Decant Pipe Installation

In order to complete grading and liner installation on the west slope, the Pond 2 decant pipe, which transfers water from Pond 2 to the southwest corner of Pond 3N, was removed. The decant pipe was temporarily routed straight down the west slope and discharged into Pond 3N while the west slope was being constructed. After completion of the west slope, the decant pipe was installed along a slightly new alignment on the west slope and routed into the existing culvert discharge flume in the southwest corner of Pond 3N, as shown on the Record Drawings.

2.11 Upstream Embankment Construction

On the north and east sides of the pond, the upstream embankment was extended from elevation 976 to 999, including clay barrier extension from elevation 972 to elevation 995. The additional 4-feet of fill above the top of the clay barrier provides frost protection for the clay. Details of the upstream embankment are shown on the Record Drawings and described below.

2.11.1 Interior embankment

The interior portion of the upstream embankment (inside the clay barrier) was originally planned to be constructed entirely of bottom ash from the Bottom Ash Pond. During construction, however, the volume of suitable coarse bottom ash available from the Bottom Ash Pond was less than expected, so the interior embankments were supplemented with random fill. Additionally, the proposed bottom ash bench elevation of 967 was raised to elevation 976 to account for a higher than expected water level in Pond 3N during construction. Approximately 206,400 cubic yards of material was used to construct the interior portion of the upstream embankments, which included 100,800 cubic yards of bottom ash and 105,600 cubic yards of random fill.

Construction started at the northwest corner and continued clockwise to the southeast corner. At times, the embankment construction occurred simultaneously with the clay barrier construction (see Section 2.11.2). The embankment material was placed with off-road trucks, spread in lifts with dozers and compacted with vibratory smooth drum rollers to 95% standard proctor density. A backhoe shaped the exterior of the embankments to a 1.5 horizontal to 1 vertical slope in preparation for the clay barrier construction. In-place density tests for the random fill and bottom ash are summarized in Tables 2 and 6 respectively. Complete data for random fill and bottom ash Standard Proctor tests and in-place density tests can be found in Appendices B and E respectively.

2.11.2 Inclined Clay Barrier

The inclined clay barrier core of the upstream embankment was constructed with clay from the prequalified off-site borrow source. The base of the clay barrier was connected to the existing inclined clay barrier at elevation 972 by scarifying and moistening the top of the existing clay prior to placing the first lift of clay. The clay barrier was constructed in horizontal lifts no longer than 500-feet. Each lift was maintained in a rough and moistened condition to promote bonding between lifts to provide uniformity throughout the clay barrier. Clay was placed by belly-dump or side-dump semis. Following placement, a dozer spread the clay into 9-inch loose lifts approximately 10-feet wide (for semi travel) along the inclined clay barrier alignment. The loose lifts were compacted to at least 100 percent Standard Proctor density at or above the optimum moisture content by a vibratory sheepsfoot roller. Periodically, a backhoe would shape the exterior of the clay barrier by pulling up the extra clay on the sides to a final width of 8-feet at a slope of 1.5 horizontal to 1 vertical. A vibratory sheepsfoot roller followed behind to compact the clay pulled up by the backhoe. In-place density tests were taken on every lift approximately 100-feet apart.

Once the clay barrier was at final elevation, it was compacted by a smooth drum roller to an elevation of 995, and an additional 4-foot of random fill was placed over the upstream embankment to bring the top of the embankment to final grade at elevation 999.

In-place density and moisture content testing, and laboratory testing of the clay was performed by Xcel's independent soil testing firms. The test results for clay used in the clay barrier are summarized in Tables 3, 4 and 5, and complete clay data is located in Appendix C. Locations of tests are shown on Figure 4, 5, 6 and 7.

2.11.3 Exterior embankment

The exterior portion of the upstream embankment (outside of the clay barrier) was partially constructed during embankment construction activities as discussed in Section 2.4. The remaining portion of the exterior upstream embankment was built as the clay barrier was installed Off-road haul trucks placed random fill while dozers spread the random fill into lifts taking care not to damage the clay. Once the clay barrier reached the final elevation of 995, off-road trucks placed random fill over the entire width of the upstream embankment to an elevation of 999, as shown on the Record Drawings. Tables 1 and 2 summarize the random fill tests. Complete data can be found in Appendix B. Locations for the random fill density tests can be found in Figures 1, 2, and 3.

2.12 Dewatering System

During the 2004 construction of Pond 3N, a dewatering system was incorporated to accommodate post-closure dewatering of Pond 3. Dewatering features were modified during the project as described below.

2.12.1 Cleanout Extension

In order to clean the dewatering pipes at the base of the pond after the pond is closed, clean-out access points were installed as part of the original construction in 2004. In 2008, as the embankments were raised, the clean-outs were also raised. On the west side, four cleanouts were extended from elevation 976 at a 3 horizontal to 1 vertical slope to the top of the finished slope at approximately elevation 1012. On the east side, the cleanouts were extended from elevation 976 at a 1.5 horizontal to 1 vertical slope along the inside of the clay barrier to elevation 999. The southern-most clean-out was broken off during construction, and was capped and abandoned in place at approximately elevation 976. This cleanout provided access to the south end of the dewatering header pipe at the toe of the east berm. This dewatering header pipe is also accessible from the north through the cleanout in the dewatering manhole, therefore, the broken cleanout will not affect the ability to clean the east header pipe. Each cleanout extension is an 8-inch solid wall polyethylene pipe connected to the existing cleanout pipe with an electrofusion coupling. The existing corrugated metal protective casings were salvaged and reinstalled on the extended cleanouts. Record Drawings of the cleanout extensions can be found in Appendix H.

2.12.2 Manhole Extension

In 2004, two dewatering manholes were constructed as part of the dewatering system. The concrete manholes were lined with 80-mil high density polyethylene geomembrane liner. During the 2008 construction project, the east dewatering manhole had to be extended from elevation 976 to 997. Concrete barrel sections with embedded 80-mil HDPE liner were used again to extend the manhole. Before each barrel section was set, two rings of mastic were added, as shown on the Construction Photos in Appendix A and the Record Drawings. In addition, the first new barrel section added to the existing manhole was supported with concrete anchors and metal support rods. After all the sections were set, 4-inch strips of 80-mil HDPE polyethylene were fused between the manhole sections to achieve a continuously lined manhole. After installation was complete, the geomembrane seams were spark tested in accordance with the technical specifications. Any leaks which were found during spark testing were repaired and re-tested. The cleanout riser pipe in the manhole was also extended using 8-inch solid wall polyethylene pipe. After testing was completed, the top slab was installed, and the manhole was covered with two feet of random fill.

2.13 Site Restoration

Site restoration included installing stormwater controls, final grading and turf establishment, and access road construction.

2.13.1 Stormwater controls

A 4-foot catch basin was installed at the bottom of the east ramps to capture water from the east ramp ditches. Stormwater is conveyed from the manhole to an outlet at the base of the east embankment through a 24-inch diameter corrugated metal pipe (CMP). The inlet to the catch basin and the pipe outlet are protected with 9-inches of Class II rip rap underlain by woven filter.

Stormwater captured by the north ramp ditch is conveyed into a sedimentation pond at the base of the north embankment. The sedimentation pond has a 24-inch corrugated metal pipe outlet that discharges into a drainage swale north of the perimeter road The drainage swale is graded to drain into the borrow area.

2.13.2 Topsoil Placement and Turf Establishment

Topsoil from the existing central stockpile was hauled to the toe of newly constructed embankments by off-road haul trucks. From there, the topsoil was pushed up the slope and spread in 6-inch lifts by dozers. Topsoil was also pushed up-slope by dozers from smaller stockpiles located along the toe of the north, south, and east embankments. The topsoiled areas were seeded to establish vegetation. A protective straw-coconut erosion blanket was added to all slopes and disturbed areas to minimize erosion until vegetation is fully established. Turf mat was added to areas highly prone to erosion such as ditches and draws, as shown on the Record Drawings.

2.13.3 Access Road Construction

Class 5 aggregate was spread and compacted on road surfaces and ramps, as shown on the Record Drawings. Field density tests on class 5 aggregate are summarized in Table 7, with complete data located in Appendix F.

Section 3 - Testing and Quality Control

Testing and quality control activities were conducted by subcontractors to the prime contractor, by independent testing firms, and by field observation personnel from McCain and Xcel. Testing and quality control activities included surveying, soil testing, and geomembrane testing. Testing and quality control procedures are presented below.

3.1 Surveying

An independent registered land surveyor, Bogart Pederson & Associates, Inc., was retained by the prime contractor to provide location and grade verification as required. Earthwork verification surveying included the following shots at grade breaks and 50-foot intervals: south embankment and west slope subgrade, clay anchor location and thickness, upstream clay barrier alignment and thickness, and north and east upstream embankment tops and side slopes. Other survey data included stormwater manholes and outlet inverts, and the top of the Pond 2 decant pipe at grade breaks and 50-foot intervals. The top of the liner cover soils were also surveyed on a 50-foot grid. The surveyor collected data using GPS and total station equipment, and periodically provided results of field data gathered during construction for review by McCain personnel. Complete survey data is contained in Appendix G. Construction staking was completed by the contractor, using their own GPS equipment and personnel.

Ulteig Engineers, Inc. was retained by Xcel to provide surveys for calculating the upstream barrier quantity and documenting the embankment configuration.

The contractor's personnel verified lines and grades during construction utilizing their GPS equipment. McCain personnel also spot checked field grades using their own GPS equipment. Measurements of drainage soil thickness were taken by McCain personnel at random locations to verify the 2-feet of drainage material had been placed.

3.2 Soil Testing

Soil testing was performed on the following:

1. Off-site clay prequalification testing
2. Random fill
3. Bottom ash
4. Clay anchor and inclined clay barrier
5. Granular drainage material
6. Class 5

3.2.1 Off-Site Clay Prequalification Testing

Clay used during the 2008 construction project was imported from an off-site source. The source, referred to as the Anderson pit, is located near Monticello. The contractor had collected samples from the pit prior to construction to verify the clay would meet the project requirements.

McCain personnel also collected clay samples from the Anderson pit for additional prequalification testing prior to construction. Six samples were collected from test pits at the clay source. The clay was very uniform, and five of the six samples (CLS-1, CLS-2, CLS-4, CLS-5, and CLS-6) were sent to Xcel's independent laboratory (SET) for analysis of Atterberg Limits, particle size distribution, Standard Proctor, in-place moisture content, and re-compacted permeability. The sixth sample (CLS-3) was retained for future testing if needed. All of the samples tested met the MPCA guidelines for classification, Atterberg Limits and percent fines, and three of the five samples (CLS-1, CLS-2, and CLS-6) met the guidelines for permeability. The permeability samples were tested at or slightly above optimum moisture content and at 95% of the Standard Proctor maximum dry density. The two samples that did not meet the permeability guidelines (CLS-4 and CLS-5) were very close to the maximum allowable permeability, and were re-tested at approximately two percent above the optimum moisture content and 98% of the Standard Proctor maximum dry density. Both samples had significantly slower permeability rates at those conditions and the results were over an order of magnitude slower than the required rate of 1.0×10^{-7} cm/s. Based on this information and discussions with the testing laboratory, the contractor decided to compact the clay to 100% of the Standard Proctor maximum dry density at or above optimum moisture content during construction to insure that the required permeability rates of the in-place clay would be achieved.

During construction, gray clay was noticed while excavating at the borrow pit, and appeared to be slightly different from the brown clay samples that had been collected prior to construction. This clay was sampled immediately (CLS-7) and sent to the laboratory for analysis. Although the clay had slightly less than 50% passing the No. 200 sieve (48.5%), it met the other MPCA guidelines for clay (Atterberg Limits and permeability) and was determined to be acceptable for construction.

The results of the clay prequalification testing are summarized in Table 4, with complete results in Appendix C.

3.2.2 Random Fill Testing

Random fill was taken from the borrow area and used for Pond 3N embankments. Samples of random fill were collected and analyzed for Standard Proctor results, and these results were used as compaction criteria for field density testing. The required compaction for embankments was 95 percent of the Standard Proctor maximum dry density. The moisture content of the material was generally well below the optimum moisture content, so the contractor added water during construction to meet the compaction requirement. Compaction testing was performed by Xcel's independent soil testing firm (Braun Intertec Corporation) under the direction of McCain personnel. Testing was performed with a nuclear density gauge at a minimum frequency of one test per 3,000 cubic yards of material placed.

The Standard Proctor results of all random fill samples are summarized in Table 1. Field compaction test data is summarized in Table 2. Locations for each test are presented in Figures 1, 2, and 3. Complete data is located in Appendix B.

3.2.3 Bottom Ash

Samples of bottom ash were collected and analyzed for Standard Proctor results, and these results were used as compaction criteria for field density testing. Specifications for bottom ash require 95 percent of the Standard Proctor maximum dry density. Generally, the bottom ash was near optimum moisture, but some water was added, as needed, to achieve required density. Compaction testing was performed by Xcel's independent soil testing firm (Braun Intertec Corporation) under the direction of McCain personnel. Testing was performed with a nuclear density gauge at a minimum frequency of one test per 3,000 cubic yards of material placed.

Field compaction test data is summarized in Table 6. Complete data for the Standard Proctor tests and density tests are located in Appendix E.

3.2.4 Clay Anchor and Inclined Barrier

The clay anchor and inclined barrier were constructed with prequalified clay from the off-site source. Quality control testing performed during construction included in-place compaction and moisture content tests, laboratory analysis of in-place permeability, and index property tests (Atterberg Limits, sieve and hydrometer analysis, classification). Testing procedures and results are discussed below.

3.2.4.1 Clay Compaction Testing

During clay construction activities, a representative from Xcel's soil testing firm (Braun Intertec Corporation) was on site to perform in-place density and moisture content testing of the clay using a nuclear density gauge. Compaction testing was completed at the minimum rate of once per horizontal lift at intervals of approximately 100-feet. In order to determine passing or failing results, the contractor decided to use 100% of the Standard Proctor maximum dry density at or above optimum moisture content. This was higher than what the technical specifications required (95% of the Standard Proctor maximum dry density), but was needed to insure that the clay met the permeability specification of 1×10^{-7} cm/s as discussed in Section 3.2.1. When a field density test indicated a failing result, the area received additional compaction if the compaction was low, or was reworked to meet the moisture requirement. Additional testing was performed in the same location after the material had been reworked, and this procedure was repeated until passing test results were obtained. In addition to field testing of the clay, placement of the clay was constantly observed and monitored to verify that consistent processing and compaction procedures were being used, and that lift thicknesses were within tolerance. The on-site quality control personnel worked closely with the contractor during clay placement to insure the clay was placed and compacted to meet the project requirements.

Compaction testing was distributed across the site to give complete coverage of the clay placed. Compaction test locations are shown in Figures 4, 5, and 6 and results of clay compaction tests are summarized in Table 3. Complete testing data can be found in Appendix C.

3.2.4.2 Clay Permeability and Index Properties Testing

In addition to prequalification testing, laboratory analysis was completed on additional clay samples collected on-site. The samples were collected by pushing thin-wall tubes into the clay after placement and compaction to recover undisturbed cores of clay. Voids created during sample collection were backfilled with bentonite. Seven samples were collected, and sample locations were distributed across the site to represent all areas of the clay anchor and inclined barrier. Approximately 21,000 cubic yards of clay were placed, resulting in one test per 3,000 cubic yards. Samples were tested for permeability, Atterberg Limits, sieve and hydrometer analysis, and classification. The coefficient of permeability of the clay samples ranged from 1.2×10^{-8} to 6.4×10^{-9} cm/s, with an average of 2.3×10^{-8} cm/s, significantly slower than the required maximum rate of 1×10^{-7} cm/s. All of the soil classifications and Atterberg Limits test results met the MPCA guidelines. Some of the percent fines results were slightly less than the 50% minimum guideline, but the other tests for those samples met the minimum requirements. The results from clay samples collected on site are summarized in Table 5, locations are presented Figure 7, and complete results are included in Appendix C.

3.2.5 Granular Drainage Material Testing

Granular drainage material was tested for maximum particle size, percent passing the no. 200 sieve, and hydraulic conductivity at the minimum rate of one test per 10,000 cubic yards of material placed. Approximately 21,000 cubic yards of granular drainage material was placed, requiring 3 samples for gradation testing and 3 samples for permeability testing. All samples met the permeability and particle size requirements. Complete results are located in Appendix D.

3.2.6 Class 5 Testing

Class 5 was used on access roads and ramps around the pond perimeter. A portion of the material was salvaged from existing roads. Class 5 imported from off-site was tested for gradation and Standard Proctor. After placing and compacting class 5, in-place density tests were taken at approximately 300-feet intervals and found to meet the compaction requirement of 100% of Standard Proctor maximum dry density. Class 5 testing is summarized in Table 7, and complete data is located in Appendix F.

3.3 Geosynthetic Clay Liner (GCL) Quality Control

Quality control for GCL included manufacturing quality control (MQC) and construction quality assurance (CQA) activities. Details of these activities are described below. GCL was installed by Clean Air & Water, LLC. (CAAW), as a subcontractor to the prime contractor.

3.3.1 Manufacturing Quality Control (MQC)

MQC was completed during and after production of the GCL by the GCL manufacturer (Bentofix). The manufacturer was responsible for testing the GCL to confirm the product met the requirement of the project specifications. The results were documented and certified by Bentofix, and submitted to the GCL installer (CAAW). CAAW then submitted the certification packages to the general contractor and Xcel's on-site representative. The certifications were reviewed by McCain personnel to insure the GCL met the project requirements.

Testing performed on the GCL included bentonite mass per unit area, grab strength, elongation, peel strength, index flux, and permeability. The GCL manufacturer's MQC certification packages are included in Appendix I.

3.3.2 Construction Quality Assurance (CQA)

CQA activities were completed on site during unloading, material handling, storage, transport, installation, and covering of the GCL. CQA was performed by personnel from McCain and Xcel.

The GCL was unloaded under observation of the CQA personnel. Rolls were unloaded from flatbed trailers by the GCL installer or prime contractor. GCL rolls were unloaded in accordance with the manufacturer's recommendations with either an extendable-boom forklift or front end loader utilizing a stinger bar, a core pipe with a spreader bar, or lifting straps. As MQC data were received, the roll numbers of GCL delivered to the site were checked against the roll numbers in the MQC certification packages.

As GCL was unloaded, it was placed in designated storage areas around the site. The storage areas were level, dry, and well drained, and the GCL rolls were stacked no more than three rolls high. The GCL rolls were delivered pre-wrapped; however, GCL which was not used right away was covered with tarps to protect it from becoming hydrated.

During installation, GCL was transported from the storage areas to the deployment area using the same equipment and methods which were used to unload the GCL. Prior to deployment, the subgrade was inspected by the installer and the CQA personnel. The GCL installer approved the subgrade by signing subgrade acceptance forms, which are include in Appendix I.

After acceptance of the subgrade, GCL was deployed using the methods described in Section 2.6.1. On the side slopes, panels were oriented parallel to the slope. During deployment, care was taken to avoid wrinkles or folds in the GCL. Any wrinkles which occurred were pulled out to keep the panels smooth. Damage to the GCL was repaired using patches as described in Section 2.6.1. Adjacent overlaps between GCL panels were visually verified to be between 6 and 9 inches by observing the lap lines printed directly on the GCL rolls. The overlap area between panels was kept free of dirt to maintain self-seaming between panels. If necessary, the overlap areas were swept clean. Accessory bentonite was used between the edges of adjacent panels at the recommendation of the manufacturer. The ends of rolls were overlapped two feet in rain-lap fashion, and accessory bentonite was used. On the slope areas, ends of panels were heat tacked by fusing the geotextiles together.

After deployment of the GCL, HDPE geomembrane was installed directly over the GCL. No heavy equipment was operated directly on the GCL, but 4-wheel all terrain vehicles were used to deploy geomembrane over the GCL. When 4-wheelers were used on the GCL, no sudden stops, starts, or abrupt turning was allowed. All GCL panels were covered daily with geomembrane to ensure the bentonite did not hydrate prior to placement of cover soils.

3.4 Geomembrane Quality Control

On-site observation of the geomembrane installation was performed by personnel from McCain and Xcel. Geomembrane installation was performed by Clean Air & Water, LLC. (CAAW), as a subcontractor to the prime contractor.

Geomembrane used on the project was textured 60-mil high density polyethylene (HDPE) manufactured by GSE. Geomembrane resin, rolls, and extrudate rod met the requirements of Geosynthetic Research Institute's (GRI) Test Method GM 17. Geomembrane quality control data was submitted by GSE to CAAW, and in turn submitted to the prime contractor and Xcel's on-site representative. The certifications were reviewed by McCain personnel to insure the geomembrane met the requirements of GRI GM 17.

Geomembrane was delivered to the site on flatbed trailers. The geomembrane rolls were delivered with lifting straps in place, and were unloaded with a front-end loader. Rolls were unloaded and stacked in the designated storage areas. Roll numbers were checked against the manufacturer's quality control submittals to verify all rolls were certified by the manufacturer.

Textured geomembrane was used on all side slopes. Panels on the slope were oriented parallel to the slope, and cross-seams were fused perpendicular to the slopes. Geomembrane was deployed over the GCL as described in Section 2.6.2.

Trial seams were prepared at the beginning of each seaming period with each piece of seaming equipment by the corresponding operator. One-inch-wide coupons were cut from the trial seams and tested on-site by the liner installer for mechanical seam strength (shear and peel) using a tensiometer. Field seaming of geomembrane panels was required to meet the strength requirements of GRI's test method GM 19. Trial seam tests are reported on the Trial Weld Testing Report forms included in Appendix J.

Destructive seam tests were performed on samples taken randomly from seams in the installed geomembrane at a rate of 1 sample per 500 lineal feet of seam. The destructive seam samples were tested on-site by the liner installer for shear and peel strength using a tensiometer, and results were recorded on the Destructive Testing Report forms included in Appendix J.

All seams were non-destructively tested for air leaks using either the air-channel test for split-wedge fusion seams or the vacuum box test for extruded seams. Split-wedge seams were required to hold 25 to 30 lbs/sq. inch of air pressure for 5 minutes without dropping more than 2 lbs/sq. inch. Non-destructive seam test reports are provided in Appendix J.

In addition to the report forms described above, the additional following quality control testing report forms were also completed by the geomembrane installer:

1. Panel placement forms
2. Panel seaming forms
3. Geomembrane repair reports

All of these report forms are included in Appendix J.

3.5 Electronic Leak Location Testing

In addition to the routine quality control activities performed on the geomembrane prior to cover soil placement, electronic leak location testing was conducted over the geomembrane liner after placement of granular drainage layer to identify the presence of construction related damage to the geomembrane. Xcel contracted directly with Foth Infrastructure & Environment, LLC. (Foth) to complete electronic leak location testing.

During the course of conducting electrical leak location testing, there were several instances where either the calibration procedure was not successfully completed or a blind hole in the liner was not detected. When these instances occurred, production testing was suspended while the cause of the problem was investigated.

Failure to detect calibration and blind holes can result from:

1) An incomplete electrical circuit through the hole due to site conditions
2) Inadequate electrical isolation of the cover soil from ground
3) Improper function of the testing equipment

Investigation revealed that all three of these issues contributed to those instances of unsuccessful calibration and blind hole detection. Corrective actions included adjusting moisture conditions at the calibration site in accordance with the provisions of ASTM D7007, improving ground isolation on the perimeter of the testing area, and repairing loose wiring connections on the testing equipment. Calibration was successfully completed and blind holes were located after the corrections were made.

The following paragraphs discuss the causes and remedies for the calibration and blind hole detection issues.

3.5.1 Electrical Circuit

Site conditions that could affect the completion of an electrical circuit through a hole in the liner include conductivity of the cover soil, GCL, and subgrade soil; and continuity between cover soil and subgrade. Conductivity is primarily affected by moisture content of the materials, since the electrical current is carried by moisture in the non-metallic materials. Continuity refers to a physical connection between the cover soil and subgrade (i.e. moist soil filling the hole in the liner, thus connecting the cover soil to ground).

As part of the investigation of calibration issues, the conductivity of a GCL sample was evaluated. It was found that in a dry condition, the geotextile portion of the GCL was not conductive. It is known that a GCL will draw moisture from subgrade and cover soils in sufficient quantities to become conductive, however, the small size of the calibration hole, the lack of saturation of the cover soils, and the short duration of exposure between the time of placement of the hole and performing the calibration procedure probably resulted in insufficient moisture absorption and thus lack of conductivity through the GCL.

The project specification did not permit the use of water for the calibration procedure in order to more closely simulate actual field conditions. However, when water was poured over the calibration hole, as allowed by ASTM D7007, the calibration procedure was successfully completed. A remedy would be to allow use of water on the calibration hole, and also require that a blind hole (that better simulates field conditions) be located prior to conducting production testing. This combination would demonstrate that the required signal:noise ratio is achieved (measure by the calibration hole), and that actual site conditions are conductive to conductivity and continuity (measured by the blind hole).

3.5.2 Ground Isolation

Isolating the liner cover soils from ground is accomplished by removing soil to expose a strip of the non-conductive liner on the perimeter of the testing area. If soil or water are present on the isolation strip, an electrical circuit can be completed between the cover soil and ground and interfere with detection of the electrical signal through the subject hole.

Maintaining ground isolation can be challenging in areas where the isolation strip is located at a mid-slope position due to soil sloughing and runoff draining across the strip. Maintaining ground isolation can also be difficult after heavy rainfall when water drains from the cover soils across the isolation strip. Ground isolation problems can often be remedied by waiting for conditions to dry out so that excess water is not draining across the isolation strip or causing soil to slough. Laborers can be employed to closely monitor and maintain the isolation strip.

3.5.3 Testing Equipment

The testing equipment must be functioning properly in delivering an electrical charge of the required voltage and amperage to the liner cover soils and be properly connected to ground beneath the liner in order for successful testing to occur. In several instances, the testing contractor indicated that the leak signal strength was low due to low amperage measurements. A loose wire was found on the testing equipment after a number of unsuccessful calibration attempts and blind hole location failures. The loose wire may have been primarily responsible for the unsuccessful calibration attempts, because calibration was successfully completed after the wire connection was repaired.

A final report was prepared and submitted by Foth on the leak testing and is included in Appendix K.

Section 4 - Conclusion

Construction of Scrubber Solids Pond 3 North Vertical Expansion at Xcel Energy's Sherburne County Generating Plant has been completed in material conformance with the "Contract Drawings and Specifications for Scrubber Solids Pond 3 North, February 2008" prepared by McCain and Associates, Inc., and in compliance with the requirements for notification, construction, materials, and testing contained in NPDES Permit No. 0002186. This report presents the results of all observation, documentation, and testing performed during the course of construction of this facility.

Tables

Table 1

Random Fill Standard Proctor Testing Summary

SAMPLE No.	SOIL TYPE		MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
1	SP	Poorly Graded Sand, medium to coarse grained, with trace gravel, brown	108.3	13.8
2	SP	Poorly Graded Sand, fine to medium grained, with gravel, brown	120.0	8.1
3	SP	Poorly Graded Sand, medium to coarse grained, with gravel, brown	123.4	8.9
4	SP	Poorly Graded Sand, medium to coarse grained, with gravel, brown	119.4	10.4
5	SP	Poorly Graded Sand, fine to medium grained, with trace gravel, brown	110.4	11.9
6	SP	Poorly Graded Sand, medium to coarse grained, with little gravel, brown	116.3	10.4
7	SP	Poorly Graded Sand, fine to medium grained, with trace gravel, brown	110.5	12.6
8	SP	Poorly Graded Sand, fine to medium grained, with trace gravel, light brown	102.0	16.1
9	SP	Poorly Graded Sand, fine to medium grained, with trace gravel, brown	110.3	11.8
10	SP	Poorly Graded Sand, coarse grained, with gravel, brown	119.6	7.4
11	SP	Poorly Graded Sand, fine to medium grained, with little gravel, brown	112.7	10.2

Note: Complete test data located in Appendix B

Table 2
Random Fill Density Testing Summary

RANDOM FILL DENSITY TEST No.	LOCATION*			IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	COMPACTION (%)	NOTES
	NORTHING	EASTING	ELEVATION						
RF-1	863,665.6	2,031,545.7	951.7	123	7	120.0	8.1	103%	
RF-2	863,650.6	2,031,733.6	949.0	120	4	120.0	8.1	100%	
RF-3	863,561.2	2,031,878.8	946.6	120	4	120.0	8.1	100%	
RF-4	863,767.0	2,030,793.0	961.0	114	5	119.4	10.4	95%	
RF-5	863,668.0	2,031,132.0	953.0	113	7	112.7	10.2	100%	
RF-6	863,673.0	2,031,395.0	955.5	119	4	123.4	8.9	96%	
RF-7	865,503.0	2,031,364.0	970.0	116	11	120.1	8.1	97%	
RF-8	865,521.0	2,031,707.0	966.0	117	11	120.1	8.1	97%	
RF-9	863,787.0	2,031,801.0	960.0	122	4	123.4	8.9	99%	
RF-10	863,754.0	2,031,589.0	957.0	115	5	119.4	10.4	96%	
RF-11	863,782.0	2,031,257.0	958.5	113	8	116.3	10.4	97%	
RF-12	863,745.0	2,030,985.0	961.0	113	7	116.3	10.4	97%	
RF-13	865,540.0	2,031,861.0	965.5	123	4	123.4	8.9	99%	
RF-14	863,737.0	2,031,107.0	959.5	123	7	123.4	8.9	99%	
RF-15	863,724.0	2,031,346.0	958.0	122	4	123.4	8.9	99%	
RF-16	863,528.0	2,031,942.0	953.0	125	4	123.4	8.9	101%	
RF-17	865,506.6	2,032,030.4	962.5	121	6	123.4	8.9	98%	
RF-18	863,697.1	2,031,465.1	957.8	122	10	123.4	8.9	99%	
RF-19	865,297.8	2,032,156.8	966.5	116	5	120.0	8.1	97%	
RF-20	865,040.7	2,032,140.5	971.5	113	7	112.7	10.7	100%	
RF-21	863,576.2	2,031,938.1	956.8	116	6	120.0	8.1	96%	
RF-22	863,576.2	2,031,888.2	956.8	113	6	112.7	10.7	100%	
RF-23	863,779.6	2,031,318.2	960.8	119	4	123.4	8.9	96%	
RF-24	863,796.2	2,030,917.3	965.1	125	2	123.4	8.9	101%	
RF-25	865,141.8	2,032,125.1	972.3	126	7	123.4	8.9	102%	
RF-26	865,498.2	2,032,118.9	965.2	124	7	123.4	8.9	100%	
RF-27	863,679.4	2,031,765.0	956.7	115	5	120.0	8.1	96%	
RF-28	863,701.5	2,031,541.7	959.0	118	4	120.0	8.1	98%	
RF-29	863,755.8	2,031,185.1	962.5	118	5	120.0	8.1	98%	
RF-30	863,748.4	2,030,922.7	966.5	118	5	120.0	8.1	98%	
RF-31	865,219.0	2,032,123.0	973.8	123	6	123.4	8.9	100%	
RF-32	865,507.0	2,031,984.0	966.0	123	7	123.4	8.9	100%	
RF-33	863,737.0	2,031,687.0	958.2	120	4	123.4	8.9	97%	
RF-34	863,781.0	2,031,486.0	961.5	115	5	116.3	10.4	98%	
RF-35	863,792.0	2,031,244.0	964.5	118	4	120.0	8.1	98%	
RF-36	863,710.0	2,030,853.0	969.4	113	3	116.3	10.4	97%	
RF-37	865,497.0	2,031,854.0	969.0	122	12	123.4	8.9	99%	
RF-38	865,481.0	2,031,641.0	972.3	125	7	123.4	8.9	101%	
RF-39	863,299.0	2,032,152.0	963.5	119	4	123.4	8.9	96%	
RF-40	863,512.0	2,031,989.0	960.3	121	8	123.4	8.9	98%	
RF-41	863,698.0	2,031,642.0	960.7	115	5	120.0	8.1	96%	
RF-42	863,707.0	2,031,221.0	966.2	118	4	120.0	8.1	98%	

Note: *See Figures 1 - 3 for test locations.
Complete test data located in Appendix B.

Table 2 (cont.)
Random Fill Density Testing Summary

RANDOM FILL DENSITY TEST No.	LOCATION*			IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	COMPACTION (%)	Notes
	NORTHING	EASTING	ELEVATION						
RF-43	865,512.0	2,031,777.0	975.5	117	7	120.0	8.1	98%	
RF-44	865,492.0	2,032,008.0	974.5	112	11	116.3	10.4	96%	
RF-45	863,755.0	2,031,689.0	962.5	118	7	120.0	8.1	98%	
RF-46	863,810.0	2,031,429.0	964.4	119	8	123.4	8.9	96%	
RF-47	863,858.0	2,030,805.0	972.0	123	4	123.4	8.9	100%	
RF-48	865,414.4	2,032,113.5	975.3	118	10	120.0	8.1	98%	
RF-49	865,504.0	2,031,539.0	976.0	111	8	112.7	10.2	98%	
RF-50	863,744.0	2,031,814.0	960.6	116	6	119.6	7.4	97%	
RF-51	863,721.0	2,031,454.0	966.7	111	11	112.7	10.2	98%	
RF-52	863,784.0	2,030,743.5	974.2	105	14	108.3	13.8	97%	
RF-53	865,347.0	2,032,118.0	977.0	108	9	110.5	12.6	98%	
RF-54	865,537.0	2,031,973.0	973.5	110	10	112.7	10.7	98%	
RF-55	863,808.0	2,031,296.0	970.5	114	9	116.3	10.4	98%	
RF-56	863,789.0	2,031,050.0	973.5	109	12	110.5	12.6	99%	
RF-57	863,747.0	2,030,817.0	975.5	110	8	110.5	12.6	100%	
RF-58	864,949.0	2,032,099.0	977.0	117	6	120.0	8.1	98%	
RF-59	865,428.0	2,032,038.0	978.0	113	6	116.3	10.4	97%	
RF-60	865,446.0	2,031,307.0	979.3	116	9	116.3	10.4	100%	
RF-61	863,806.0	2,031,647.0	968.5	116	12	120.0	8.1	97%	
RF-62	863,788.0	2,031,398.0	971.2	115	6	120.0	8.1	96%	
RF-63	863,779.0	2,030,892.0	977.0	114	7	119.6	7.4	95%	
RF-64	865,096.0	2,032,112.0	978.0	118	7	120.0	8.1	98%	
RF-65	865,490.0	2,031,800.0	982.0	118	5	120.0	8.1	98%	
RF-66	865,479.0	2,031,577.0	984.0	112	13	110.4	11.9	101%	
RF-67	863,723.0	2,031,650.0	970.5	109	7	110.4	11.9	99%	
RF-68	863,778.0	2,031,408.0	973.0	115	9	116.3	10.4	99%	
RF-69	863,748.0	2,031,137.0	976.0	111	8	112.7	10.2	98%	
RF-70	863,766.0	2,030,805.5	977.5	118	5	120.0	8.1	98%	
RF-71	865,457.2	2,031,865.0	983.4	114	7	116.3	10.4	98%	
RF-72	865,398.5	2,032,069.5	978.2	121	6	123.4	8.9	98%	
RF-73	863,832.7	2,031,080.2	975.1	118	5	120.0	8.1	98%	
RF-74	863,826.1	2,031,378.7	972.0	118	8	120.0	8.1	98%	
RF-75	863,499.4	2,031,989.4	963.4	119	5	120.0	8.1	99%	
RF-76	865,085.0	2,032,090.0	982.5	114	7	116.3	10.4	98%	
RF-77	865,316.0	2,032,104.0	983.0	120	7	123.4	8.9	97%	
RF-78	865,482.0	2,032,022.0	979.0	113	7	116.3	10.4	97%	
RF-79	863,809.0	2,030,843.0	979.5	113	6	116.3	10.4	97%	
RF-80	863,768.0	2,031,115.0	979.5	118	5	120.0	8.1	98%	
RF-81	863,733.0	2,031,520.0	974.5	113	7	116.3	10.4	97%	
RF-82	863,580.0	2,032,156.0	964.0	119	5	120.0	8.1	99%	
RF-83	865,095.0	2,032,097.0	982.5	113	10	110.4	11.9	102%	
RF-84	865,413.0	2,032,038.0	985.0	112	9	110.4	11.9	101%	

Note: *See Figures 1 - 3 for test locations.
Complete test data located in Appendix B.

Table 2 (cont.)
Random Fill Density Testing Summary

RANDOM FILL DENSITY TEST No.	LOCATION*			IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	COMPACTION (%)	Notes
	NORTHING	EASTING	ELEVATION						
RF-85	865,449.0	2,031,162.0	978.0	113	12	110.4	11.9	102%	
RF-86	865,458.0	2,031,584.0	985.3	118	7	120.0	8.1	98%	
RF-87	863,820.0	2,030,880.0	982.5	117	8	120.0	8.1	98%	
RF-88	863,770.0	2,031,110.0	978.5	114	8	112.7	10.2	101%	
RF-89	863,733.0	2,031,382.0	976.5	115	7	116.3	10.4	99%	
RF-90	863,605.0	2,032,001.0	965.0	118	6	120.0	8.1	98%	
RF-91	865,447.0	2,032,072.0	988.0	115	6	116.3	10.4	99%	
RF-92	865,538.0	2,031,258.0	965.5	124	7	123.4	8.9	100%	
RF-93	863,816.0	2,030,756.0	984.0	117	4	120.0	8.1	97%	
RF-94	863,808.0	2,030,979.0	982.5	120	5	120.0	8.1	100%	
RF-95	863,821.0	2,031,673.0	973.5	122	11	123.4	8.9	99%	
RF-96	863,411.7	2,032,115.0	964.3	124	5	123.4	8.9	100%	
RF-97	865,288.5	2,032,099.9	986.3	126	7	123.4	8.9	102%	
RF-98	865,476.1	2,031,907.0	989.2	122	5	123.4	8.9	99%	
RF-99	863,768.3	2,030,792.7	986.6	121	5	123.4	8.9	98%	
RF-100	863,779.8	2,031,050.2	985.5	122	3	123.4	8.9	99%	
RF-101	863,793.3	2,031,585.4	978.6	120	5	123.4	8.9	97%	
RF-102	863,560.0	2,032,052.0	965.4	119	10	120.0	8.1	99%	
RF-103	865,470.0	2,031,977.3	993.7	120	6	123.4	8.9	97%	
RF-104	863,323.0	2,032,111.2	970.1	121	4	123.4	8.9	98%	
RF-105	863,765.0	2,031,644.2	982.2	121	4	123.4	8.9	98%	
RF-106	863,788.9	2,031,104.8	988.3	115	4	120.0	8.1	96%	
RF-107	864,482.7	2,032,163.7	962.4	118	5	123.4	8.9	96%	
RF-108	865,413.0	2,032,046.0	999.0	110	10	112.7	10.2	97%	
RF-109	864,660.0	2,032,140.0	968.2	115	6	116.3	10.4	99%	
RF-110	863,305.0	2,032,126.0	977.0	113	6	116.3	10.4	98%	
RF-111	863,820.0	2,031,806.0	969.0	110	6	112.7	10.2	97%	
RF-112	863,792.0	2,031,250.0	988.2	117	5	120.0	8.1	98%	
RF-113	863,780.0	2,030,690.0	994.0	115	5	116.3	10.4	99%	
RF-114	863,795.4	2,031,677.6	978.3	117	3	120.0	8.1	98%	
RF-115	863,789.8	2,031,328.2	988.6	117	5	120.0	8.1	98%	
RF-116	863,796.9	2,030,937.3	992.8	120	4	120.0	8.1	100%	
RF-117	863,558.4	2,032,022.8	967.8	122	4	123.4	8.9	99%	
RF-118	864,296.4	2,032,147.0	968.5	126	5	123.4	8.9	102%	
RF-119	864,636.8	2,032,139.4	947.1	125	5	123.4	8.9	101%	
RF-120	863,366.1	2,032,115.7	977.1	114	7	116.3	10.4	98%	
RF-121	863,538.3	2,031,988.8	972.8	107	13	108.3	13.8	99%	
RF-122	863,625.9	2,032,100.4	969.2	113	8	112.7	10.2	100%	
RF-123	864,610.0	2,032,095.0	977.5	117	6	120.0	8.1	98%	
RF-124	864,272.0	2,032,107.0	978.0	114	8	116.3	10.4	98%	
RF-125	863,790.0	2,031,090.0	995.0	119	7	120.0	8.1	99%	
RF-126	863,791.0	2,031,540.0	992.5	114	6	116.3	10.4	98%	

Note: *See Figures 1 - 3 for test locations.
Complete test data located in Appendix B.

Table 2 (cont.)
Random Fill Density Testing Summary

RANDOM FILL DENSITY TEST No.	LOCATION* NORTHING	EASTING	ELEVATION	IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	COMPACTION (%)	Notes
RF-127	863,777.0	2,031,715.0	988.5	106	4	108.3	13.8	98%	
RF-128	863,724.0	2,031,828.0	968.5	113	5	116.3	10.4	97%	
RF-129	864,448.0	2,032,093.0	979.5	113	9	116.3	10.4	97%	
RF-130	864,547.9	2,031,993.6	1005.0	118	8	120.0	8.1	98%	
RF-131	864,250.9	2,042,040.0	995.0	118	7	120.0	8.1	98%	
RF-132	863,950.0	2,042,150.0	964.0	116	7	120.0	8.1	97%	
RF-133	863,930.0	2,042,000.0	965.0	116	5	120.0	8.1	97%	
RF-134	864,100.0	2,041,940.0	962.0	112	5	116.3	10.4	96%	
RF-135	863,809.0	2,032,005.0	973.5	125	7	123.4	8.9	101%	
RF-136	863,712.0	2,032,129.0	975.0	116	6	120.0	8.1	97%	
RF-137	863,582.0	2,032,050.0	974.0	117	7	120.0	8.1	98%	
RF-138	863,587.0	2,032,000.0	977.0	119	6	120.0	8.1	99%	
RF-139	863,356.0	2,032,105.0	978.0	126	8	123.4	8.9	102%	
RF-140	863,730.0	2,032,081.0	976.5	112	4	112.7	10.2	99%	
RF-141	863,647.0	2,031,980.0	977.5	114	5	116.3	10.4	98%	
RF-142	863,504.0	2,032,011.0	977.5	119	6	120.0	8.1	99%	
RF-143	863,407.3	2,032,047.2	989.0	113	8	116.3	10.4	97%	
RF-144	863,508.6	2,032,047.4	992.0	116	9	116.3	10.4	100%	
RF-145	863,609.8	2,032,047.5	995.0	109	9	112.7	10.2	97%	
RF-146	863,812.5	2,031,976.4	995.0	108	9	112.7	10.2	96%	
RF-147	863,913.5	2,032,190.7	980.0	120	6	120.0	8.1	100%	
RF-148	863,590.5	2,032,088.2	980.0	118	4	120.0	8.1	98%	
RF-149	863,675.0	2,032,057.0	999.0	122	9	120.0	8.1	102%	
RF-150	863,576.0	2,032,065.0	999.0	116	10	116.3	10.4	100%	
RF-151	863,744.0	2,032,025.0	995.0	113	6	112.7	10.2	100%	
RF-152	864,327.3	2,030,652.2	997.6	106	7	108.3	13.8	98%	
RF-153	864,127.3	2,030,652.2	997.6	108	8	110.4	11.9	98%	
RF-154	864,788.6	2,030,621.8	1007.8	103	7	108.3	13.8	95%	
RF-158	863,789.0	2,031,388.0	994.0	109	4	112.7	10.7	97%	
RF-159	863,737.0	2,031,842.8	974.0	113	3	116.3	10.4	97%	
RF-160	863,816.2	2,031,860.6	977.5	116	3	116.3	10.4	100%	
RF-161	863,818.7	2,031,814.6	985.0	114	2	116.3	10.4	98%	
RF-162	863,762.1	2,031,890.5	985.0	117	2	116.3	10.4	101%	
RF-163	863,800.5	2,031,821.1	987.5	114	3	116.3	10.4	98%	
RF-164	863,793.2	2,031,889.0	992.5	115	5	116.3	10.4	99%	
RF-165	863,783.0	2,031,868.0	995.0	124	4	123.4	8.9	100%	
RF-166	863,778.2	2,031,872.4	995.0	104	13	108.3	13.8	96%	
RF-167	863,795.0	2,030,693.1	1004.5	120	7	123.4	8.9	97%	
RF-168	865,369.0	2,031,535.0	977.0	121	7	123.4	8.9	98%	
RF-169	865,015.0	2,031,963.0	973.0	106	4	110.3	11.8	96%	
RF-170	864,547.0	2,031,938.0	973.0	116	7	116.3	10.4	100%	
RF-171	864,060.0	2,031,982.0	973.5	112	6	116.3	10.4	96%	

Note: *See Figures 1 - 3 for test locations.
Complete test data located in Appendix B.

Table 2 (cont.)
Random Fill Density Testing Summary

RANDOM FILL DENSITY TEST No.	LOCATION*			IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	COMPACTION (%)	Notes
	NORTHING	EASTING	ELEVATION						
RF-172	864,098.5	2,032,001.8	977.0	115	5	120.0	8.1	96%	
RF-173	864,447.6	2,031,996.5	976.5	107	6	108.3	13.8	99%	
RF-174	864,145.0	2,031,990.0	978.5	109	3	110.4	11.9	99%	
RF-175	865,317.7	2,031,962.1	976.0	117	3	120.0	8.1	98%	
RF-176	865,026.7	2,032,011.7	975.5	117	5	120.0	8.1	98%	
RF-177	865,339.7	2,031,856.0	978.0	107	7	108.3	13.8	99%	
RF-178	865,344.6	2,031,460.9	976.5	113	3	116.3	10.4	97%	
RF-179	865,357.2	2,031,538.9	979.0	111	8	112.7	10.2	98%	
RF-180	864,759.8	2,031,985.0	980.5	113	6	116.3	10.4	97%	
RF-181	865,266.0	2,031,996.3	984.5	112	3	116.3	10.4	96%	
RF-182	865,351.7	2,031,723.5	983.5	112	5	116.3	10.4	96%	
RF-183	865,374.8	2,031,240.8	982.0	116	4	116.3	10.4	100%	
RF-184	865,101.9	2,031,999.9	985.0	116	5	120.0	8.1	97%	
RF-185	865,357.2	2,031,814.2	985.0	118	6	120.0	8.1	98%	
RF-186	865,358.0	2,031,418.3	985.0	120	5	120.0	8.1	100%	
RF-187	865,151.7	2,031,908.1	974.5	111	5	112.7	10.2	98%	
RF-188	865,281.5	2,031,719.9	974.5	107	6	108.3	13.8	99%	
RF-189	865,275.1	2,031,490.8	974.0	111	4	112.7	10.2	98%	
RF-190	865,270.8	2,031,138.2	973.0	116	6	120.0	8.1	97%	
RF-191	865,396.4	2,031,770.2	980.0	107	5	110.5	12.6	97%	
RF-192	865,400.2	2,031,438.2	978.0	109	7	110.5	12.6	99%	
RF-193	864,046.0	2,031,906.6	975.0	110	4	112.7	10.2	98%	
RF-194	864,979.2	2,032,035.2	977.0	111	4	112.7	10.2	98%	
RF-195	865,400.1	2,031,682.7	983.0	121	3	123.4	8.9	98%	
RF-196	865,395.6	2,031,766.9	984.0	114	6	116.3	10.4	98%	
RF-197	865,407.1	2,031,484.5	982.0	124	4	123.4	8.9	100%	
RF-198	863,908.1	2,032,035.7	974.5	117	8	120.0	8.1	98%	
RF-199	865,426.3	2,031,476.5	984.5	120	9	120.0	8.1	100%	
RF-200	865,433.8	2,031,731.2	989.5	119	6	120.0	8.1	99%	
RF-201	864,365.4	2,032,033.5	979.5	108	9	110.4	11.9	98%	
RF-202	863,971.9	2,032,038.1	979.0	113	9	116.3	10.4	97%	
RF-203	865,390.5	2,031,429.8	983.0	112	5	116.3	10.4	96%	
RF-204	865,438.8	2,031,309.3	983.0	115	4	116.3	10.4	99%	
RF-205	863,971.9	2,031,133.9	981.5	113	3	116.3	10.4	97%	
RF-206	863,886.4	2,031,988.6	993.0	112	4	116.3	10.4	96%	
RF-207	864,269.0	2,031,988.9	992.5	117	5	120.0	8.1	98%	
RF-208	864,571.9	2,031,989.4	992.0	115	8	116.3	10.4	99%	
RF-209	864,577.0	2,032,061.1	981.5	112	7	116.3	10.4	96%	
RF-210	864,300.2	2,032,055.5	982.0	109	6	112.7	10.2	97%	
RF-211	863,872.3	2,032,037.3	980.5	111	8	112.7	10.2	98%	
RF-212	864,397.0	2,031,990.0	994.0	120	5	123.4	8.9	97%	
RF-213	865,362.0	2,031,714.0	994.0	122	8	123.4	8.9	99%	

Note: *See Figures 1 - 3 for test locations.
Complete test data located in Appendix B.

Table 2 (cont.)
Random Fill Density Testing Summary

RANDOM FILL DENSITY TEST No.	LOCATION*			IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	COMPACTION (%)	Notes
	NORTHING	EASTING	ELEVATION						
RF-214	865,358.0	2,031,353.0	994.0	121	6	123.4	8.9	98%	
RF-215	865,442.0	2,031,149.0	982.0	117	6	120.0	8.1	98%	
RF-216	865,393.0	2,031,419.0	983.5	109	11	112.7	10.2	97%	
RF-217	865,428.0	2,031,659.0	989.5	115	5	120.0	8.1	96%	
RF-218	865,404.0	2,031,794.0	984.5	116	6	120.0	8.1	97%	
RF-219	864,603.2	2,032,062.1	987.5	109	5	112.7	10.2	97%	
RF-220	864,329.8	2,032,046.9	986.5	118	5	120.0	8.1	98%	
RF-221	864,066.1	2,032,058.5	986.0	110	4	112.7	10.2	98%	
RF-222	863,872.4	2,032,023.4	989.5	109	6	112.7	10.2	97%	
RF-223	864,185.0	2,032,021.3	988.5	113	4	112.7	10.2	100%	
RF-224	864,444.5	2,032,025.5	989.5	120	6	123.4	8.9	97%	
RF-225	864,847.6	2,032,054.3	983.0	108	5	110.4	11.9	98%	
RF-226	865,190.0	2,032,034.5	981.5	117	6	120.0	8.1	98%	
RF-227	865,392.6	2,031,836.8	986.5	112	5	116.3	10.4	96%	
RF-228	865,392.0	2,031,523.1	989.0	115	4	116.3	10.4	99%	
RF-229	865,399.3	2,031,071.9	986.0	118	4	120.0	8.1	98%	
RF-230	865,391.6	2,031,061.9	991.0	116	3	120.0	8.1	97%	
RF-231	865,405.2	2,031,301.2	991.5	117	4	120.0	8.1	98%	
RF-232	865,386.4	2,031,615.9	991.0	114	5	116.3	10.4	98%	
RF-233	865,408.2	2,031,168.2	995.0	115	3	120.0	8.1	96%	
RF-234	865,411.1	2,031,608.2	995.0	115	3	120.0	8.1	96%	
RF-235	865,119.7	2,031,921.2	993.5	115	5	120.0	8.1	96%	
RF-236	865,199.3	2,031,989.3	993.5	115	7	120.0	8.1	96%	
RF-237	864,279.6	2,032,027.9	998.5	109	11	110.5	12.6	99%	
RF-238	863,953.2	2,032,025.5	998.0	120	3	123.4	8.9	97%	
RF-239	865,325.3	2,032,015.7	985.0	107	4	110.5	12.6	97%	
RF-240	865,212.2	2,032,072.8	987.5	114	8	116.3	10.4	98%	
RF-241	865,423.1	2,031,930.0	991.5	115	3	116.3	10.4	99%	
RF-242	865,432.7	2,031,955.6	997.0	119	4	123.4	8.9	96%	
RF-243	865,417.9	2,031,843.8	997.0	111	3	116.3	10.4	95%	
RF-244	865,256.3	2,032,051.2	989.5	120	8	123.4	8.9	97%	
RF-245	864,933.9	2,032,068.7	984.5	114	3	116.3	10.4	98%	
RF-246	864,789.1	2,032,151.3	973.5	120	4	123.4	8.9	97%	
RF-247	864,486.7	2,032,016.0	995.0	112	3	116.3	10.4	96%	
RF-248	864,775.2	2,032,029.7	990.0	114	4	116.3	10.4	98%	
RF-249	864,975.3	2,032,032.3	985.0	118	3	123.4	8.9	96%	
RF-250	864,923.7	2,032,021.4	991.0	109	7	112.7	10.2	97%	
RF-251	865,129.0	2,032,031.5	989.5	113	3	112.7	10.2	100%	
RF-252	864,017.4	2,032,003.2	998.5	114	5	116.3	10.4	98%	
RF-253	864,602.6	2,032,011.7	995.0	112	5	116.3	10.4	96%	
RF-254	865,013.7	2,032,023.1	994.5	120	7	123.4	8.9	97%	
RF-255	865,307.0	2,031,971.7	995.0	115	3	116.3	10.4	99%	

Note: *See Figures 1 - 3 for test locations.
Complete test data located in Appendix B.

Table 2 (cont.)
Random Fill Density Testing Summary

RANDOM FILL DENSITY TEST No.	LOCATION*			IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	COMPACTION (%)	Notes
	NORTHING	EASTING	ELEVATION						
RF-256	865,000.0	2,032,015.2	999.0	112	4	116.3	10.4	96%	
RF-257	864,618.8	2,032,010.9	999.0	113	7	116.3	10.4	97%	
RF-258	865,374.9	2,031,986.5	998.0	117	2	120.0	8.1	98%	
RF-259	865,445.0	2,031,773.0	998.5	117	3	120.0	8.1	98%	
RF-260	866,390.0	2,031,455.0	998.0	126	7	123.4	8.9	102%	
RF-261	865,398.0	2,031,191.0	998.0	112	5	116.3	10.4	96%	
RF-262	865,366.0	2,030,940.0	998.0	110	7	112.7	10.2	98%	

Note: *See Figures 1 - 3 for test locations.
Complete test data located in Appendix B.

Table 3

Clay Anchor and Upstream Clay Barrier Density Testing Summary

CLAY DENSITY TEST No.	LOCATION*			IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	COMPACTION (%)	NOTES
	NORTHING	EASTING	ELEVATION						
CL-1	863,731.0	2,031,982.0	991.0	112	12	113.4	14.6	99%	Weir Clay Anchor, Test Failed
CL-2	863,668.0	2,031,985.0	991.0	114	14	113.4	14.6	101%	Weir Clay Anchor
CL-1A	863,668.0	2,031,985.0	991.0	116	15	113.4	14.6	102%	Weir Clay Anchor, Retest CL-1 Passed
CL-3	863,666.0	2,032,000.0	993.2	118	15	113.4	14.6	104%	Weir Clay Anchor
CL-4	863,706.0	2,032,001.0	993.8	117	15	113.4	14.6	103%	Weir Clay Anchor
CL-5	863,682.0	2,032,002.0	994.5	115	15	113.4	14.6	101%	Weir Clay Anchor
CL-6	863,702.0	2,031,991.0	995.0	118	14	113.4	14.6	104%	Weir Clay Anchor
CL-7	TRANSITION CLAY ANCHOR SEE FIGURES 4 - 7			115	15	113.4	14.6	101%	Transition Clay Anchor
CL-8				115	15	113.4	14.6	101%	Transition Clay Anchor
CL-9				114	18	113.4	14.6	101%	Transition Clay Anchor
CL-10				114	16	113.4	14.6	101%	Transition Clay Anchor
CL-11				114	19	113.4	14.6	101%	Transition Clay Anchor
CL-12				115	15	113.4	14.6	101%	Transition Clay Anchor
CL-13				115	15	113.4	14.6	101%	Transition Clay Anchor
CL-14				114	18	113.4	14.6	101%	Transition Clay Anchor
CL-15				114	15	113.4	14.6	101%	Transition Clay Anchor
CL-16	864,390.0	2,030,658.0	990.9	114	18	113.4	14.6	101%	West Slope Clay Anchor
CL-17	864,279.2	2,030,659.2	991.4	115	15	113.4	14.6	101%	West Slope Clay Anchor
CL-18	864,170.0	2,030,663.0	990.5	114	16	113.4	14.6	101%	West Slope Clay Anchor
CL-19	864,135.0	2,030,660.0	991.0	115	16	113.4	14.6	101%	West Slope Clay Anchor
CL-20	863,933.4	2,030,661.3	991.7	110	20	113.4	14.6	97%	West Slope Clay Anchor, Test Failed
CL-20A	863,933.4	2,030,661.3	991.7	116	15	113.4	14.6	102%	West Slope Clay Anchor, Retest CL-20 Passed
CL-21	864,190.0	2,030,675.0	988.0	114	13	113.4	14.6	101%	West Slope Clay Anchor
CL-22	864,467.0	2,030,667.0	991.0	115	14	113.4	14.6	101%	West Slope Clay Anchor
CL-23	864,602.0	2,030,664.0	991.8	114	15	113.4	14.6	101%	West Slope Clay Anchor
CL-24	864,649.4	2,030,656.0	992.8	118	14	113.4	14.6	104%	West Slope Clay Anchor
CL-25	864,689.0	2,030,659.0	993.7	115	17	113.4	14.6	101%	West Slope Clay Anchor
CL-26	864,626.0	2,030,652.9	994.3	114	15	113.4	14.6	101%	West Slope Clay Anchor
CL-27	864,770.0	2,030,666.0	991.0	115	15	113.4	14.6	101%	West Slope Clay Anchor
CL-28	864,795.0	2,030,663.0	992.0	115	15	113.4	14.6	101%	West Slope Clay Anchor
CL-29	865,000.0	2,030,660.0	992.0	114	15	113.4	14.6	101%	West Slope Clay Anchor
CL-30			972.0	119	8	115.6	14.3	103%	Transition Clay Anchor
CL-31	863,733.0	2,031,999.0	995.0	115	10	113.4	14.6	101%	Weir Clay Anchor
CL-32	864,208.0	2,030,609.0	1010.0	116	12	113.4	14.6	102%	West Slope Clay Anchor (Liner Tie-In Trench)
CL-33	865,399.7	2,031,333.9	972.5	114	16	113.4	14.6	101%	Upstream Clay Barrier (CL-33 to CL-40)
CL-34	865,402.0	2,031,724.0	972.5	114	15	113.4	14.6	101%	
CL-35	865,090.8	2,032,034.5	972.0	113	16	113.4	14.6	100%	
CL-36	864,696.7	2,032,033.4	972.0	113	16	113.4	14.6	100%	
CL-37	865,400.6	2,031,358.6	973.5	113	15	113.4	14.6	100%	
CL-38	865,399.2	2,031,174.4	975.0	115	15	113.4	14.6	101%	
CL-39	865,395.9	2,031,275.4	975.5	116	15	113.4	14.6	102%	
CL-40	865,394.3	2,031,303.0	976.5	113	17	113.4	14.6	100%	

Notes: * See Figure 4 - 6 for test locations
Complete test data located in Appendix B

Table 3 (Cont.)
Clay Anchor and Upstream Clay Barrier Density Testing Summary

CLAY DENSITY TEST No.	LOCATION* NORTHING	EASTING	ELEVATION	IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	COMPACTION (%)	NOTES
CL-41	865,395.7	2,031,683.9	974.0	114	16	113.4	14.6	101%	Upstream Clay Barrier (CL-41 to CL-82)
CL-42	865,402.3	2,031,618.4	974.0	113	16	113.4	14.6	100%	
CL-43	865,394.7	2,031,655.9	974.5	113	17	113.4	14.6	100%	
CL-44	865,365.7	2,031,945.7	973.5	113	17	113.4	14.6	100%	
CL-45	865,066.9	2,032,033.2	974.0	114	16	113.4	14.6	101%	
CL-46	864,836.4	2,032,032.3	973.5	114	15	113.4	14.6	101%	
CL-47	864,642.3	2,032,035.4	974.0	115	15	113.4	14.6	101%	
CL-48	864,809.8	2,032,034.7	974.0	115	18	113.4	14.6	101%	
CL-49	865,394.2	2,031,601.4	975.0	115	16	113.4	14.6	101%	
CL-50	865,277.9	2,032,021.8	974.5	115	16	113.4	14.6	101%	
CL-51	865,056.5	2,032,030.5	975.0	113	16	113.4	14.6	100%	
CL-52	864,624.1	2,032,033.0	974.0	118	16	113.4	14.6	104%	
CL-53	864,472.5	2,032,030.3	974.0	114	15	113.4	14.6	101%	
CL-54	864,643.4	2,032,030.4	975.0	116	16	113.4	14.6	102%	
CL-55	864,439.8	2,032,027.4	975.5	116	15	113.4	14.6	102%	
CL-56	865,394.9	2,031,482.3	975.5	116	15	113.4	14.6	102%	
CL-57	864,706.7	2,032,026.8	976.0	117	17	113.4	14.6	103%	
CL-58	864,452.6	2,032,027.0	977.0	114	17	113.4	14.6	101%	
CL-59	864,669.0	2,032,023.9	978.0	113	17	113.4	14.6	100%	
CL-60	863,925.4	2,032,027.5	977.0	116	15	113.4	14.6	102%	
CL-61	865,396.6	2,031,688.8	976.0	113	15	113.4	14.6	100%	
CL-62	865,392.2	2,031,473.2	976.5	114	17	113.4	14.6	101%	
CL-63	865,389.4	2,031,855.2	977.0	117	15	113.4	14.6	103%	
CL-64	865,392.6	2,031,268.2	978.0	113	16	113.4	14.6	100%	
CL-65	865,389.9	2,031,334.8	979.0	116	15	113.4	14.6	102%	
CL-66	865,389.1	2,031,269.2	979.0	117	15	113.4	14.6	103%	
CL-67	865,389.1	2,031,214.1	980.0	117	15	113.4	14.6	103%	
CL-68	865,386.0	2,031,675.0	981.0	115	15	113.4	14.6	101%	
CL-69	865,013.9	2,032,029.8	975.5	113	16	113.4	14.6	100%	
CL-70	864,666.8	2,032,023.8	979.5	114	16	113.4	14.6	101%	
CL-71	865,111.6	2,032,026.4	977.0	114	15	113.4	14.6	101%	
CL-72	865,015.8	2,032,026.8	976.5	113	15	113.4	14.6	100%	
CL-73	864,860.6	2,032,022.3	979.0	118	15	113.4	14.6	104%	
CL-74	864,851.6	2,032,020.8	980.0	117	15	113.4	14.6	103%	
CL-75	864,890.9	2,032,022.0	978.5	113	17	113.4	14.6	100%	
CL-76	865,018.6	2,032,023.9	977.5	113	16	113.4	14.6	100%	
CL-77	865,383.7	2,031,866.2	982.5	114	16	113.4	14.6	101%	
CL-78	865,384.0	2,031,763.0	982.0	116	16	113.4	14.6	102%	
CL-79	865,386.7	2,031,652.0	981.0	114	15	113.4	14.6	101%	
CL-80	865,382.4	2,031,864.7	983.0	114	16	113.4	14.6	101%	
CL-81	865,381.5	2,031,164.9	984.0	113	16	113.4	14.6	100%	
CL-82	865,380.6	2,031,296.2	984.5	113	15	113.4	14.6	100%	

Notes: * See Figure 4 - 6 for test locations
Complete test data located in Appendix B

Table 3 (Cont.)
Clay Anchor and Upstream Clay Barrier Density Testing Summary

CLAY DENSITY TEST No.	LOCATION* NORTHING	EASTING	ELEVATION	IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	COMPACTION (%)	NOTES
CL-83	865,388.1	2,031,511.0	982.0	117	14	113.4	14.6	103%	Upstream Clay Barrier (CL-83 to CL-123)
CL-84	865,379.3	2,031,628.3	984.5	114	15	113.4	14.6	101%	
CL-85	865,385.8	2,031,785.4	983.5	116	15	113.4	14.6	102%	
CL-86	865,380.4	2,031,873.2	983.0	115	16	113.4	14.6	101%	
CL-87	865,379.5	2,031,129.3	984.5	117	15	113.4	14.6	103%	
CL-88	864,526.8	2,032,018.2	982.0	117	17	115.6	14.3	101%	
CL-89	864,362.2	2,032,020.6	980.0	117	16	113.4	14.6	103%	
CL-90	864,703.3	2,032,017.8	982.0	116	15	113.4	14.6	102%	
CL-91	864,328.7	2,032,016.8	982.0	116	15	113.4	14.6	102%	
CL-92	864,099.9	2,032,021.0	979.5	117	15	113.4	14.6	103%	
CL-93	863,885.6	2,032,020.8	979.0	116	15	113.4	14.6	102%	
CL-94	863,849.7	2,032,018.9	981.0	116	15	113.4	14.6	102%	
CL-95	863,865.5	2,032,016.6	982.5	116	15	113.4	14.6	102%	
CL-96	865,386.1	2,031,092.6	981.5	115	15	113.4	14.6	101%	
CL-97	864,640.0	2,032,018.0	984.0	113	16	113.4	14.6	100%	
CL-98	864,019.0	2,032,021.1	982.0	113	14	113.4	14.6	100%	
CL-99	864,057.0	2,032,021.1	982.0	113	14	113.4	14.6	100%	
CL-100	864,395.0	2,032,019.6	983.0	118	15	113.4	14.6	104%	
CL-101	864,551.0	2,032,018.1	984.5	119	15	113.4	14.6	105%	
CL-102	864,642.0	2,032,016.6	985.0	114	17	113.4	14.6	101%	
CL-103	863,850.0	2,032,015.4	986.5	116	15	113.4	14.6	102%	
CL-104	864,685.0	2,032,013.8	987.0	114	17	113.4	14.6	101%	
CL-105	864,628.7	2,032,013.7	987.0	113	16	113.4	14.6	100%	
CL-106	864,939.0	2,032,009.9	987.5	113	16	113.4	14.6	100%	
CL-107	865,024.7	2,032,023.1	979.0	113	16	113.4	14.6	100%	
CL-108	865,382.3	2,031,417.5	984.0	113	15	113.4	14.6	100%	
CL-109	865,173.3	2,032,021.3	981.0	116	14	113.4	14.6	102%	
CL-110	863,871.9	2,032,006.9	988.5	115	15	113.4	14.6	101%	
CL-111	865,380.3	2,031,611.8	985.5	116	14	113.4	14.6	102%	
CL-112	865,381.5	2,031,263.8	986.5	115	14	113.4	14.6	101%	
CL-113	865,378.3	2,030,974.1	989.6	116	14	113.4	14.6	102%	
CL-114	864,238.2	2,032,005.6	991.0	114	16	113.4	14.6	101%	
CL-115	865,373.9	2,030,920.0	985.0	113	15	113.4	14.6	100%	
CL-116	865,380.6	2,031,056.4	985.0	111	19	113.4	14.6	98%	Upstream Clay Barrier, Test Failed
CL-116A	865,380.6	2,031,056.4	985.0	114	15	113.4	14.6	101%	Upstream Clay Barrier, Retest CL-116 Passed
CL-117	865,381.5	2,031,055.9	985.0	113	16	113.4	14.6	100%	
CL-118	865,378.2	2,031,033.2	986.5	113	16	113.4	14.6	100%	
CL-119	865,371.0	2,031,136.0	986.5	114	16	113.4	14.6	101%	
CL-120	863,876.0	2,032,003.0	991.0	118	14	113.4	14.6	104%	
CL-121	865,372.5	2,031,323.0	987.0	115	15	113.4	14.6	101%	
CL-122	865,375.4	2,030,997.1	989.0	118	14	113.4	14.6	104%	
CL-123	863,881.6	2,032,003.5	991.0	114	14	113.4	14.6	101%	

Notes: * See Figure 4 - 6 for test locations
Complete test data located in Appendix B

Table 3 (Cont.)
Clay Anchor and Upstream Clay Barrier Density Testing Summary

CLAY DENSITY TEST No.	LOCATION* NORTHING	LOCATION* EASTING	LOCATION* ELEVATION	IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	COMPACTION (%)	NOTES
CL-124	865,140.0	2,032,021.1	982.0	115	14	113.4	14.6	101%	Upstream Clay Barrier (CL-124 to CL-159)
CL-125	865,037.1	2,032,019.1	981.5	115	15	113.4	14.6	101%	
CL-126	864,732.1	2,032,002.6	991.0	119	15	113.4	14.6	105%	
CL-127	864,618.9	2,032,003.5	990.5	119	14	113.4	14.6	105%	
CL-128	865,374.5	2,031,633.4	988.5	114	16	113.4	14.6	101%	
CL-129	865,377.4	2,031,545.9	989.0	118	15	113.4	14.6	104%	
CL-130	865,773.8	2,031,675.3	989.5	114	16	113.4	14.6	101%	
CL-131	865,140.0	2,032,013.5	984.0	115	16	113.4	14.6	101%	
CL-132	865,373.1	2,031,123.0	990.0	117	16	113.4	14.6	103%	
CL-133	865,372.5	2,031,653.2	992.0	116	15	113.4	14.6	102%	
CL-134	865,371.8	2,031,296.1	992.5	117	15	113.4	14.6	103%	
CL-135	865,367.1	2,031,008.6	993.0	114	16	113.4	14.6	101%	
CL-136	865,370.6	2,031,602.3	992.0	114	15	113.4	14.6	101%	
CL-137	865,366.0	2,031,086.0	993.5	119	15	113.4	14.6	105%	
CL-138	865,367.8	2,031,054.1	994.0	119	15	113.4	14.6	105%	
CL-139	865,363.3	2,031,384.2	995.5	114	16	113.4	14.6	101%	
CL-140	863,944.8	2,032,007.6	991.0	116	16	113.4	14.6	102%	
CL-141	864,066.6	2,032,005.0	992.0	117	16	113.4	14.6	103%	
CL-142	864,332.9	2,032,001.8	993.0	117	15	113.4	14.6	103%	
CL-143	865,328.8	2,031,941.8	990.0	117	16	113.4	14.6	103%	
CL-144	865,353.0	2,031,911.7	992.0	117	15	113.4	14.6	103%	
CL-145	865,121.8	2,032,009.3	984.5	117	15	115.6	14.3	101%	
CL-146	865,104.4	2,032,013.3	985.5	116	15	113.4	14.6	102%	
CL-147	863,889.1	2,031,997.5	994.0	117	15	113.4	14.6	103%	
CL-148	865,366.7	2,031,854.1	995.0	118	14	113.4	14.6	104%	
CL-149	865,270.8	2,031,992.4	933.0	116	16	113.4	14.6	102%	
CL-150	865,051.6	2,032,010.1	988.5	117	14	113.4	14.6	103%	
CL-151	864,860.2	2,032,006.4	990.0	116	14	113.4	14.6	102%	
CL-152	865,095.4	2,032,003.9	992.0	114	16	113.4	14.6	101%	
CL-153	864,648.0	2,032,003.9	992.5	115	17	113.4	14.6	101%	
CL-154	865,026.0	2,032,009.0	992.5	116	16	113.4	14.6	102%	
CL-155	864,516.9	2,031,995.4	995.5	119	15	113.4	14.6	105%	
CL-156	863,981.5	2,031,996.8	995.5	118	15	113.4	14.6	104%	
CL-157	864,235.3	2,031,998.3	995.5	118	15	113.4	14.6	104%	
CL-158	864,535.8	2,031,994.9	995.5	118	16	113.4	14.6	104%	
CL-159	865,153.3	2,031,998.9	994.0	115	16	113.4	14.6	101%	

Notes: * See Figure 4 - 6 for test locations
Complete test data located in Appendix B

TABLE 4
Off-Site (Anderson Pit) Clay Prequalification Testing Summary

Sample ID	CLS-1	CLS-2	CLS-3	CLS-4	CLS-5	CLS-6	CLS-7	MPCA rqmnt
Classification	CL/SC	CL/SC		CL/SC	CL/SC	CL/SC	SC/CL	CL, CH, SC
Liquid limit	32.6	34.5		31.6	34.1	33.2	31.5	25 min.
Plastic limit	15.2	16.0		15.1	15.4	15.5	16.7	---
Plasticity Index	17.4	18.5		16.5	18.7	17.7	14.8	12 min.
Field moisture content	17.0	16.5		18.4	20.8	17.4	17.2	---
Passing No. 200 seive, %	51.0	50.2		51.4	50.7	51.2	48.5	50 min.
Max. dry density, pcf	115.0	116.2		114.4	115.3	116.1	119.4	---
Opt. moisture content, %	14.4	14.2		14.0	14.1	14.0	13.9	---
Initial permeability results								
As-tested moisture content, %	15.9	16.1		15.5	15.5	15.6	15.5	---
As-tested dry density	109.1	109.5		109.5	109.9	111.2	113.9	---
As-tested compation, % MDD	94.9%	94.2%		95.7%	95.3%	95.8%	95.4%	---
Permeability, cm/s	6.8x10-8	7.5x10-8		2.2x10-7	1.3x10-7	9.6x10-8	1.1x10-8	1x10-7 max.
Re-tested permeability results								
Re-tested moisture content, %				16.0	16.2			
Re-tested dry density				111.9	112.7			
Re-tested compation, % MDD				97.8%	97.7%			
Re-tested permeability, cm/s				6.2x10-9	1.3x10-8			1x10-7 max.

Notes: Complete test data located in Appendix C
CLS-3 was collected but not tested due to similarity with other samples
CLS-4 & CLS-5 were re-tested at a higher compaction and moisture due to initial permeablility rates not meeting requirements
CLS-7 was collected later in project after encountering slightly different material from the original six samples

Table 5

Clay In-Place Index Properties and Permeability Test Summary

Sample #	LOCATION*			LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX (%)	PASSING No. 200 SIEVE (%)	PERMEABILITY (cm/s)	NOTES
	NORTHING	EASTING	ELEVATION						
ST-1	863,697	2,031,995	992.8 - 993.8	--	--	--	--	1.5×10^{-8}	Weir Clay Anchor
ST-2	865,392	2,031,307	975.6 - 976.8	30.3	14.3	16.0	50.9	2.5×10^{-8}	Upstream Clay Barrier
ST-3	865,069	2,032,031	973.7 - 974.9	31.0	11.4	19.6	49.9	3.6×10^{-8}	Upstream Clay Barrier
ST-4	864,500	2,032,016	981.6 - 982.7	32.1	14.3	17.8	49.7	1.2×10^{-8}	Upstream Clay Barrier
ST-5	863,859	2,032,010	985.4 - 986.4	31.8	15.4	16.4	50.2	2.3×10^{-8}	Upstream Clay Barrier
ST-6	865,365	2,031,118	993.0 - 994.4	31.8	15.1	16.7	46.4	4.4×10^{-8}	Upstream Clay Barrier
ST-7	865,364	2,031,864	995.2 - 994.6	32.7	14.8	17.9	45.1	6.4×10^{-9}	Upstream Clay Barrier
MPCA GUIDELINES				≥ 25	NA	≥ 12	≥ 50	1.0×10^{-7}	
AVERAGE								**2.3×10^{-8}**	

Note: Clay samples were taken by Shelby tube and tested in Soil Engineering Testing Lab.
*See Figure 7 for test locations
Complete test data located in Appendix C.

Table 6
Bottom Ash Density Testing Summary

DENSITY TEST NO.	LOCATION* NORTHING	EASTING	ELEVATION	IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE (%)	COMPACTION (%)	NOTES
BA-1	864,450.0	2,030,247.0	1008.5	102	7	99.8	21.6	102	Pond 2 Dike
BA-2	864,480.0	2,030,467.0	1012.5	100	9	99.8	21.6	100	
BA-3	865,352.0	2,031,610.0	971.0	98	2	99.8	21.6	98	Pond 3N Interior Berm
BA-4	865,321.0	2,031,343.0	974.5	101	5	99.8	21.6	101	
BA-5	865,318.0	2,031,828.0	973.5	96	12	99.8	21.6	96	
BA-6	864,903.4	2,031,960.7	976.0	96	15	99.8	21.6	96	
BA-7	864,170.3	2,031,968.9	980.5	95	8	99.8	21.6	95	
BA-8	863,137.8	2,031,967.0	979.5	95	6	99.8	21.6	95	
BA-9	865,333.2	2,031,741.9	980.5	104	6	99.8	21.6	104	
BA-10	865,324.4	2,031,751.5	979.5	100	8	99.8	21.6	100	
BA-11	865,318.2	2,031,159.5	980.5	104	5	99.8	21.6	104	
BA-12	864,054.3	2,031,954.0	979.5	99	7	99.8	21.6	99	
BA-13	864,156.4	2,031,964.5	982.0	99	6	99.8	21.6	99	
BA-14	865,097.5	2,031,967.4	982.5	104	6	99.8	21.6	104	
BA-15	865,329.7	2,031,159.8	983.5	98	7	99.8	21.6	98	
BA-16	865,337.8	2,031,455.3	984.5	97	13	99.8	21.6	97	
BA-17	865,342.8	2,031,390.5	987.0	105	6	99.8	21.6	105	
BA-18	864,285.6	2,031,971.6	984.5	96	23	99.8	21.6	96	
BA-19	863,871.0	2,031,988.3	991.0	104	3	99.8	21.6	104	

Note: Complete Test Data Located In Appendix E

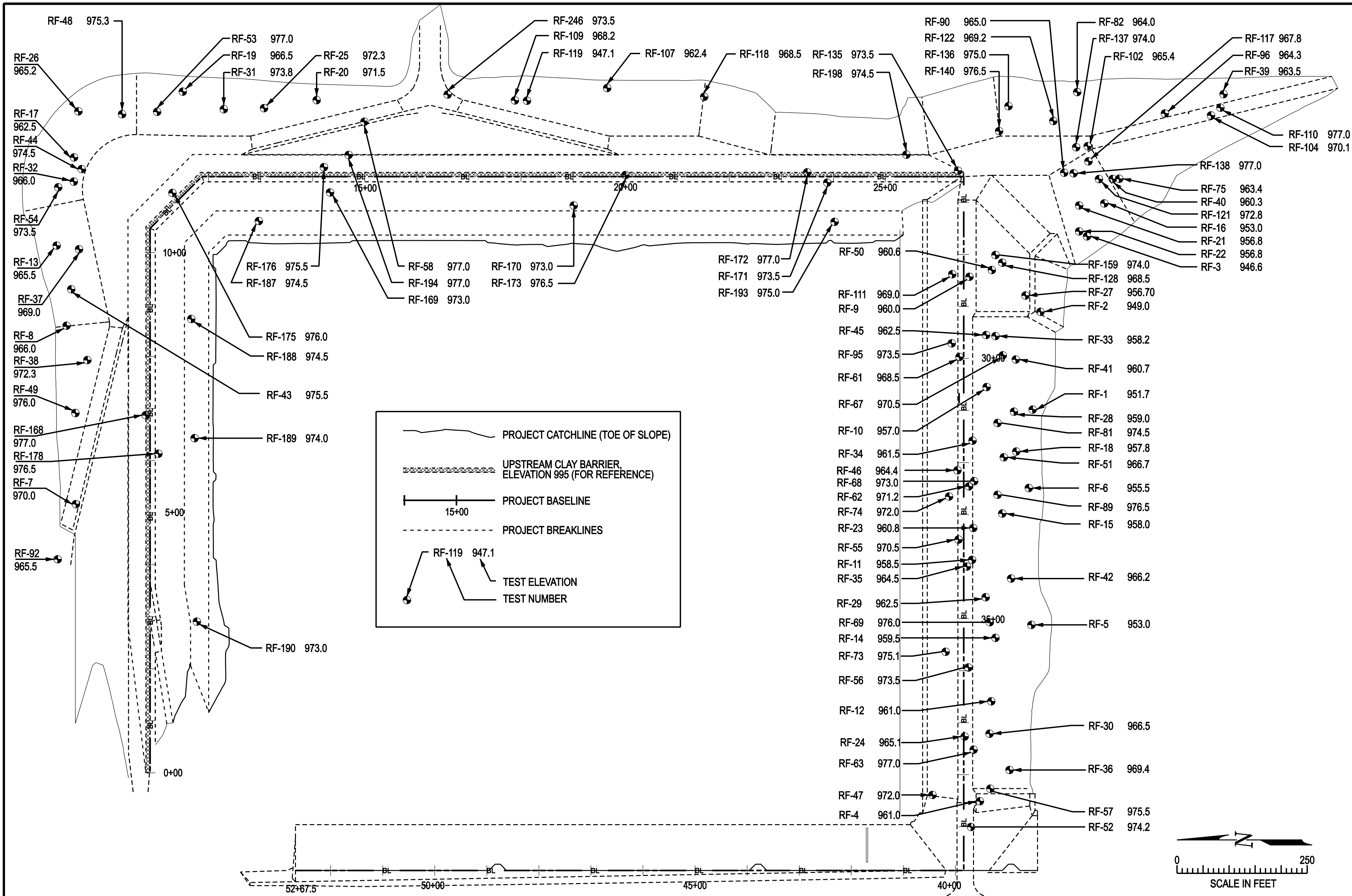
Table 7

Class 5 Density Testing Summary

DENSITY TEST NO.	LOCATION*			IN-PLACE DENSITY (PCF)	MOISTURE CONTENT (%)	MAXIMUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)	COMPACTION (%)	NOTES
	NORTHING	EASTING	ELEVATION						
CL5-1	North Half of East End of Pond 3N Parking			131.0	8.0	129.6	8.4	101%	
CL5-2	864949.8	2030617.9	1012.0	125.0	10.0	125.0	9.0	100%	
CL5-3	864428.6	2030617.9	1012.0	127.0	8.0	125.0	9.0	102%	
CL5-4	863915.1	2030616.1	1012.0	127.0	8.0	125.0	9.0	102%	
CL5-5	863803.8	2030867.3	997.5	131.0	5.0	131.6	7.4	100%	
CL5-6	863788.5	2031614.9	997.0	134.0	5.0	131.6	7.4	102%	
CL5-7	863464.9	2032074.1	991.5	131.0	4.0	131.6	7.4	100%	
CL5-8	864737.5	2032119.6	978.5	127.0	9.0	125.0	9.0	102%	
CL5-9	864017.5	2032026.3	999.0	124.0	11.0	125.0	9.0	99%	
CL5-10	864473.0	2032020.7	999.0	122.0	11.0	125.0	9.0	98%	
CL5-11	865238.0	2032012.7	999.0	121.0	10.0	125.0	9.0	97%	
CL5-12	865393.2	2031523.1	999.0	122.0	10.0	125.0	9.0	98%	
CL5-13	865394.1	2031014.0	999.0	123.0	9.0	125.0	9.0	98%	
CL5-14	865453.9	2031586.8	984.0	119.0	10.0	125.0	9.0	95%	

Note: Complete Test Data Located In Appendix F

Figures



McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FIGURE 1: RANDOM FILL DENSITY TEST LOCATIONS (EL 945 - 977.0)

2008 ASH CONSTRUCTION PROJECTS

Default , P:\Projects\XCEL\SHC0306\2008 Construction\Cert Report\Figures\Figure 1 - RF Testing Locations (EL 945-977.0).dgn

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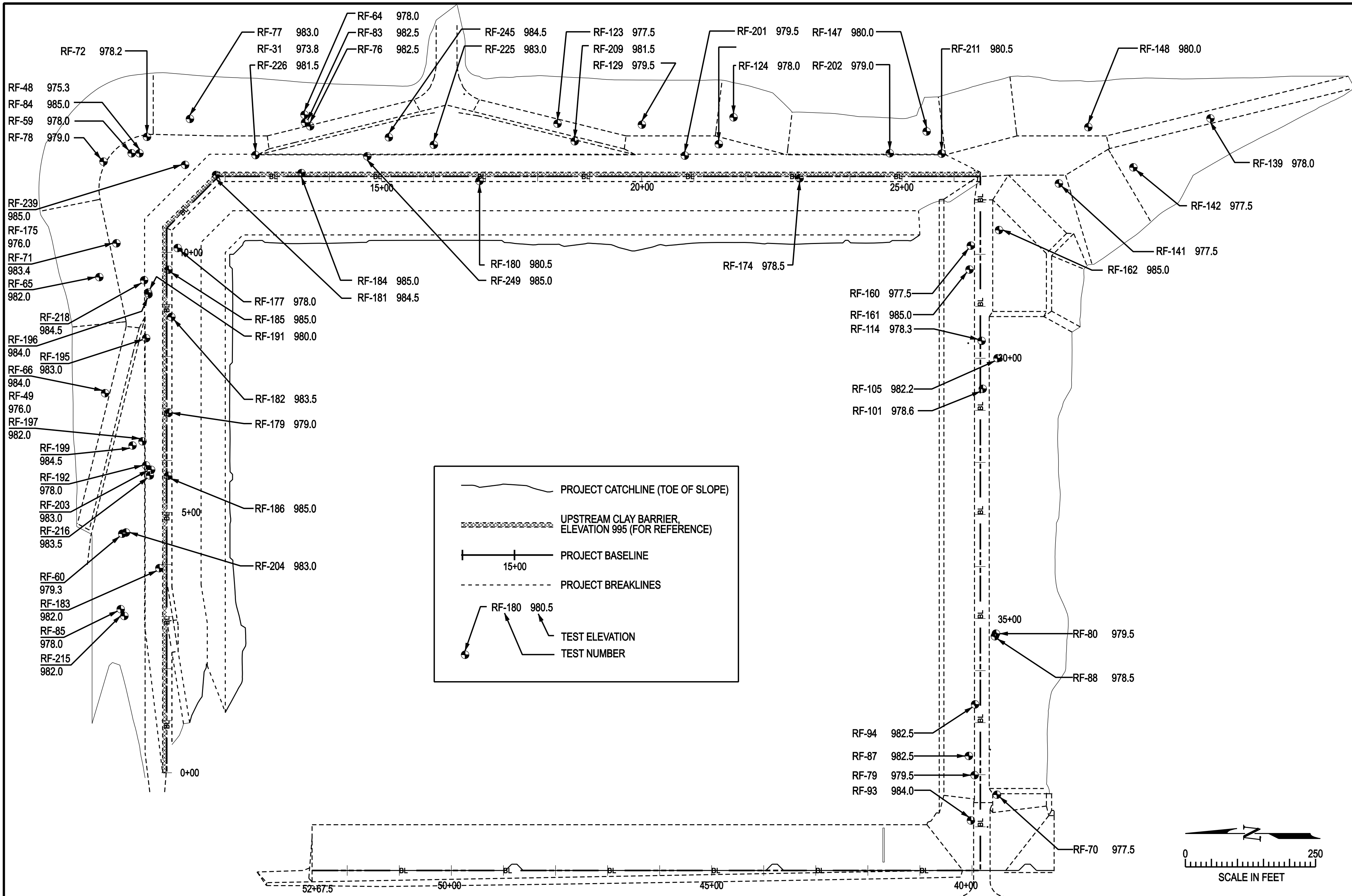
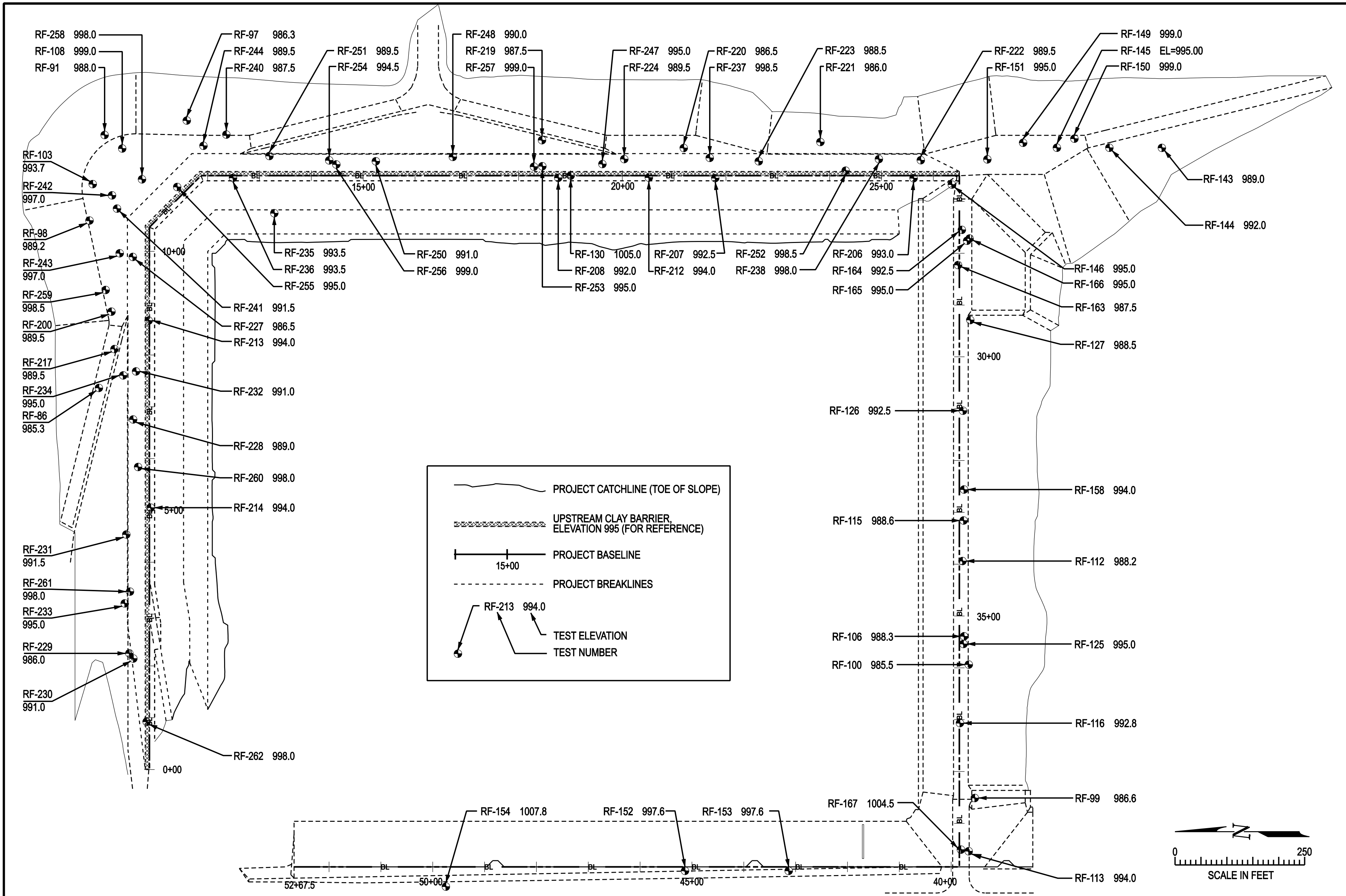


McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FIGURE 2: RANDOM FILL DENSITY TEST LOCATIONS (EL 977.1 - 985.1)

2008 ASH CONSTRUCTION PROJECTS

File: Default , P:\Projects\XCEL\SHC0306\2008 Construction\Cert Report\Figures\Figure 2 - RF Testing Locations (EL 977.1-985.1).dgn



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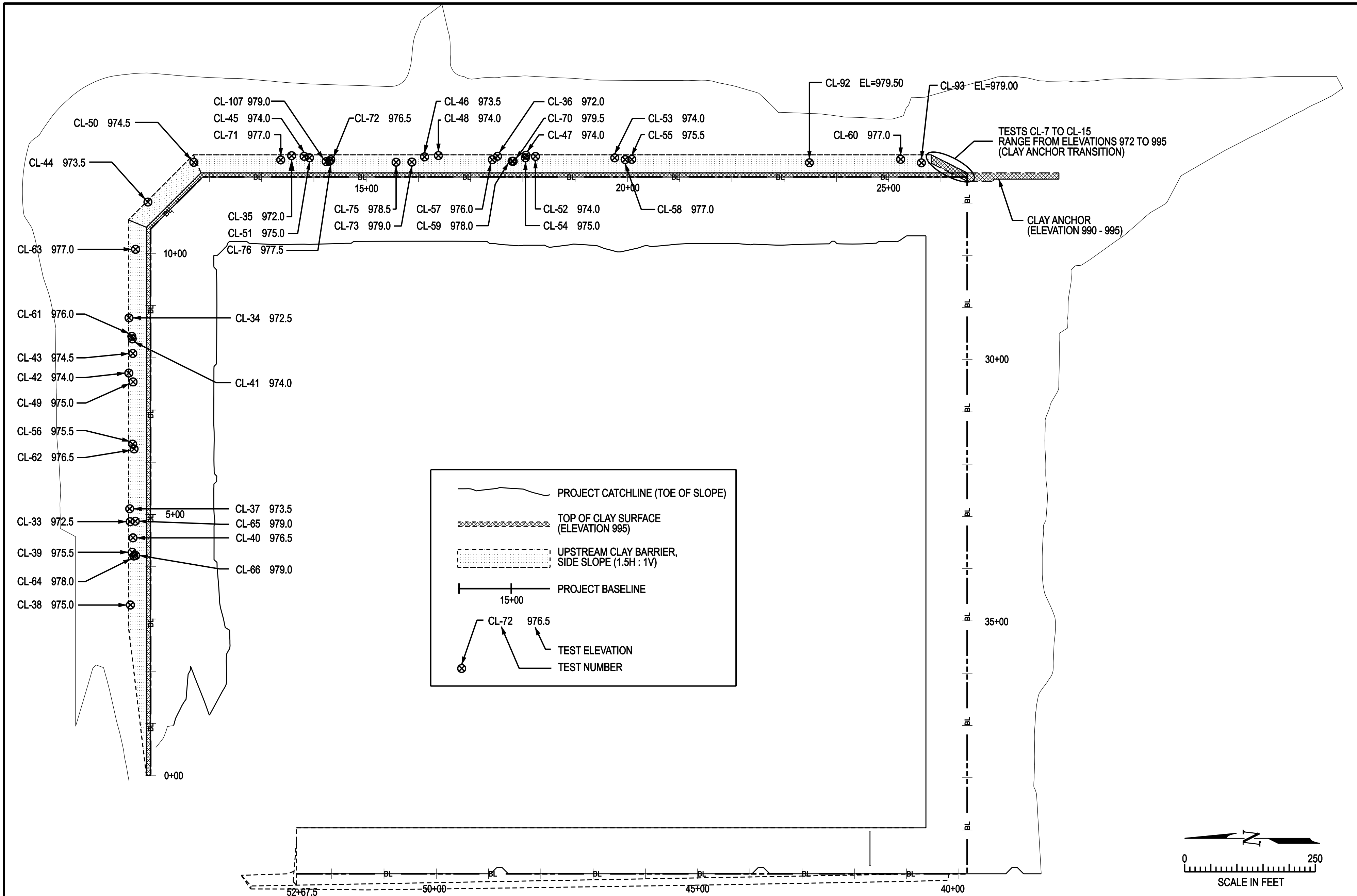
ph 952-346-3900
fx 952-346-3901

FIGURE 3: RANDOM FILL DENSITY TEST LOCATIONS (EL 985.2 - 1012)

2008 ASH CONSTRUCTION PROJECTS

File: Default , P:\Projects\XCEL\SHC0306\2008 Construction\Cert Report\Figures\Figure 3 - RF Testing Locations (EL 985.2-1012).dgn



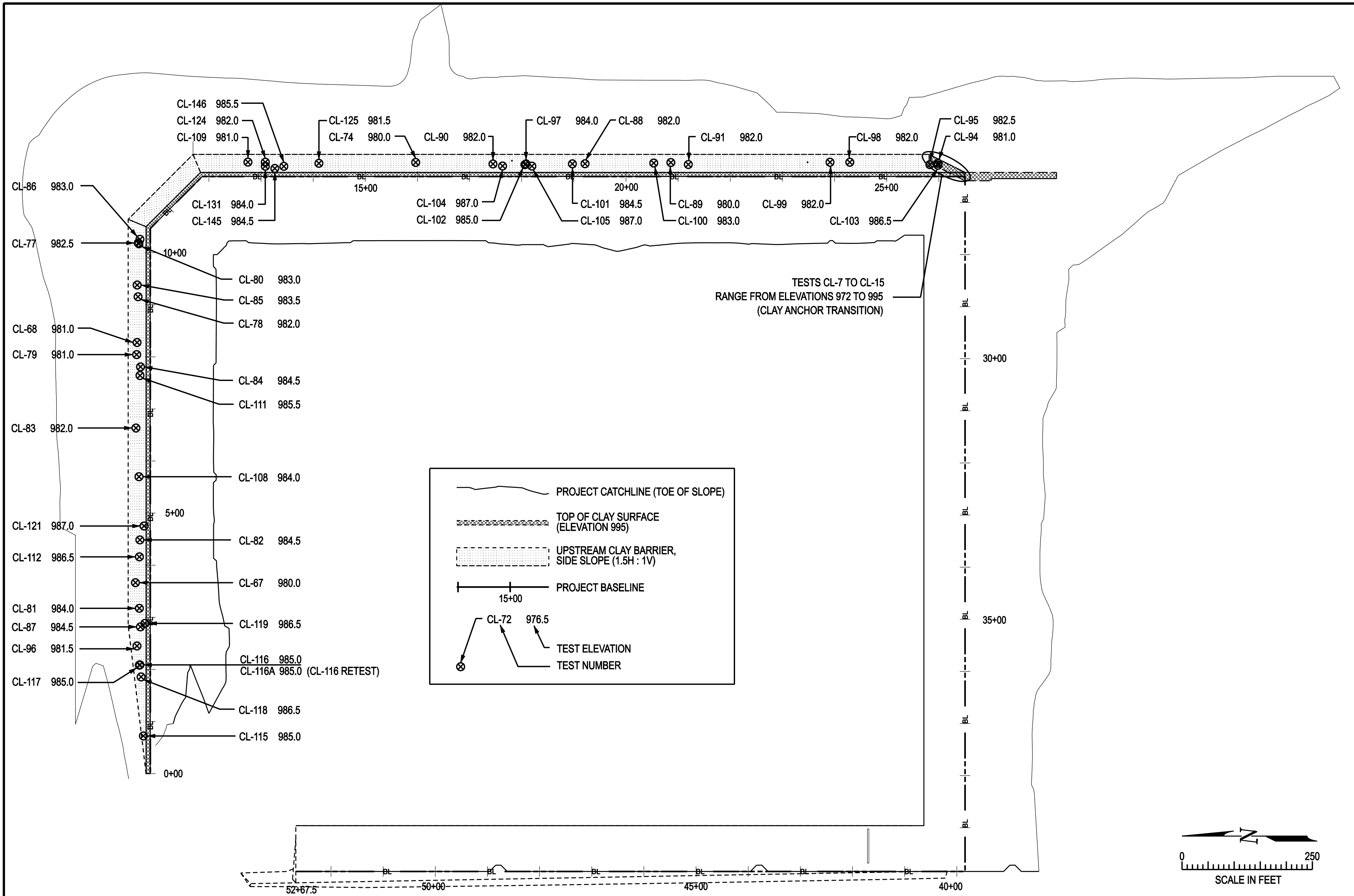
McCain and Associates,Inc.

5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FIGURE 4: CLAY DENSITY TEST LOCATIONS (EL 972.0 - 979.5)

2008 ASH CONSTRUCTION PROJECTS

File: Default , P:\Projects\XCEL\SHC0306\2008 Construction\Cert Report\Figures\Figure 4 - CL Testing Locations (EL 972 - 979.5).dgn

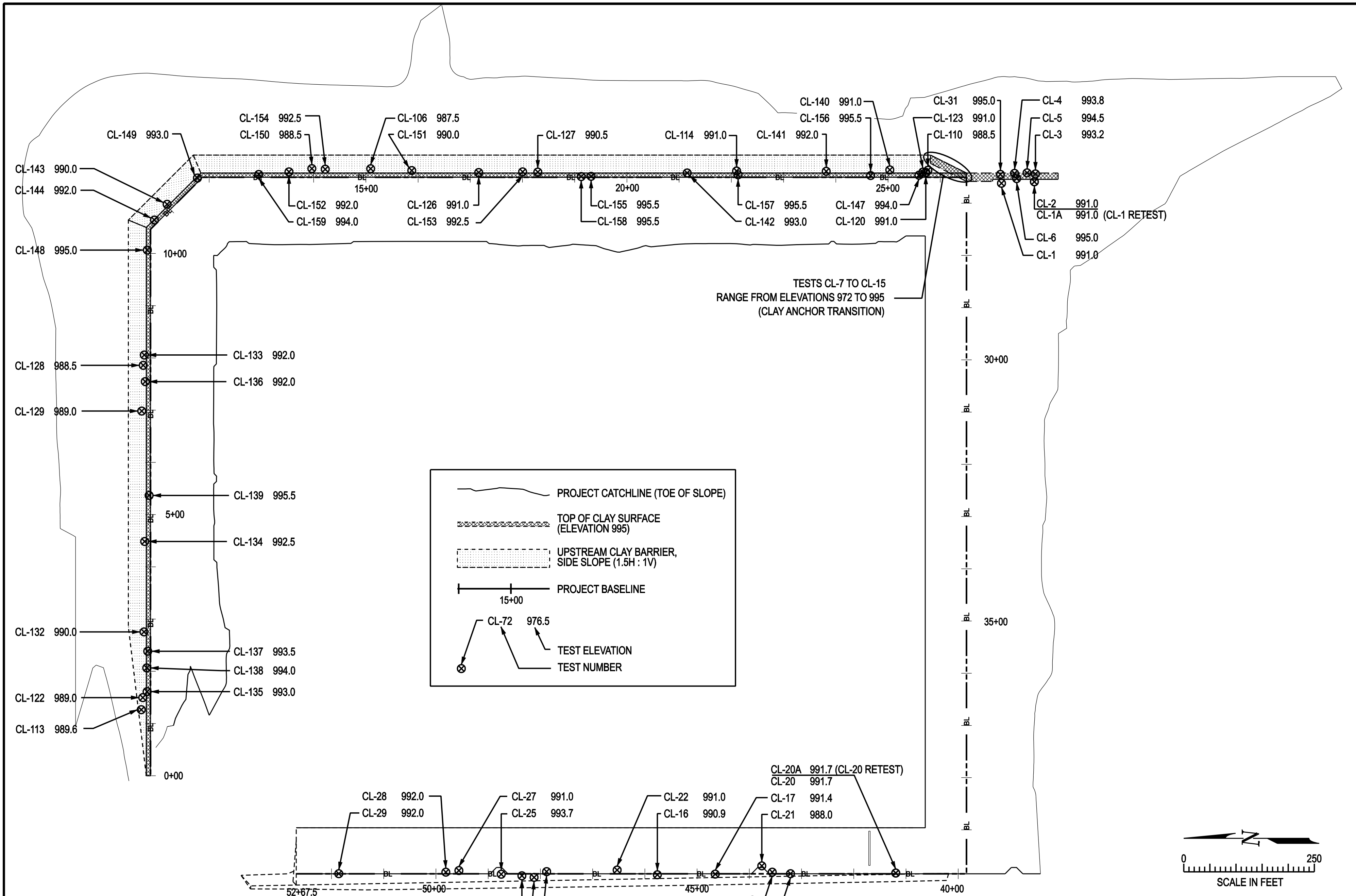


McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FIGURE 5: CLAY DENSITY TEST LOCATIONS (EL 979.6 - 987.0)

2008 ASH CONSTRUCTION PROJECTS

File: Default , P:\Projects\XCEL\SHC0306\2008 Construction\Cert Report\Figures\Figure 5 - CL Testing Locations (EL 979.6 - 987.0).dgn



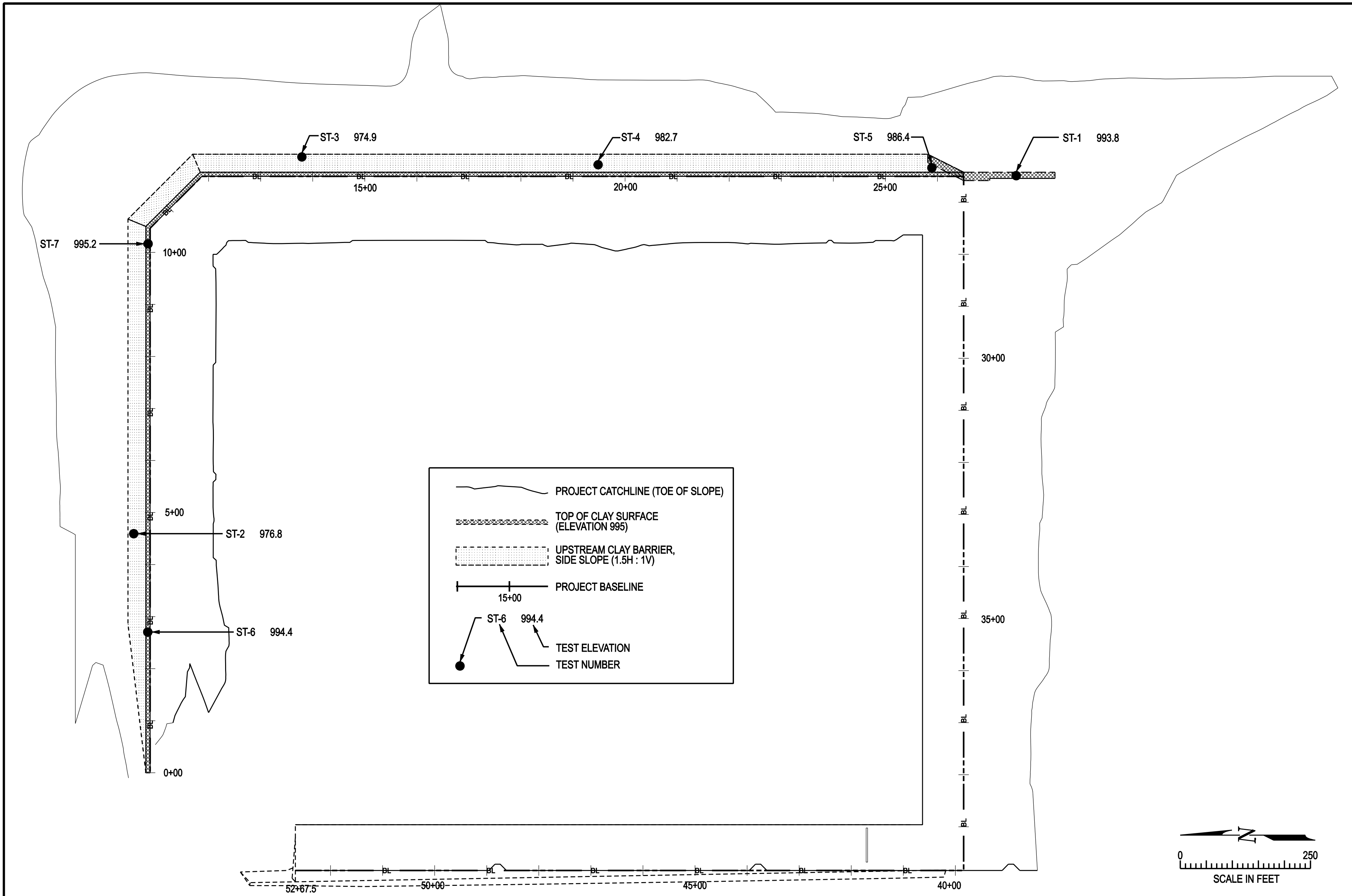
McCain and Associates, Inc.

5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FIGURE 6: CLAY DENSITY TEST LOCATIONS (EL 987.1 - 1010)

2008 ASH CONSTRUCTION PROJECTS

File: Default , P:\Projects\XCEL\SHC0306\2008 Construction\Cert Report\Figures\Figure 6 - CL Testing Locations (EL 987.1 - 1010).dgn



McCain and Associates,Inc.

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Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FIGURE 7: CLAY INDEX PROPERTIES AND PERMEABILITY TEST LOCATIONS

2008 ASH CONSTRUCTION PROJECTS

File: Default , P:\Projects\XCEL\SHC0306\2008 Construction\Cert Report\Figures\Figure 7 - CL Perm Testing Locations.dgn

Appendix A

Construction Photographs

Photo 1: Granular Drainage Screening and Stockpiling Operation, prior to Pond 3N 2008 Construction.

Photo 3: Scrapers Stripping and Stockpiling Topsoil (far pile) from Borrow Area

Photo 2: Existing Conditions, South Embankment looking West

Photo 4: Dozers Stripping Topsoil from the South Side of the Existing South Embankment


11/08/2006

Photo 5: Vibratory Smooth Roller and Dozer Constructing South Embankment, looking West

Photo 7: Topsoil Pile at the South Toe of the South Embankment, looking East

Photo 6: South Embankment Construction, looking East

Photo 8: Random Fill Excavation from the East Side of the Borrow Area, looking North


04.23.2008 08:26


05.08.2008 16:07


04.30.2008 09:41


04.30.2008 08:13

Photo 9: Excavating Random Fill to Place Clay Anchor Connection to Pond 3N at Southeast Corner, looking North

Photo 10: Bottom of Excavated Clay Anchor Trench, looking South

Photo 11: Southeast Corner Clay Anchor Transition Lift Compacted with Vibratory Sheepsfoot Roller, looking Northeast

Photo 12: Southeast Clay Anchor Lift at Elevation 990 +/-, looking North. Note: Vibratory Sheepsfoor Roller and Watering Truck in Background.


06.05.2008 08:59


06.13.2008 11:44


06.05.2008 09:52


06.10.2008 16:07

Photo 13: Braun Technician Recording Nuclear Gauge In-Place Density

Photo 15: 2' x 2' Liner Anchor Trench on North Side of Southeast Corner with Geosynthetic Clay Liner (GCL) Placed Inside, looking South.

Photo 14: 2' Deep Liner Anchor Trench at Top of West Slope in Existing Pond 2 Inclined Clay Barrier at Elevation 1010 +/-, looking South

Photo 16: Supplemental Bentonite being used at GCL Panel Overlaps.


06.10.2008 13:58


06.20.2008 10:45


06.26.2008 09:03


06.20.2008 08:27

Photo 17: GCL Deployment on West Side of Weir, looking West

Photo 18: GCL placed on West Slope and Pond 2 Decant Pipe Stub, looking Southwest

Photo 19: Geomembrane Liner Deployment on South Side of South Embankment, looking North

Photo 20: Composite Liner placed in 2' Deep Anchor Trench in Clay Anchor in Southeast Corner at Elevation 995, looking North. Note: Geomembrane is underlain by GCL.


06.21.2008 09:26


06.20.2008 14:22


07.09.2008 09:23


06.21.2008 19:55

Photo 21: Composite Liner Construction on East Side of Weir, looking North. Note: Exposed Existing Liner shown in Background

Photo 23: Connecting Existing Flap (Right Side) to New Lower Flap (Left Side), looking Southwest.

Photo 22: Installing Geomembrane Portion of Lower Flap in Weir, looking Northeast Note: Lower Flap Consists of GCL over Geomembrane

Photo 24: Dozer spreading GDM over GCL on Lower Flap, looking West. Note: GCL is underlain by Geomembrane.


06.20.2008


07.15.2008 19:09


06.24.2008 07:28


07.15.2008 19:58

Photo 25: GCL placed around Existing Pond 2 Inclined Dewatering Well, looking North

Photo 27: Worker Fusing New Geomembrane (Right) to Existing Geomembrane (Left) with Extrusion Welder

Photo 26: Geomembrane Boot Placed around Pond 2 Inclined Dewatering Well

Photo 28: Non-Destructive Testing of Hot-Wedge Welded Seam. Note: Air Pressure Test Requires Maintaining 30 psi for 5 Minutes on every Seam.


07.09.2008 15:37


07.11.2008 08:58


07.02.2008 14:29


05.20.2005

Photo 29: Dozer placing GDM on South Side of Weir, looking Southeast

Photo 31: Liner Leak Testing Technicians Surveying the West Slope Composite Liner, looking South.

Photo 30: Dozers spreading Granular Drainage Material on West Slope Composite Liner, looking North.

Photo 32: Liner Leak Test Calibration Hole. Hole is placed in Liner Prior to Leak Testing.


06.25.2008 08:59


07.28.2008 14:34


07.08.2008 13:56


CAL-6
07.29.2008 15:56

Photo 33: Worker using "Jumping Jack" to Compact Clay in Southeast Anchor Trench, looking South

Photo 35: Dozer and Vibratory Smooth Drum Roller Spreading and Compacting Random Fill in Weir, looking East

Photo 34: Worker using Hand Operated Sheepsfoot to Compact Clay in West Slope Anchor Trench, looking South.

Photo 36: Installing GCL Portion of Upper Flap in Weir, looking West.


06.24.2008 07:49


08.04.2008 14:32


07.30.2008 09:54


08.11.2008 11:16

Photo 37: 1-foot of Insulation placed over Pond 2 Inclined Dewatering Well, looking Southwest.

Photo 38: Installing 18" Polyethylene (PE) Decant Pipe from Pond 2, looking North

Photo 39: Pond 2 Decant Pipe Alignment, looking North.

Photo 40: Pond 2 Decant Pipe Discharge Flume at Southwest Corner of Pond 3N, looking Southeast.


08.06.2008 10:58


08.14.2008 18:52


VEIT
330C
08.14.2008 11:24


08.15.2008 11:56

Photo 41: Fusing and Installing Decant Pipe

Photo 43: Pond 3N Interior Berm and Bench Construction (Constructed out of Bottom Ash and Random Fill), looking Northeast

Photo 42: Excavating Bottom Ash Material from Bottom Ash Pond, looking Southeast.

Photo 44: Exposing Existing Upstream Clay Barrier on North Embankment, looking East.


08.15.2008 10:34


09.15.2008 10:46


09.10.2008 11:06


09.15.2008 11:33

Photo 45: Scarifying Clay with Chisel Plow, looking Southwest.

Photo 47: Foreground: Vibratory Sheepsfoot Roller Compacting Upstream Clay Barrier. Background: Dozer Spreading Clay, looking West.

Photo 46: Left: Belly Dump Hauling Clay along Upstream Clay Barrier. Right: 1.5H to 1V Interior Berm, looking Southeast.

Photo 48: Backhoe Bucket Removing Thin-Walled Tube Sample from Upstream Clay Barrier.


CATERPILLAR
09.18.2008 14:25


09.18.2008 09:11


10.21.2008 16:07


09.17.2008 18:10

Photo 49: Backhoe pulling Clay up from the Exterior of the Upstream Clay Barrier (Upstream Clay Barrier is generally construced wider than 8 feet to allow Belly Dump Semis room to travel), Vibratory Sheepsfoot Roller Compacting pulled up Clay. Looking East.

Photo 50: Foreground: East Side 8" PE Pipe Clean Out Extension with Electrofusion Coupler (Culvert used to temporarily prop Pipe while constructing Interior Berm). Background: Dozer spreading Random Fill along Interior Berm, looking North

Photo 51: Foreground: Upstream Clay Barrier Smooth Rolled to Final Elevation (995). Background: Backhoe Shaping Interior Berm at a 2H to 1V, looking South.

Photo 52: Vibratory Smooth Drum Roller Compacting Bottom Ash/Random Fill along Discharge Structure Access Road, looking East.


10.14.2008 10:51

10.29.2008 16:08

09.17.2008 17:17

11.04.2008 14:18

Photo 53: Two Rings of Mastic Applied to Northeast Dewatering Manhole before Installing the next Section.

Photo 55: North Embankment Sedimentation Pond, looking East

Photo 54: East Ramp Manhole with 24 inch Corrugated Metal Pipe (CMP) Outlet, looking East.

Photo 56: East Embankment Smooth Rolled to Final Elevation (999), looking North


RCP.STACY.MN
05.09.2008 10:21


11.04.2008 14:22


10.28.2008 11:16


11.04.2008 08:50

Photo 57: Dozers spreading 6 inches of Topsoil along East Embankment, looking North.

Photo 59: Foreground: Class II Riprap placed around East Ramp Stormwater Manhole. Background Left: Straw-Coconut Erosion Blanket placed on 3H to 1V Slope. Background Right: 12 feet of Turfmat placed along Ramp Ditch, looking North

Photo 58: Dozer spreading 6 inches of Class 5 along South Embankment, looking East.

Photo 60: Foreground: Straw-Coconut Erosion Blanket placed on East Slope. Foreground Right: 15 foot Bench between East Embankment Toe and Borrow Area (Extends around to North Embankment) Background: Borrow Area, looking North.


11.05.2008 14:26


11.14.2008 15:20


08.21.2008 07:30


11.14.2008 13:48

Appendix B

Random Fill Test Reports

Random Fill Standard Proctor Test Reports
Random Fill Density Test Reports

Random Fill Standard Proctor Test Reports

Moisture-Density Relationship

Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		Not Tested	P-1	N/A	N/A	4.6	1.4

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 108.3 pcf Optimum moisture = 13.8 %	SP - POORLY GRADED SAND, medium-to coarse-grained, with trace Gravel, brown

Project No.: SC-08-01145 **Client:** Northern States Power Company

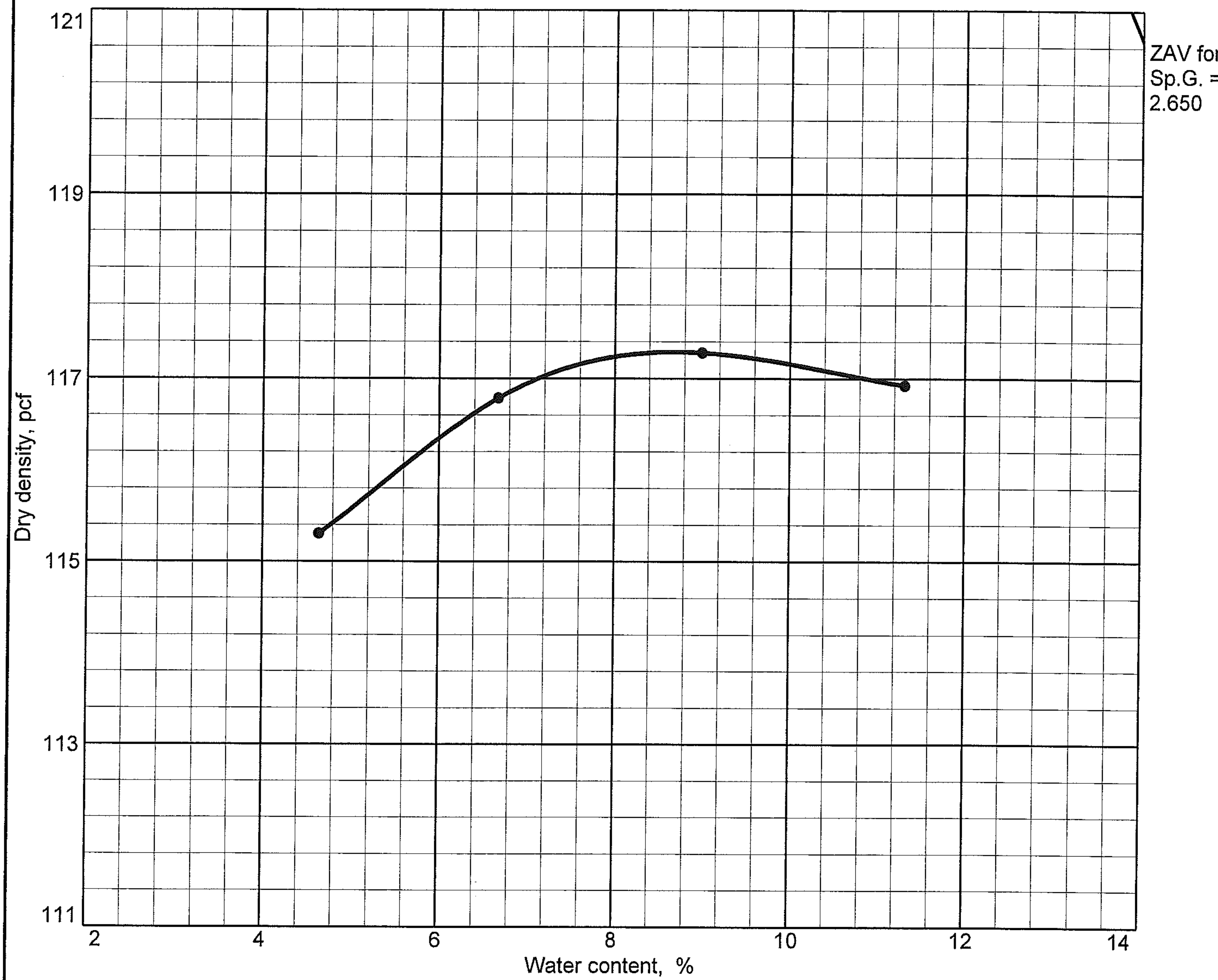
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-01

Remarks:

BRAUN INTERTEC

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard
Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		Not Tested	P-2	N/A	N/A		2.5

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 120.0 pcf Optimum moisture = 8.1 %	SP - POORLY GRADED SAND, fine-to medium-grained, with GRAVEL, brown

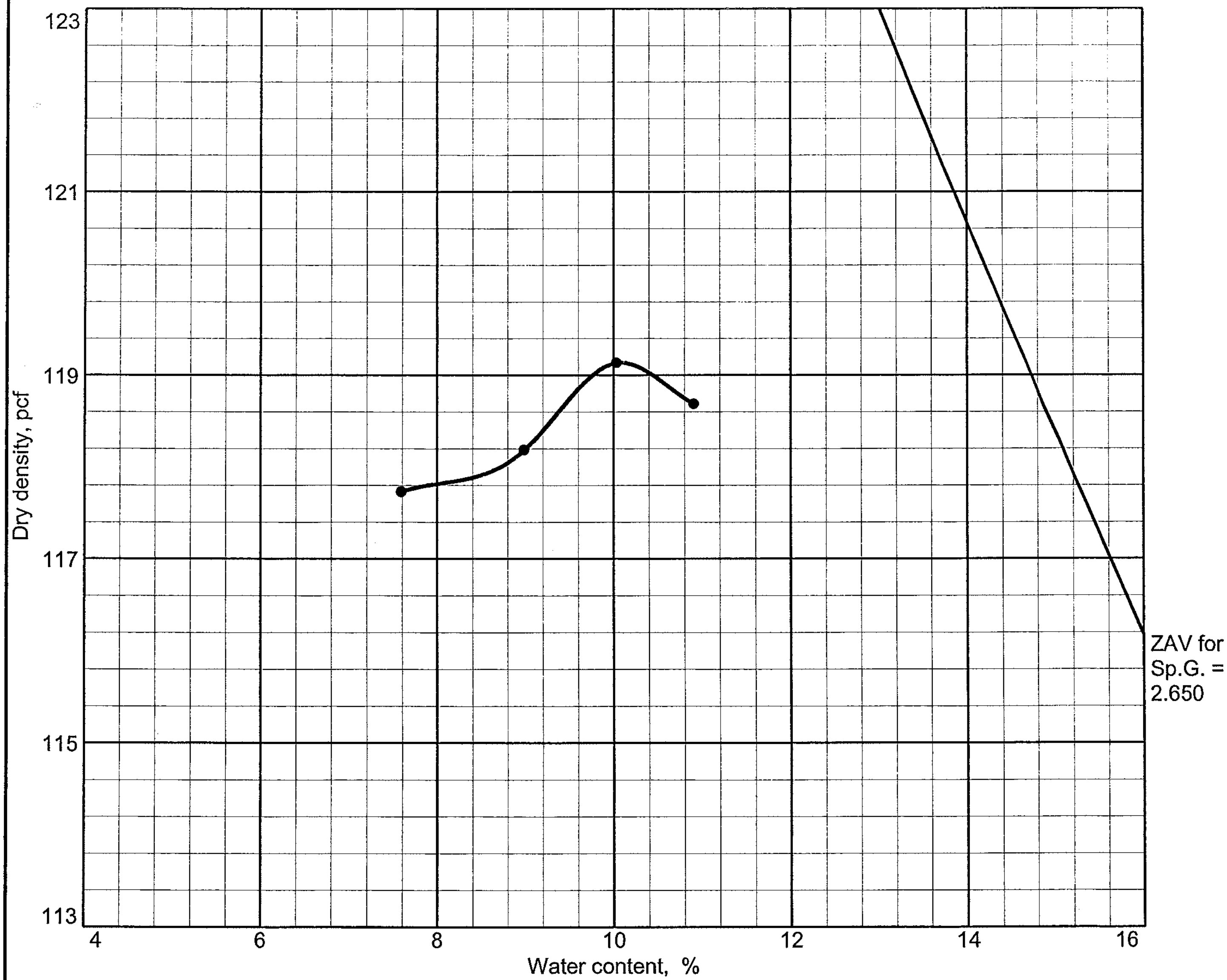
Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-02

Remarks:

BRAUN INTERTEC

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard
Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		Not Tested	P-3	N/A	N/A		2.6

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 123.4 pcf Optimum moisture = 8.9 %	SP - POORLY GRADED SAND, medium-to coarse-grained, with GRAVEL, brown

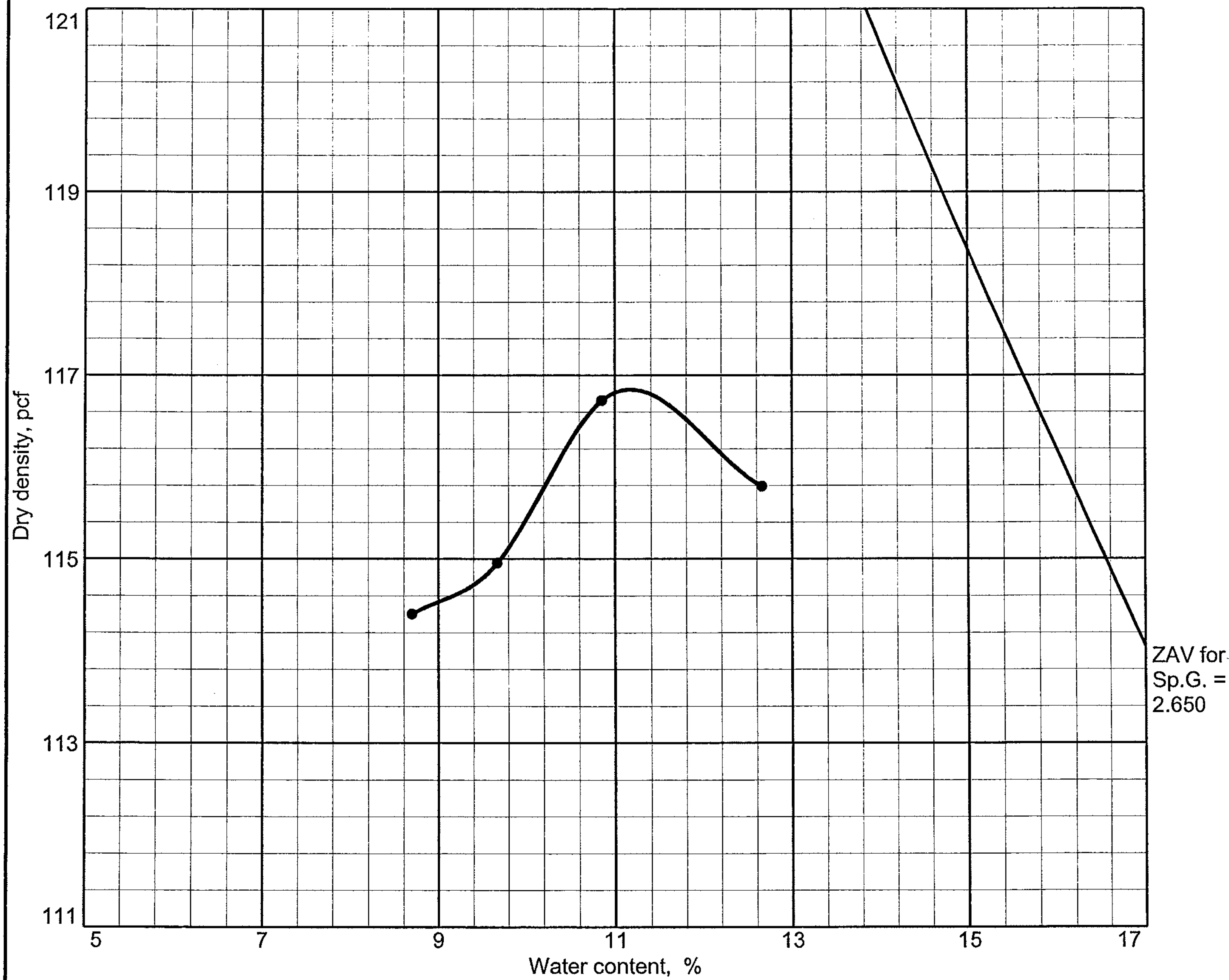
Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-03

Remarks:

BRAUN INTERTEC

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard
Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		Not Tested	P-4	N/A	N/A		2.5

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 119.4 pcf Optimum moisture = 10.4 %	SP - POORLY GRADED SAND, medium-to coarse-grained, with GRAVEL, brown

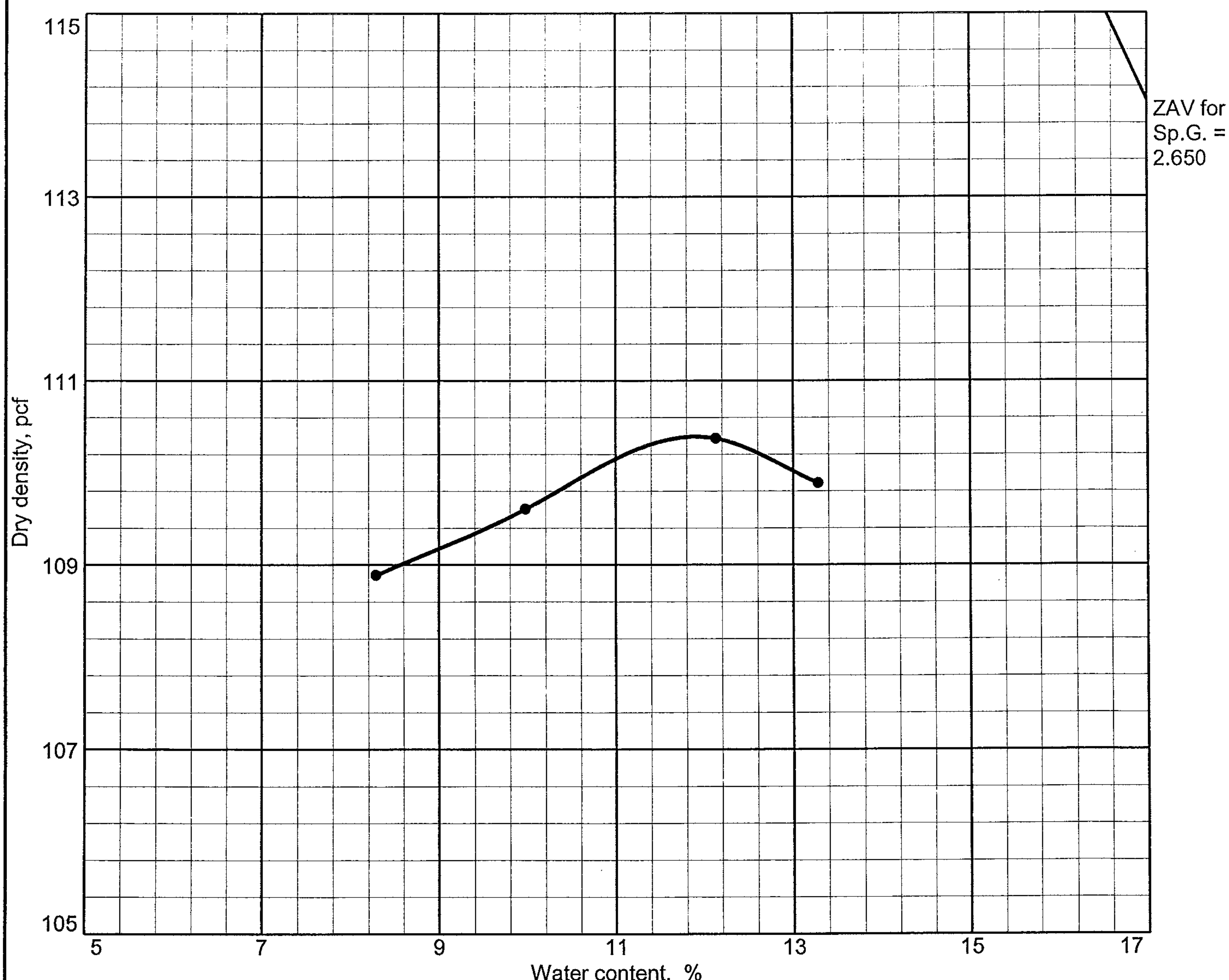
Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-04

Remarks:

BRAUN INTERTEC

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		Not Tested	P-5	N/A	N/A	3.2	2.2

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 110.4 pcf Optimum moisture = 11.9 %	SP - POORLY GRADED SAND, fine-to medium-grained, with trace Gravel, brown

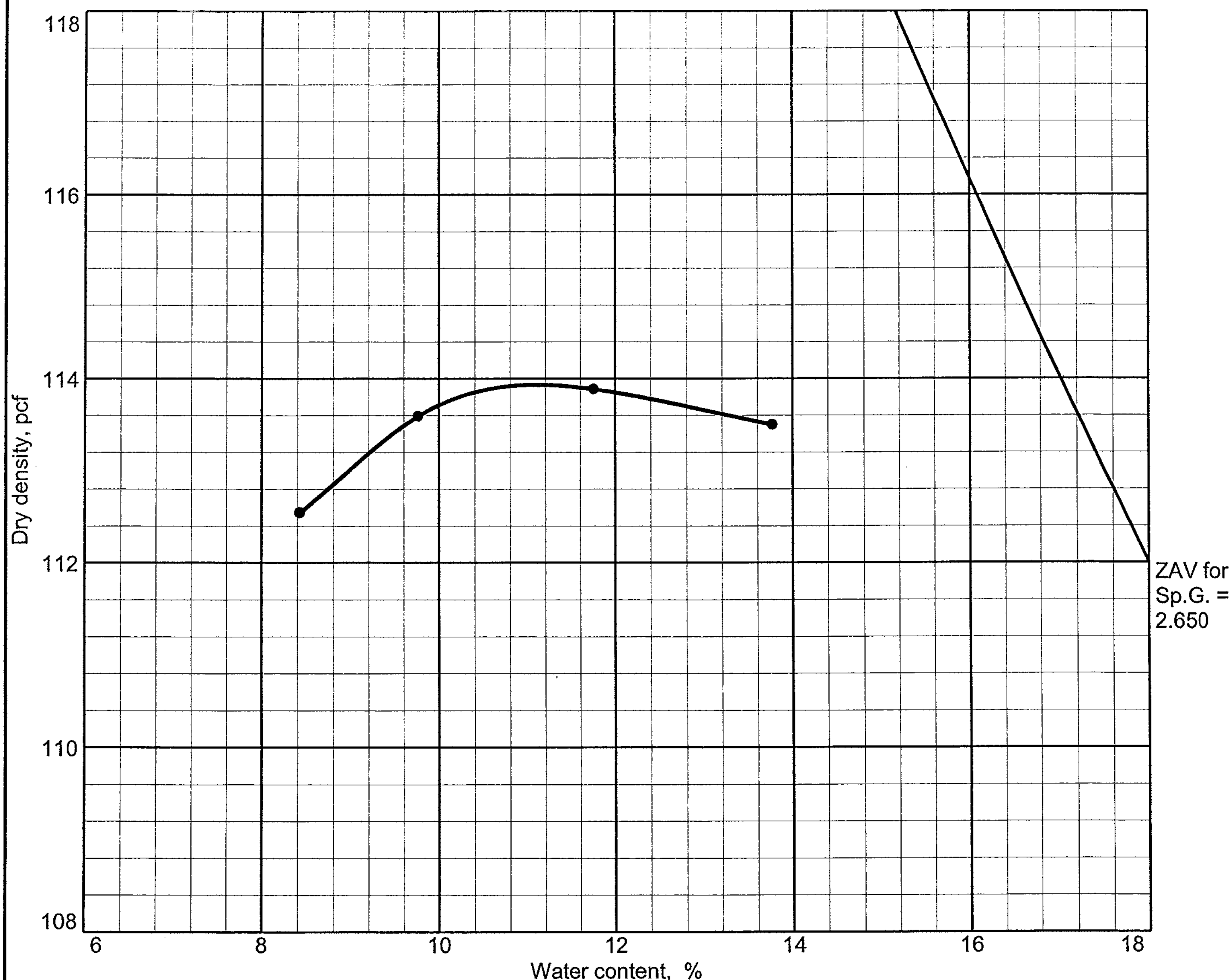
Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-05

Remarks:

BRAUN INTERTEC

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard
Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		Not Tested	P-1	N/A	N/A		1.7

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 116.3 pcf Optimum moisture = 10.4 %	SP - POORLY GRADED SAND, medium-to coarse-grained, with little Gravel, brown

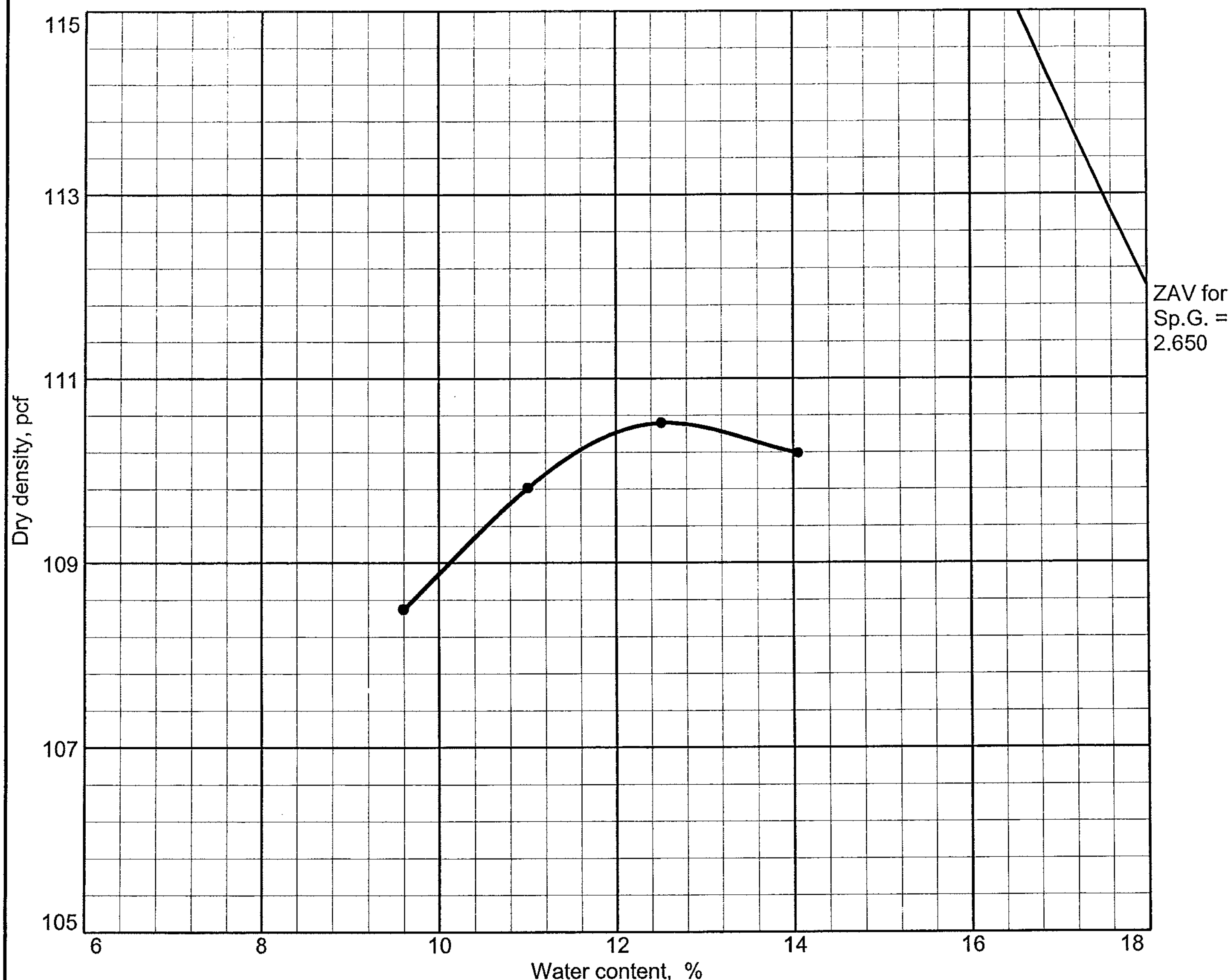
Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-06

Remarks:

BRAUN INTERTEC

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		Not Tested	P-7	N/A	N/A	2.3	1.7

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 110.5 pcf Optimum moisture = 12.6 %	SP - POORLY GRADED SAND, fine-to medium-grained, with trace Gravel, brown

Project No.: SC-08-01145 **Client:** Northern States Power Company

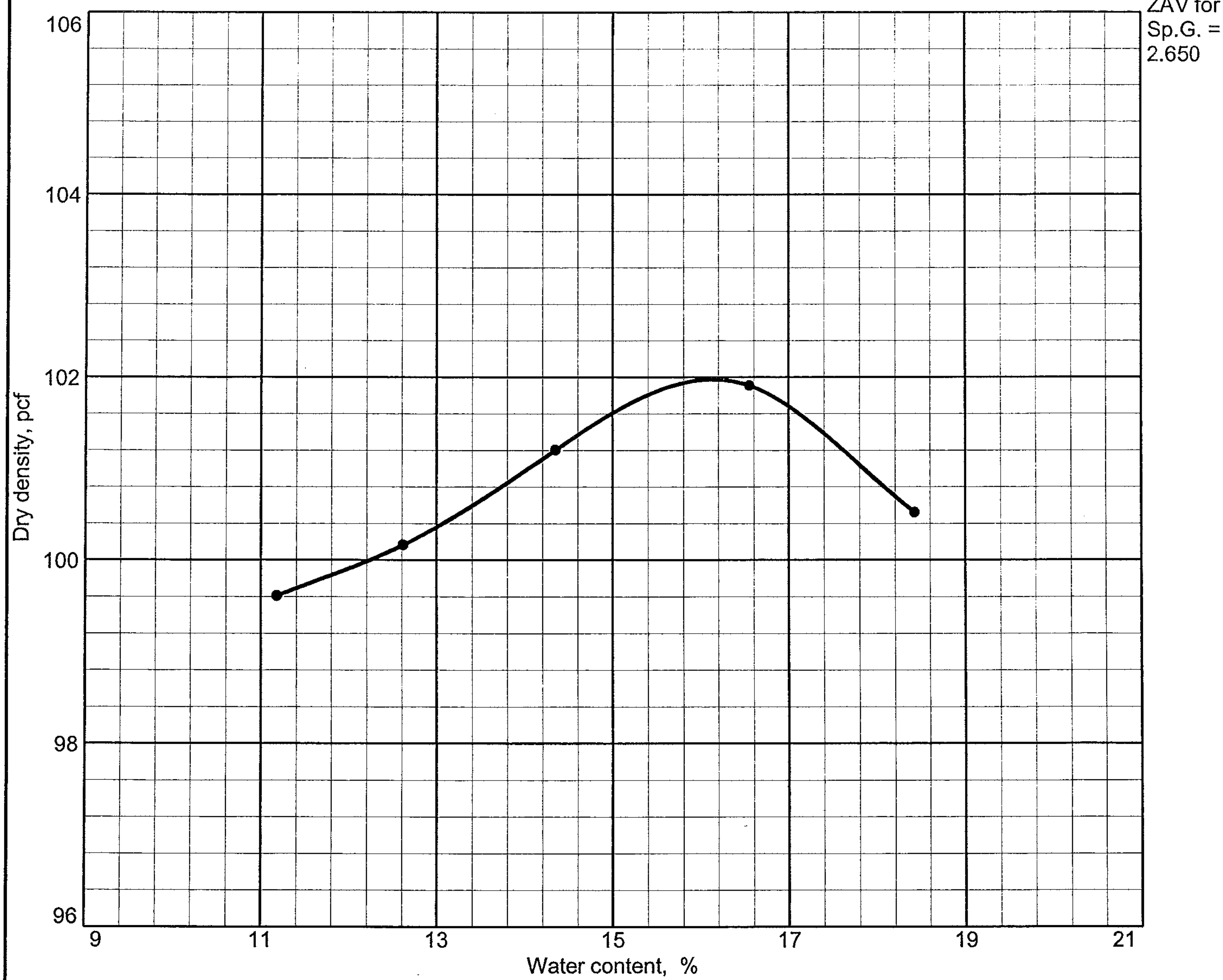
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-07

Remarks:

BRAUN INTERTEC

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		Not Tested	P-8	N/A	N/A	1.1	3.2

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 102.0 pcf Optimum moisture = 16.1 %	SP - POORLY GRADED SAND, fine-to medium-grained, with trace Gravel, light brown

Project No.: SC-08-01145 **Client:** Northern States Power Company

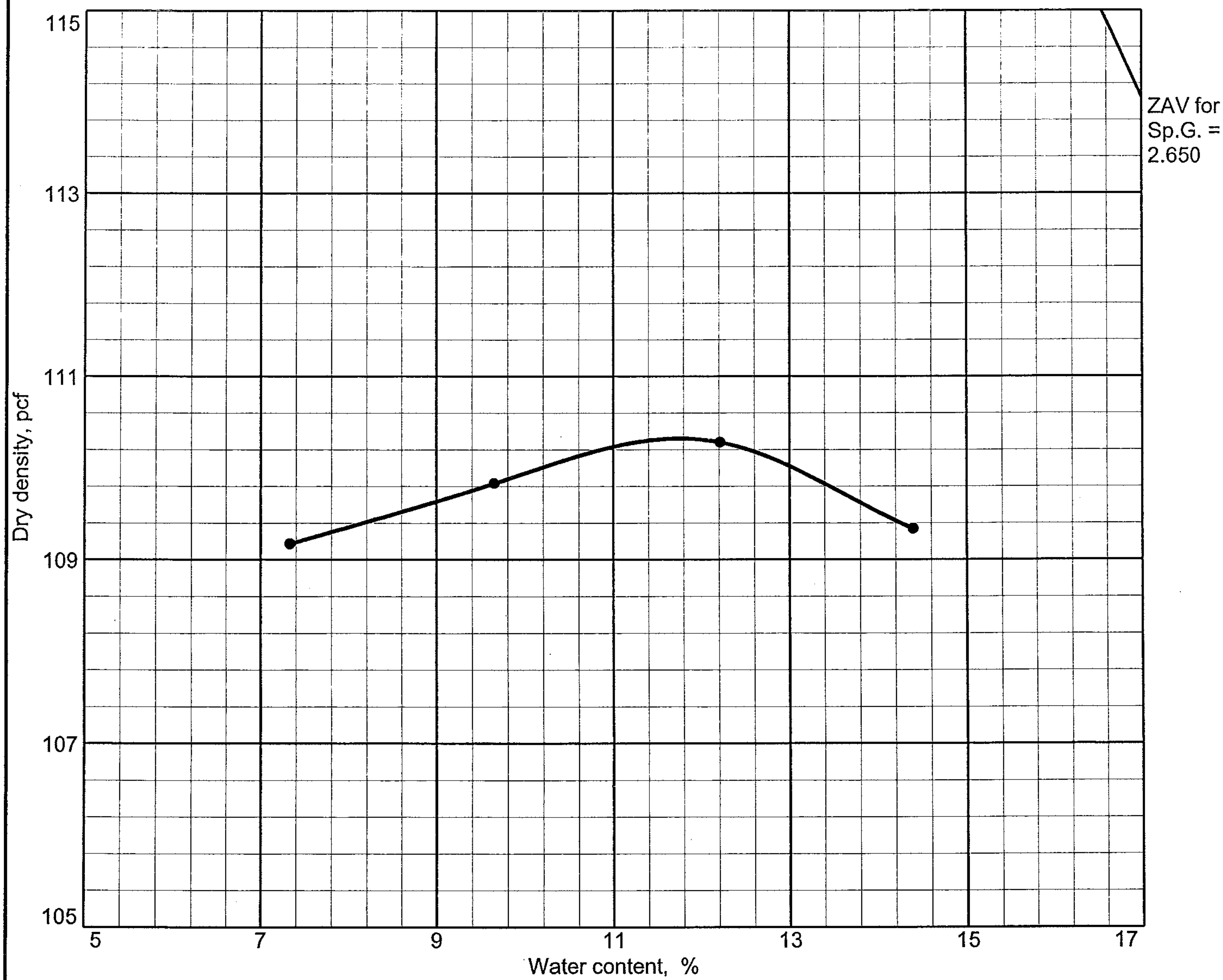
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-08

Remarks:

BRAUN INTERTEC

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		Not Tested	P-9	N/A	N/A	0.4	2.5

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 110.3 pcf Optimum moisture = 11.8 %	SP - POORLY GRADED SAND, fine-to medium-grained, with trace Gravel, brown

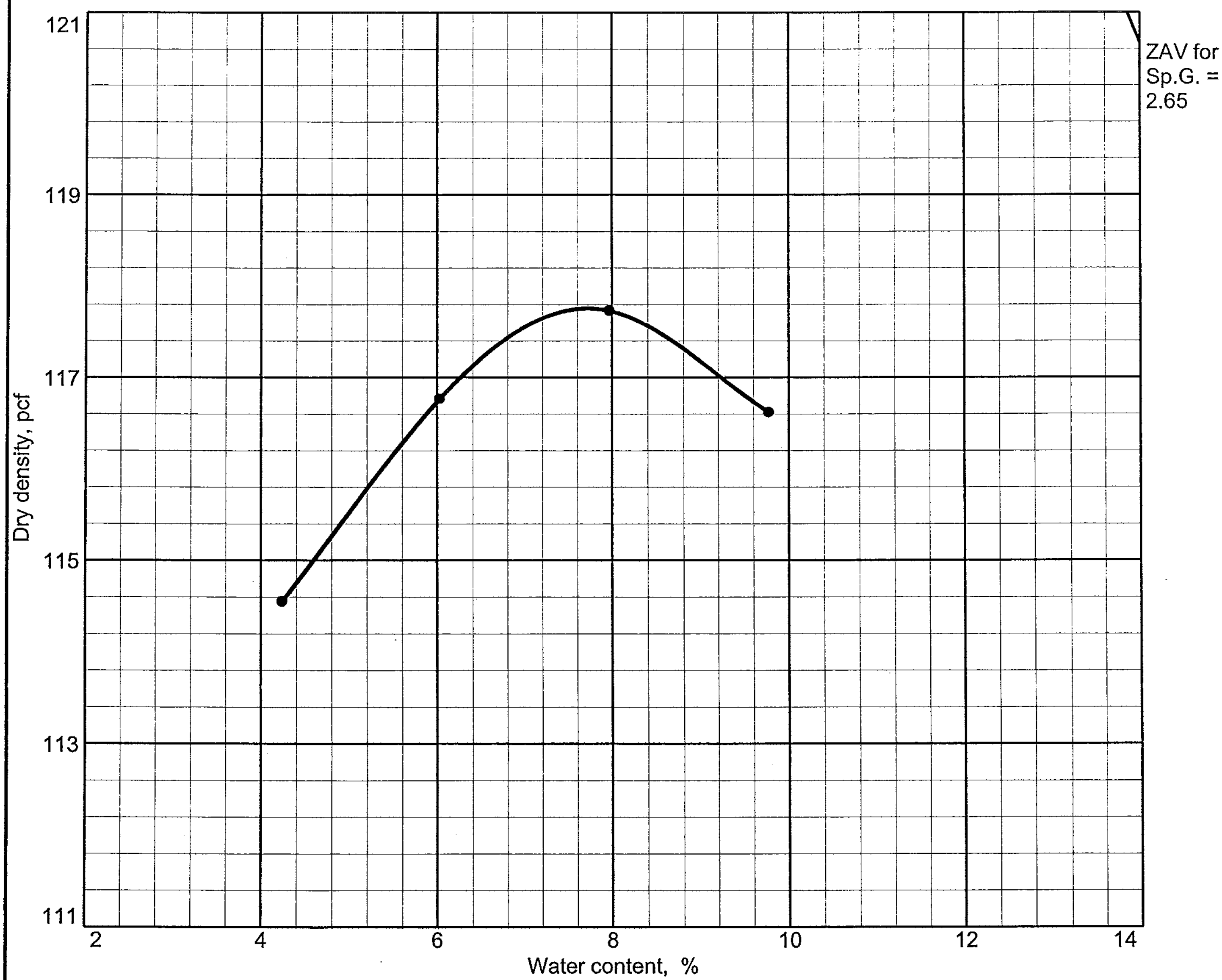
Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-09

BRAUN INTERTEC

Remarks:

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard
Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		2.5	2.65	N/A	N/A		.5

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 119.6 pcf Optimum moisture = 7.4 %	SP - POORLEY GRADED SAND, coarse-grained, with GRAVEL, brown

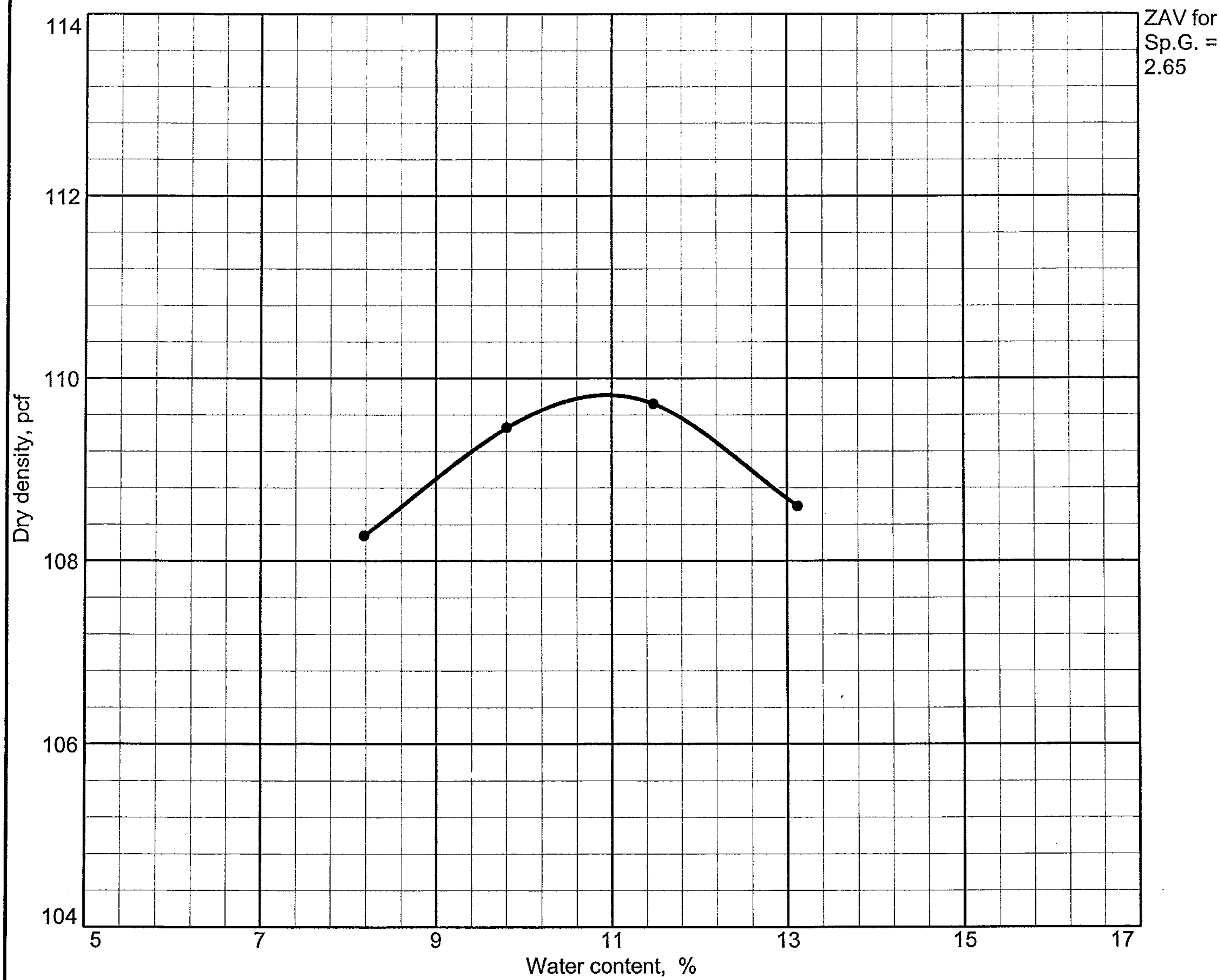
Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-10

Remarks:

BRAUN INTERTEC

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard
Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP		8.2	2.65	N/A	N/A		1.9

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 112.7 pcf Optimum moisture = 10.2 %	SP - POORLEY GRADED SAND, fine-to medium-grained, with little Gravel, brown

Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PRF-11

BRAUN INTERTEC

Remarks:

Random Fill Density Test Reports

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: April 29, 2008 **Project:** SC-08-01145 **Report:** 1

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-1	4/22/08	PRF-02	SP	8.1	120.0	7	123	103	95	A
RF-2	4/22/08	PRF-03	SP	8.1	120.0	4	120	100	95	A
RF-3	4/22/08	PRF-04	SP	8.1	120.0	4	120	100	95	A
RF-4	4/23/08	PRF-04	SP	10.4	119.4	5	114	95	95	A
RF-5	4/23/08	PRF-11	SP	10.2	112.7	7	113	100	95	A
RF-6	4/23/08	PRF-03	SP	8.9	123.4	4	119	96	95	A
RF-7	4/24/08	PRF-02	SP	8.1	120.1	11	116	97	95	A
RF-8	4/24/08	PRF-02	SP	8.1	120.1	11	117	97	95	A
RF-9	4/24/08	PRF-03	SP	8.9	123.4	4	122	99	95	A
RF-10	4/24/08	PRF-04	SP	10.4	119.4	5	115	96	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-1	N863665.6, E2031545.7	951.7
RF-2	N863650.6, E2031733.6	949.0
RF-3	N863561.2, E2031878.8	946.6
RF-4	N863767.0, E2030793.0	961.0
RF-5	N863668.0, E2031132.0	953.0
RF-6	N863673.0, E2031395.0	955.5
RF-7	N865503.0, E2031364.0	970.0
RF-8	N865521.0, E2031707.0	966.0
RF-9	N863787.0, E2031801.0	960.0
RF-10	N863754.0, E2031589.0	957.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: April 29, 2008 **Project:** SC-08-01145 **Report:** 2

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-11	4/24/08	PRF-06	SP	10.4	116.3	8	113	97	95	A
RF-12	4/24/08	PRF-06	SP	10.4	116.3	7	113	97	95	A
RF-13	4/25/08	PRF-03	SP	8.9	123.4	4	123	99	95	A
RF-14	4/25/08	PRF-03	SP	8.9	123.4	7	123	99	95	A
RF-15	4/25/08	PRF-03	SP	8.9	123.4	4	122	99	95	A
RF-16	4/25/08	PRF-03	SP	8.9	123.4	4	125	101	95	A
RF-17	4/28/08	PRF-03	SP	8.9	123.4	6	121	98	95	A
RF-18	4/28/08	PRF-03	SP	8.9	123.4	10	122	99	95	A
RF-19	4/29/08	PRF-02	SP	8.1	120.0	5	116	97	95	A
RF-20	4/29/08	PRF-11	SP	10.7	112.7	7	113	100	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-11	N863782.0, E2031257.0	958.5
RF-12	N863745.0, E2030985.0	961.0
RF-13	N865540.0, E2031861.0	965.5
RF-14	N863737.0, E2031107.0	959.5
RF-15	N863724.0, E2031346.0	958.0
RF-16	N863528.0, E2031942.0	953.0
RF-17	N865506.6, E2032030.4	962.5
RF-18	N863697.1, E2031465.1	957.8
RF-19	N865297.8, E2032156.8	966.5
RF-20	N865040.7, E2032140.5	971.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 2, 2008 **Project:** SC-08-01145 **Report:** 3

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-21	4/29/08	PRF-02	SP	8.1	120.0	6	116	96	95	A
RF-22	4/29/08	PRF-11	SP	10.7	112.7	6	113	100	95	A
RF-23	4/29/08	PRF-03	SP	8.9	123.4	4	119	96	95	A
RF-24	4/29/08	PRF-03	SP	8.9	123.4	2	125	101	95	A
RF-25	4/30/08	PRF-03	SP	8.9	123.4	7	126	102	95	A
RF-26	4/30/08	PRF-02	SP	8.9	123.4	7	124	100	95	A
RF-27	4/30/08	PRF-02	SP	8.1	120.0	5	115	96	95	A
RF-28	4/30/08	PRF-02	SP	8.1	120.0	4	118	98	95	A
RF-29	4/30/08	PRF-02	SP	8.1	120.0	5	118	98	95	A
RF-30	4/30/08	PRF-02	SP	8.1	120.0	5	118	98	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications:
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-21	N863576.2, E2031938.1	956.8
RF-22	N863576.2, E2031888.2	956.8
RF-23	N863779.6, E2031318.2	960.8
RF-24	N863796.2, E2030917.3	965.1
RF-25	N865141.8, E2032125.1	972.3
RF-26	N865498.2, E2032118.9	965.2
RF-27	N863679.4, E2031765.0	956.7
RF-28	N863701.5, E2031541.7	959.0
RF-29	N863755.8, E2031185.1	962.5
RF-30	N863748.4, E2030922.7	966.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 2, 2008 **Project:** SC-08-01145 **Report:** 4

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-31	4/30/08	PRF-03	SP	8.9	123.4	6	123	100	95	A
RF-32	4/30/08	PRF-03	SP	8.9	123.4	7	123	100	95	A
RF-33	4/30/08	PRF-03	SP	8.9	123.4	4	120	97	95	A
RF-34	4/30/08	PRF-06	SP	10.4	116.3	5	115	98	95	A
RF-35	4/30/08	PRF-02	SP	8.1	120.0	4	118	98	95	A
RF-36	4/30/08	PRF-06	SP	10.4	116.3	3	113	97	95	A
RF-37	5/2/08	PRF-03	SP	8.9	123.4	12	122	99	95	A
RF-38	5/2/08	PRF-03	SP	8.9	123.4	7	125	101	95	A
RF-39	5/2/08	PRF-03	SP	8.9	123.4	4	119	96	95	A
RF-40	5/2/08	PRF-03	SP	8.9	123.4	8	121	98	95	A

Key: N = Nuclear, ASTM D 2922
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* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-31	N865219.0, E2032123.0	973.8
RF-32	N865507.0, E2031984.0	966.0
RF-33	N863737.0, E2031687.0	958.2
RF-34	N863781.0, E2031486.0	961.5
RF-35	N863792.0, E2031244.0	964.5
RF-36	N863710.0, E2030853.0	969.4
RF-37	N865497.0, E2031854.0	969.0
RF-38	N865481.0, E2031641.0	972.3
RF-39	N863299.0, E2032152.0	963.5
RF-40	N863512.0, E2031989.0	960.3

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 2, 2008 **Project:** SC-08-01145 **Report:** 5

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-41	5/2/08	PRF-02	SP	8.1	120.0	5	115	96	95	A
RF-42	5/2/08	PRF-02	SP	8.1	120.0	4	118	98	95	A
RF-43	5/5/08	PRF-02	SP	8.1	120.0	7	117	98	95	A
RF-44	5/5/08	PRF-06	SP	10.4	116.3	11	112	96	95	A
RF-45	5/5/08	PRF-02	SP	8.1	120.0	7	118	98	95	A
RF-46	5/5/08	PRF-03	SP	8.9	123.4	8	119	96	95	A
RF-47	5/5/08	PRF-03	SP	8.9	123.4	4	123	100	95	A
RF-48	5/6/08	PRF-02	SP	8.1	120.0	10	118	98	95	A
RF-49	5/6/08	PRF-11	SP	10.2	112.7	8	111	98	95	A
RF-50	5/6/08	PRF-10	SP	7.4	119.6	6	116	97	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-41	N863698.0, E2031642.0	960.7
RF-42	N863707.0, E2031221.0	966.2
RF-43	N865512.0, E2031777.0	975.5
RF-44	N865492.0, E2032008.0	974.5
RF-45	N863755.0, E2031689.0	962.5
RF-46	N863810.0, E2031429.0	964.4
RF-47	N863858.0, E2030805.0	972.0
RF-48	N865414.4, E2032113.5	975.3
RF-49	N865504.0, E2031539.0	976.0
RF-50	N863744.0, E2031814.0	960.6

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303
Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 7, 2008 **Project:** SC-08-01145 **Report:** 6

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-51	5/6/08	PRF-11	SP	10.2	112.7	11	111	98	95	A
RF-52	5/6/08	PRF-01	SP	13.8	108.3	14	105	97	95	A
RF-53	5/7/08	PRF-07	SP	12.6	110.5	9	108	98	95	A
RF-54	5/7/08	PRF-11	SP	10.7	112.7	10	110	98	95	A
RF-55	5/7/08	PRF-06	SP	10.4	116.3	9	114	98	95	A
RF-56	5/7/08	PRF-07	SP	12.6	110.5	12	109	99	95	A
RF-57	5/7/08	PRF-07	SP	12.6	110.5	8	110	100	95	A
RF-58	5/8/08	PRF-02	SP	8.1	120.0	6	117	98	95	A
RF-59	5/8/08	PRF-06	SP	10.4	116.3	6	113	97	95	A
RF-60	5/8/08	PRF-06	SP	10.4	116.3	9	116	100	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-51	N863721.0, E2031454.0	966.7
RF-52	N863784.0, E2030743.5	974.2
RF-53	N865347.0, E2032118.0	977.0
RF-54	N865537.0, E2031973.0	973.5
RF-55	N863808.0, E2031296.0	970.5
RF-56	N863789.0, E2031050.0	973.5
RF-57	N863747.0, E2030817.0	975.5
RF-58	N864949.0, E2032099.0	977.0
RF-59	N865428.0, E2032038.0	978.0
RF-60	N865446.0, E2031307.0	979.3

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 8, 2008 **Project:** SC-08-01145 **Report:** 7

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-61	5/8/08	PRF-02	SP	8.1	120.0	12	116	97	95	A
RF-62	5/8/08	PRF-02	SP	8.1	120.0	6	115	96	95	A
RF-63	5/8/08	PRF-10	SP	7.4	119.6	7	114	95	95	A
RF-64	5/9/08	PRF-02	SP	8.1	120.0	7	118	98	95	A
RF-65	5/9/08	PRF-02	SP	8.1	120.0	5	118	98	95	A
RF-66	5/9/08	PRF-05	SP	11.9	110.4	13	112	101	95	A
RF-67	5/9/08	PRF-05	SP	11.9	110.4	7	109	99	95	A
RF-68	5/9/08	PRF-06	SP	10.4	116.3	9	115	99	95	A
RF-69	5/9/08	PRF-11	SP	10.2	112.7	8	111	98	95	A
RF-70	5/9/08	PRF-02	SP	8.1	120.0	5	118	98	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-61	N863806.0, E2031647.0	968.5
RF-62	N863788.0, E2031398.0	971.2
RF-63	N863779.0, E2030892.0	977.0
RF-64	N865096.0, E2032112.0	978.0
RF-65	N865490.0, E2031800.0	982.0
RF-66	N865479.0, E2031577.0	984.0
RF-67	N863723.0, E2031650.0	970.5
RF-68	N863778.0, E2031408.0	973.0
RF-69	N863748.0, E2031137.0	976.0
RF-70	N863766.0, E2030805.5	977.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 8, 2008 **Project:** SC-08-01145 **Report:** 8

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-71	5/12/08	PRF-06	SP	10.4	116.3	7	114	98	95	A
RF-72	5/12/08	PRF-03	SP	8.9	123.4	6	121	98	95	A
RF-73	5/12/08	PRF-02	SP	8.1	120.0	5	118	98	95	A
RF-74	5/12/08	PRF-02	SP	8.1	120.0	8	118	98	95	A
RF-75	5/12/08	PRF-02	SP	8.1	120.0	5	119	99	95	A
RF-76	5/13/08	PRF-06	SP	10.4	116.3	7	114	98	95	A
RF-77	5/13/08	PRF-03	SP	8.9	123.4	7	120	97	95	A
RF-78	5/13/08	PRF-06	SP	10.4	116.3	7	113	97	95	A
RF-79	5/13/08	PRF-06	SP	10.4	116.3	6	113	97	95	A
RF-80	5/13/08	PRF-02	SP	8.1	120.0	5	118	98	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-71	N865457.2, E2031865.0	983.4
RF-72	N865398.5, E2032069.5	978.2
RF-73	N863832.7, E2031080.2	975.1
RF-74	N863826.1, E2031378.7	972.0
RF-75	N863499.4, E2031989.4	963.4
RF-76	N865085.0, E2032090.0	982.5
RF-77	N865316.0, E2032104.0	983.0
RF-78	N865482.0, E2032022.0	979.0
RF-79	N863809.0, E2030843.0	979.5
RF-80	N863768.0, E2031115.0	979.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 14, 2008 **Project:** SC-08-01145 **Report:** 9

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-81	5/13/08	PRF-6	SP	10.4	116.3	7	113	97	95	A
RF-82	5/13/08	PRF-2	SP	8.1	120.0	5	119	99	95	A
RF-83	5/14/08	PRF-5	SP	11.9	110.4	10	113	102	95	A
RF-84	5/14/08	PRF-5	SP	11.9	110.4	9	112	101	95	A
RF-85	5/14/08	PRF-5	SP	11.9	110.4	12	113	102	95	A
RF-86	5/14/08	PRF-2	SP	8.1	120.0	7	118	98	95	A
RF-87	5/14/08	PRF-2	SP	8.1	120.0	8	117	98	95	A
RF-88	5/14/08	PRF-11	SP	10.2	112.7	8	114	101	95	A
RF-89	5/14/08	PRF-6	SP	10.4	116.3	7	115	99	95	A
RF-90	5/14/08	PRF-2	SP	8.1	120.0	6	118	98	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-81	N863733.0, E2031520.0	974.5
RF-82	N863580.0, E2032156.0	964.0
RF-83	N865095.0, E2032097.0	982.5
RF-84	N865413.0, E2032038.0	985.0
RF-85	N865449.0, E2031162.0	978.0
RF-86	N865458.0, E2031584.0	985.3
RF-87	N863820.0, E2030880.0	982.5
RF-88	N863770.0, E2031110.0	978.5
RF-89	N863733.0, E2031382.0	976.5
RF-90	N863605.0, E2032001.0	965.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303
Phone: 320.253.9940
Fax: 320.253.3054
Web: brauninterec.com

Report of Field Compaction Tests

Date: May 16, 2008 **Project:** SC-08-01145 **Report:** 10

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-91	5/15/08	PRF-6	SP	10.4	116.3	6	115	99	95	A
RF-92	5/15/08	PRF-3	SP	8.9	123.4	7	124	100	95	A
RF-93	5/15/08	PRF-2	SP	8.1	120.0	4	117	97	95	A
RF-94	5/15/08	PRF-2	SP	8.1	120.0	5	120	100	95	A
RF-95	5/15/08	PRF-3	SP	8.9	123.4	11	122	99	95	A
RF-96	5/15/08	PRF-3	SP	8.9	123.4	5	124	100	95	A
RF-97	5/16/08	PRF-3	SP	8.9	123.4	7	126	102	95	A
RF-98	5/16/08	PRF-3	SP	8.9	123.4	5	122	99	95	A
RF-99	5/16/08	PRF-3	SP	8.9	123.4	5	121	98	95	A
RF-100	5/16/08	PRF-3	SP	8.9	123.4	3	122	99	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-91	N865447.0, E2032072.0	988.0
RF-92	N865538.0, E2031258.0	965.5
RF-93	N863816.0, E2030756.0	984.0
RF-94	N863808.0, E2030979.0	982.5
RF-95	N863821.0, E2031673.0	973.5
RF-96	N863411.7, E2032115.0	964.3
RF-97	N865288.5, E2032099.9	986.3
RF-98	N865476.1, E2031907.0	989.2
RF-99	N863768.3, E2030792.7	986.6
RF-100	N863779.8, E2031050.2	985.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 22, 2008 **Project:** SC-08-01145 **Report:** 11

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-101	5/16/08	PRF-3	SP	8.9	123.4	5	120	97	95	A
RF-102	5/16/08	PRF-2	SP	8.1	120.0	10	119	99	95	A
RF-103	5/19/08	PRF-3	SP	8.9	123.4	6	120	97	95	A
RF-104	5/19/08	PRF-3	SP	8.9	123.4	4	121	98	95	A
RF-105	5/19/08	PRF-3	SP	8.9	123.4	4	121	98	95	A
RF-106	5/19/08	PRF-2	SP	8.1	120.0	4	115	96	95	A
RF-107	5/19/08	PRF-3	SP	8.9	123.4	5	118	96	95	A
RF-108	5/20/08	PRF-11	SP	10.2	112.7	10	110	97	95	A
RF-109	5/20/08	PRF-6	SP	10.4	116.3	6	115	99	95	A
RF-110	5/20/08	PRF-6	SP	10.4	116.3	6	113	98	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-101	N863793.3, E2031585.4	978.6
RF-102	N863560.0, E2032052.0	965.4
RF-103	N865470.0, E2031977.3	993.7
RF-104	N863323.0, E2032111.2	970.1
RF-105	N863765.0, E2031644.2	982.2
RF-106	N863788.9, E2031104.8	988.3
RF-107	N864482.7, E2032163.7	962.4
RF-108	N865413.0, E2032046.0	999.0
RF-109	N864660.0, E2032140.0	968.2
RF-110	N863305.0, E2032126.0	977.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 23, 2008 **Project:** SC-08-01145 **Report:** 12

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-111	5/20/08	PRF-11	SP	10.2	112.7	6	110	97	95	A
RF-112	5/20/08	PRF-2	SP	8.1	120.0	5	117	98	95	A
RF-113	5/20/08	PRF-6	SP	10.4	116.3	5	115	99	95	A
RF-114	5/21/08	PRF-2	SP	8.1	120.0	3	117	98	95	A
RF-115	5/21/08	PRF-2	SP	8.1	120.0	5	117	98	95	A
RF-116	5/21/08	PRF-2	SP	8.1	120.0	4	120	100	95	A
RF-117	5/21/08	PRF-3	SP	8.9	123.4	4	122	99	95	A
RF-118	5/21/08	PRF-3	SP	8.9	123.4	5	126	102	95	A
RF-119	5/21/08	PRF-3	SP	8.9	123.4	5	125	101	95	A
RF-120	5/22/08	PRF-6	SP	10.4	116.3	7	114	98	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-111	N863820.0, E2031806.0	969.0
RF-112	N863792.0, E2031250.0	988.2
RF-113	N863780.0, E2030690.0	994.0
RF-114	N863795.4, E2031677.6	978.3
RF-115	N863789.8, E2031328.2	988.6
RF-116	N863796.9, E2030937.3	992.8
RF-117	N863558.4, E2032022.8	967.8
RF-118	N864296.4, E2032147.0	968.5
RF-119	N864636.8, E2032139.4	947.1
RF-120	N863366.1, E2032115.7	977.1

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 29, 2008 **Project:** SC-08-01145 **Report:** 13

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-121	5/22/08	PRF-1	SP	13.8	108.3	13	107	99	95	A
RF-122	5/22/08	PRF-11	SP	10.2	112.7	8	113	100	95	A
RF-123	5/22/08	PRF-2	SP	8.1	120.0	6	117	98	95	A
RF-124	5/22/08	PRF-6	SP	10.4	116.3	8	114	98	95	A
RF-125	5/22/08	PRF-2	SP	8.1	120.0	7	119	99	95	A
RF-126	5/22/08	PRF-6	SP	10.4	116.3	6	114	98	95	A
RF-127	5/22/08	PRF-1	SP	13.8	108.3	4	106	98	95	A
RF-128	5/22/08	PRF-6	SP	10.4	116.3	5	113	97	95	A
RF-129	5/22/08	PRF-6	SP	10.4	116.3	9	113	97	95	A
RF-130	5/27/08	PRF-2	SP	8.1	120.0	8	118	98	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-121	N863538.3, E2031988.8	972.8
RF-122	N863625.9, E2032100.4	969.2
RF-123	N864610.0, E2032095.0	977.5
RF-124	N864272.0, E2032107.0	978.0
RF-125	N863790.0, E2031090.0	995.0
RF-126	N863791.0, E2031540.0	992.5
RF-127	N863777.0, E2031715.0	988.5
RF-128	N863724.0, E2031828.0	968.5
RF-129	N864448.0, E2032093.0	979.5
RF-130	N864547.9, E2031993.6	1005.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Braun Intertec Corporation
1520 24th Avenue N
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: May 29, 2008 **Project:** SC-08-01145 **Report:** 14

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-131	5/27/08	PRF-2	SP	8.1	120.0	7	118	98	95	A
RF-132	5/27/08	PRF-2	SP	8.1	120.0	7	116	97	95	A
RF-133	5/27/08	PRF-2	SP	8.1	120.0	5	116	97	95	A
RF-134	5/27/08	PRF-6	SP	10.4	116.3	5	112	96	95	A
RF-135	5/28/08	PRF-3	SP	8.9	123.4	7	125	101	95	A
RF-136	5/28/08	PRF-2	SP	8.1	120.0	6	116	97	95	A
RF-137	5/28/08	PRF-2	SP	8.1	120.0	7	117	98	95	A
RF-138	5/29/08	PRF-2	SP	8.1	120.0	6	119	99	95	A
RF-139	5/29/08	PRF-3	SP	8.9	123.4	8	126	102	95	A
RF-140	6/2/08	PRF-11	SP	10.2	112.7	4	112	99	95	A

Key:
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A = Test results comply with specifications.
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C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-131	N864250.9, E2042040.0	995.0
RF-132	N863950.0, E2042150.0	964.0
RF-133	N863930.0, E2042000.0	965.0
RF-134	N864100.0, E2041940.0	962.0
RF-135	N863809.0, E2032005.0	973.5
RF-136	N863712.0, E2032129.0	975.0
RF-137	N863582.0, E2032050.0	974.0
RF-138	N863587.0, E2032000.0	977.0
RF-139	N863356.0, E2032105.0	978.0
RF-140	N863730.0, E2032081.0	976.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: June 2, 2008 **Project:** SC-08-01145 **Report:** 15

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-141	6/2/08	PRF-6	SP	10.4	116.3	5	114	98	95	A
RF-142	6/2/08	PRF-2	SP	8.1	120.0	6	119	99	95	A
RF-143	6/4/08	PRF-6	SP	10.4	116.3	8	113	97	95	A
RF-144	6/4/08	PRF-6	SP	10.4	116.3	9	116	100	95	A
RF-145	6/4/08	PRF-11	SP	10.2	112.7	9	109	97	95	A
RF-146	6/4/08	PRF-11	SP	10.2	112.7	9	108	96	95	A
RF-147	6/4/08	PRF-2	SP	8.1	120.0	6	120	100	95	A
RF-148	6/4/08	PRF-2	SP	8.1	120.0	4	118	98	95	A
RF-149	6/6/08	PRF-2	SP	8.1	120.0	9	122	102	95	A
RF-150	6/6/08	PRF-6	SP	10.4	116.3	10	116	100	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-141	N863647.0, E2031980.0	977.5
RF-142	N863504.0, E2032011.0	977.5
RF-143	Lat. 45 degrees 22' 6" Long 93 degrees 52' 32"	989.0
RF-144	Lat. 45 degrees 22' 7" Long 93 degrees 52' 32"	992.0
RF-145	Lat. 45 degrees 22' 8" Long 93 degrees 52' 32"	995.0
RF-146	Lat. 45 degrees 22' 10" Long 93 degrees 52' 33"	995.0
RF-147	Lat. 45 degrees 22' 11" Long 93 degrees 52' 30"	980.0
RF-148	N863590.5, E2032088.2	980.0
RF-149	N863675.0, E2032057.0	999.0
RF-150	N863576.0, E2032065.0	999.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: August 6, 2008 **Project:** SC-08-01145 **Report:** 16

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-151	6/6/08	PRF-11	SP	10.2	112.7	6	113	100	95	A
RF-152	6/24/08	PRF-1	SP	13.8	108.3	7	106	98	95	A
RF-153	6/24/08	PRF-5	SP	11.9	110.4	8	108	98	95	A
RF-154	6/25/08	PRF-1	SP	13.8	108.3	7	103	95	95	A
RF-155	7/21/08	PRF-2	SP	8.1	120.0	3	116	97	95	A
RF-156	7/23/08	PRF-3	SP	8.9	123.4	6	123	100	100	A
RF-157	7/23/08	PRF-3	SP	8.9	123.4	6	126	102	100	A
RF-158	7/29/08	PRF-11	SP	10.7	112.7	4	109	97	95	A
RF-159	8/5/08	PRF-6	SP	10.4	116.3	3	113	97	95	A
RF-160	8/5/08	PRF-6	SP	10.4	116.3	3	116	100	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-151	N863744.0, E2032025.0	995.0
RF-152	N864327.3, E2030652.2	997.6
RF-153	N864127.3, E2030652.2	997.6
RF-154	N864788.6, E2030621.8	1007.8
RF-155	South Half of West End of Parking Lot	FSG
RF-156	Unit 3 Landfill, North Road, Sta; 5+03, 7' Right of Centerline	973.0
RF-157	Unit 3 Landfill, North Road, Sta; 8+12, 3' Left of Centerline	973.5
RF-158	N863789.0, E2031388.0	994.0
RF-159	N863737.0, E2031842.8	974.0
RF-160	N863816.2, E2031860.6	977.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN
INTERTEC

RECEIVED SEP 2 4 2008

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303
Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 16, 2008 **Project:** SC-08-01145 **Report:** 17

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-161	8/5/08	PRF-6	SP	10.4	116.3	2	114	98	95	A
RF-162	8/5/08	PRF-6	SP	10.4	116.3	2	117	101	95	A
RF-163	8/6/08	PRF-6	SP	10.4	116.3	3	114	98	95	A
RF-164	8/7/08	PRF-6	SP	10.4	116.3	5	115	99	95	A
RF-165	8/7/08	PRF-3	SP	8.9	123.4	4	124	100	95	A
RF-166	8/14/08	PRF-1	SP	13.8	108.3	13	104	96	95	A
RF-167	8/14/08	PRF-3	SP	8.9	123.4	7	120	97	95	A
RF-168	9/16/08	PRF-3	SP	8.9	123.4	7	121	98	95	A
RF-169	9/16/08	PRF-9	SP	11.8	110.3	4	106	96	95	A
RF-170	9/16/08	PRF-6	SP	10.4	116.3	7	116	100	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-161	N863818.7, E2031814.6	985.0
RF-162	N863762.1, E2031890.5	985.0
RF-163	N863800.5, E2031821.1	987.5
RF-164	N863793.2, E2031889.0	992.5
RF-165	N863783.0, E2031868.0	995.0
RF-166	N863778.2, E2031872.4	995.0
RF-167	N863795.0, E2030693.1	1004.5
RF-168	N865369.0, E2031535.0	977.0
RF-169	N865015.0, E2031963.0	973.0
RF-170	N864547.0, E2031938.0	973.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 22, 2008 **Project:** SC-08-01145 **Report:** 18

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-171	9/16/08	PRF-6	SP	10.4	116.3	6	112	96	95	A
RF-172	9/17/08	PRF-2	SP	8.1	120.0	5	115	96	95	A
RF-173	9/17/08	PRF-1	SP	13.8	108.3	6	107	99	95	A
RF-174	9/17/08	PRF-5	SP	11.9	110.4	3	109	99	95	A
RF-175	9/18/08	PRF-2	SP	8.1	120.0	3	117	98	95	A
RF-176	9/18/08	PRF-2	SP	8.1	120.0	5	117	98	95	A
RF-177	9/19/08	PRF-1	SP	13.8	108.3	7	107	99	95	A
RF-178	9/19/08	PRF-6	SP	10.4	116.3	3	113	97	95	A
RF-179	9/19/08	PRF-11	SP	10.2	112.7	8	111	98	95	A
RF-180	9/22/08	PRF-6	SP	10.4	116.3	6	113	97	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-171	N864060.0, E2031982.0	973.5
RF-172	N864098.5, E2032001.8	977.0
RF-173	N864447.6, E2031996.5	976.5
RF-174	N864145.0, E2031990.0	978.5
RF-175	N865317.7, E2031962.1	976.0
RF-176	N865026.7, E2032011.7	975.5
RF-177	N865339.7, E2031856.0	978.0
RF-178	N865344.6, E2031460.9	976.5
RF-179	N865357.2, E2031538.9	979.0
RF-180	N864759.8, E2031985.0	980.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 30, 2008 **Project:** SC-08-01145 **Report:** 19

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-181	9/22/08	PRF-6	SP	10.4	116.3	3	112	96	95	A
RF-182	9/22/08	PRF-6	SP	10.4	116.3	5	112	96	95	A
RF-183	9/22/08	PRF-6	SP	10.4	116.3	4	116	100	95	A
RF-184	9/23/08	PRF-2	SP	8.1	120.0	5	116	97	95	A
RF-185	9/23/08	PRF-2	SP	8.1	120.0	6	118	98	95	A
RF-186	9/23/08	PRF-2	SP	8.1	120.0	5	120	100	95	A
RF-187	9/29/08	PRF-11	SP	10.2	112.7	5	111	98	95	A
RF-188	9/29/08	PRF-1	SP	13.8	108.3	6	107	99	95	A
RF-189	9/29/08	PRF-11	SP	10.2	112.7	4	111	98	95	A
RF-190	9/29/08	PRF-2	SP	8.1	120.0	6	116	97	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-181	N865266.0, E2031996.3	984.5
RF-182	N865351.7, E2031723.5	983.5
RF-183	N865374.8, E2031240.8	982.0
RF-184	N865101.9, E2031999.9	985.0
RF-185	N865357.2, E2031814.2	985.0
RF-186	N865358.0, E2031418.3	985.0
RF-187	N865151.7, E2031908.1	974.5
RF-188	N865281.5, E2031719.9	974.5
RF-189	N865275.1, E2031490.8	974.0
RF-190	N865270.8, E2031138.2	973.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 1, 2008 **Project:** SC-08-01145 **Report:** 20

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-191	9/29/08	PRF-7	SP	12.6	110.5	5	107	97	95	A
RF-192	9/29/08	PRF-7	SP	12.6	110.5	7	109	99	95	A
RF-193	9/29/08	PRF-11	SP	10.2	112.7	4	110	98	95	A
RF-194	9/29/08	PRF-11	SP	10.2	112.7	4	111	98	95	A
RF-195	9/30/08	PRF-3	SP	8.9	123.4	3	121	98	95	A
RF-196	9/30/08	PRF-6	SP	10.4	116.3	6	114	98	95	A
RF-197	9/30/08	PRF-3	SP	8.9	123.4	4	124	100	95	A
RF-198	9/30/08	PRF-2	SP	8.1	120.0	8	117	98	95	A
RF-199	9/30/08	PRF-2	SP	8.1	120.0	9	120	100	95	A
RF-200	9/30/08	PRF-2	SP	8.1	120.0	6	119	99	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-191	N865396.4, E2031770.2	980.0
RF-192	N865400.2, E2031438.2	978.0
RF-193	N864046.0, E2031906.6	975.0
RF-194	N864979.2, E2032035.2	977.0
RF-195	N865400.1, E2031682.7	983.0
RF-196	N865395.6, E2031766.9	984.0
RF-197	N865407.1, E2031484.5	982.0
RF-198	N863908.1, E2032035.7	974.5
RF-199	N865426.3, E2031476.5	984.5
RF-200	N865433.8, E2031731.2	989.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 3, 2008 **Project:** SC-08-01145 **Report:** 21

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-201	10/1/08	PRF-5	SP	11.9	110.4	9	108	98	95	A
RF-202	10/1/08	PRF-6	SP	10.4	116.3	9	113	97	95	A
RF-203	10/2/08	PRF-6	SP	10.4	116.3	5	112	96	95	A
RF-204	10/2/08	PRF-6	SP	10.4	116.3	4	115	99	95	A
RF-205	10/2/08	PRF-6	SP	10.4	116.3	3	113	97	95	A
RF-206	10/3/08	PRF-6	SP	10.4	116.3	4	112	96	95	A
RF-207	10/3/08	PRF-2	SP	8.1	120.0	5	117	98	95	A
RF-208	10/3/08	PRF-6	SP	10.4	116.3	8	115	99	95	A
RF-209	10/3/08	PRF-6	SP	10.4	116.3	7	112	96	95	A
RF-210	10/3/08	PRF-11	SP	10.2	112.7	6	109	97	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-201	N864365.4, E2032033.5	979.5
RF-202	N863971.9, E2032038.1	979.0
RF-203	N865390.5, E2031429.8	983.0
RF-204	N865438.8, E2031309.3	983.0
RF-205	N863971.9, E2031133.9	981.5
RF-206	N863886.4, E2031988.6	993.0
RF-207	N864269.0, E2031988.9	992.5
RF-208	N864571.9, E2031989.4	992.0
RF-209	N864577.0, E2032061.1	981.5
RF-210	N864300.2, E2032055.5	982.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 16, 2008 **Project:** SC-08-01145 **Report:** 22

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-211	10/3/08	PRF-11	SP	10.2	112.7	8	111	98	95	A
RF-212	10/6/08	PRF-3	SP	8.9	123.4	5	120	97	95	A
RF-213	10/6/08	PRF-3	SP	8.9	123.4	8	122	99	95	A
RF-214	10/6/08	PRF-3	SP	8.9	123.4	6	121	98	95	A
RF-215	10/6/08	PRF-2	SP	8.1	120.0	6	117	98	95	A
RF-216	10/6/08	PRF-11	SP	10.2	112.7	11	109	97	95	A
RF-217	10/6/08	PRF-2	SP	8.1	120.0	5	115	96	95	A
RF-218	10/6/08	PRF-2	SP	8.1	120.0	6	116	97	95	A
RF-219	10/14/08	PRF-11	SP	10.2	112.7	5	109	97	95	A
RF-220	10/14/08	PRF-2	SP	8.1	120.0	5	118	98	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-211	N863872.3, E2032037.3	980.5
RF-212	N864397.0, E2031990.0	994.0
RF-213	N865362.0, E2031714.0	994.0
RF-214	N865358.0, E2031353.0	994.0
RF-215	N865442.0, E2031149.0	982.0
RF-216	N865393.0, E2031419.0	983.5
RF-217	N865428.0, E2031659.0	989.5
RF-218	N865404.0, E2031794.0	984.5
RF-219	N864603.2, E2032062.1	987.5
RF-220	N864329.8, E2032046.9	986.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 17, 2008 **Project:** SC-08-01145 **Report:** 23

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-221	10/14/08	PRF-11	SP	10.2	112.7	4	110	98	95	A
RF-222	10/15/08	PRF-11	SP	10.2	112.7	6	109	97	95	A
RF-223	10/15/08	PRF-11	SP	10.2	112.7	4	113	100	95	A
RF-224	10/15/08	PRF-3	SP	8.9	123.4	6	120	97	95	A
RF-225	10/16/08	PRF-5	SP	11.9	110.4	5	108	98	95	A
RF-226	10/16/08	PRF-2	SP	8.1	120.0	6	117	98	95	A
RF-227	10/16/08	PRF-6	SP	10.4	116.3	5	112	96	95	A
RF-228	10/16/08	PRF-6	SP	10.4	116.3	4	115	99	95	A
RF-229	10/16/08	PRF-2	SP	8.1	120.0	4	118	98	95	A
RF-230	10/17/08	PRF-2	SP	8.1	120.0	3	116	97	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-221	N864066.1, E2032058.5	986.0
RF-222	N863872.4, E2032023.4	989.5
RF-223	N864185.0, E2032021.3	988.5
RF-224	N864444.5, E2032025.5	989.5
RF-225	N864847.6, E2032054.3	983.0
RF-226	N865190.0, E2032034.5	981.5
RF-227	N865392.6, E2031836.8	986.5
RF-228	N865392.0, E2031523.1	989.0
RF-229	N865399.3, E2031071.9	986.0
RF-230	N865391.6, E2031061.9	991.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 24, 2008 **Project:** SC-08-01145 **Report:** 24

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-231	10/17/08	PRF-2	SP	8.1	120.0	4	117	98	95	A
RF-232	10/17/08	PRF-6	SP	10.4	116.3	5	114	98	95	A
RF-233	10/20/08	PRF-2	SP	8.1	120.0	3	115	96	95	A
RF-234	10/20/08	PRF-2	SP	8.1	120.0	3	115	96	95	A
RF-235	10/21/08	PRF-2	SP	8.1	120.0	5	115	96	95	A
RF-236	10/21/08	PRF-2	SP	8.1	120.0	7	115	96	95	A
RF-237	10/23/08	PRF-7	SP	12.6	110.5	11	109	99	95	A
RF-238	10/23/08	PRF-3	SP	8.9	123.4	3	120	97	95	A
RF-239	10/23/08	PRF-7	SP	12.6	110.5	4	107	97	95	A
RF-240	10/24/08	PRF-6	SP	10.4	116.3	8	114	98	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
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C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-231	N865405.2, E2031301.2	991.5
RF-232	N865386.4, E2031615.9	991.0
RF-233	N865408.2, E2031168.2	995.0
RF-234	N865411.1, E2031608.2	995.0
RF-235	N865119.7, E2031921.2	993.5
RF-236	N865199.3, E2031989.3	993.5
RF-237	N864279.6, E2032027.9	998.5
RF-238	N863953.2, E2032025.5	998.0
RF-239	N865325.3, E2032015.7	985.0
RF-240	N865212.2, E2032072.8	987.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 30, 2008 **Project:** SC-08-01145 **Report:** 25

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-241	10/24/08	PRF-6	SP	10.4	116.3	3	115	99	95	A
RF-242	10/27/08	PRF-3	SP	8.9	123.4	4	119	96	95	A
RF-243	10/27/08	PRF-6	SP	10.4	116.3	3	111	95	95	A
RF-244	10/27/08	PRF-3	SP	8.9	123.4	8	120	97	95	A
RF-245	10/27/08	PRF-6	SP	10.4	116.3	3	114	98	95	A
RF-246	10/29/08	PRF-3	SP	8.9	123.4	4	120	97	95	A
RF-247	10/29/08	PRF-6	SP	10.4	116.3	3	112	96	95	A
RF-248	10/29/08	PRF-6	SP	10.4	116.3	4	114	98	95	A
RF-249	10/29/08	PRF-3	SP	8.9	123.4	3	118	96	95	A
RF-250	10/29/08	PRF-11	SP	10.2	112.7	7	109	97	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
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C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-241	N865423.1, E2031930.0	991.5
RF-242	N865432.7, E2031955.6	997.0
RF-243	N865417.9, E2031843.8	997.0
RF-244	N865256.3, E2032051.2	989.5
RF-245	N864933.9, E2032068.7	984.5
RF-246	N864789.1, E2032151.3	973.5
RF-247	N864486.7, E2032016.0	995.0
RF-248	N864775.2, E2032029.7	990.0
RF-249	N864975.3, E2032032.3	985.0
RF-250	N864923.7, E2032021.4	991.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: November 5, 2008 **Project:** SC-08-01145 **Report:** 26

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-251	10/30/08	PRF-11	SP	10.2	112.7	3	113	100	95	A
RF-252	10/30/08	PRF-6	SP	10.4	116.3	5	114	98	95	A
RF-253	10/31/08	PRF-6	SP	10.4	116.3	5	112	96	95	A
RF-254	10/31/08	PRF-3	SP	8.9	123.4	7	120	97	95	A
RF-255	10/31/08	PRF-6	SP	10.4	116.3	3	115	99	95	A
RF-256	11/3/08	PRF-6	SP	10.4	116.3	4	112	96	95	A
RF-257	11/3/08	PRF-6	SP	10.4	116.3	7	113	97	95	A
RF-258	11/3/08	PRF-2	SP	8.1	120.0	2	117	98	95	A
RF-259	11/4/08	PRF-2	SP	8.1	120.0	3	117	98	95	A
RF-260	11/4/08	PRF-3	SP	8.9	123.4	7	126	102	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-251	N865129.0, E2032031.5	989.5
RF-252	N864017.4, E2032003.2	998.5
RF-253	N864602.6, E2032011.7	995.0
RF-254	N865013.7, E2032023.1	994.5
RF-255	N865307.0, E2031971.7	995.0
RF-256	N865000.0, E2032015.2	999.0
RF-257	N864618.8, E2032010.9	999.0
RF-258	N865374.9, E2031986.5	998.0
RF-259	N865445.0, E2031773.0	998.5
RF-260	N866390.0, E2031455.0	998.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: November 6, 2008 **Project:** SC-08-01145 **Report:** 27

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
RF-261	11/4/08	PRF-6	SP	10.4	116.3	5	112	96	95	A
RF-262	11/4/08	PRF-11	SP	10.2	112.7	7	110	98	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
RF-261	N865398.0, E2031191.0	998.0
RF-262	N865366.0, E2030940.0	998.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Appendix C

Clay Test Reports

Anderson Pit (Off-Site) Clay Pre-Qualification Test Reports
Anderson Pit (Off-Site) Clay Pre-Qualification Re-Test Test Reports
Clay Standard Proctor Test Reports
Clay Density Test Reports
Clay In-Place Permeability and Index Test Reports

Anderson Pit (Off-Site) Clay Pre-Qualification Test Reports

Hydraulic Conductivity Results

Project: Sherco Pond #3 North - SHC 0306 Date: 5/31/2008

Reported To: McCain & Associates, Inc. Job No.: 6515

Boring No.:							
Sample No.:	CLS-1	CLS-2	CLS-4	CLS-5	CLS-6		
Depth (ft)	2-4	8-10	10-12	6-8	10-12		
Location:							
Sample Type:	Bulk	Bulk	Bulk	Bulk	Bulk		
Soil Type:	Sandy Lean Clay w/a Trace of Gravel (CL/SC)	Sandy Lean Clay w/a LittleGravel (CL/SC)	Sandy Lean Clay w/a Trace of Gravel (CL/SC)	Sandy Lean Clay w/a LittleGravel (CL/SC)	Sandy Lean Clay w/a Trace of Gravel (CL/SC)		
Atterberg Limits							
LL	32.6	34.5	31.6	34.1	33.2		
PL	15.2	16.0	15.1	15.4	15.5		
PI	17.4	18.5	16.5	18.7	17.7		
Permeability Test							
Before Test Conditions: Saturation %:							
Porosity:							
Ht. (in):	3.00	3.01	2.99	2.99	2.99		
Dia. (in):	2.85	2.85	2.85	2.85	2.85		
Dry Density (pcf):	109.1	109.5	109.5	109.9	111.2		
Water Content:	15.9%	16.1%	15.5%	15.5%	15.6%		
Test Type:	Falling	Falling	Falling	Falling	Falling		
Max Head (ft):	5.0	5.0	5.0	5.0	5.0		
Confining press. (Effective-psi):	2.0	2.0	2.0	2.0	2.0		
Trial No.:	16-20	17-21	19-23	18-22	17-21		
Water Temp ℃:	21.0	21.0	21.0	21.0	21.0		
% Compaction	94.9%	94.2%	95.7%	95.3%	95.8%		
% Saturation (After Test)	95.1%	95.7%	97.5%	95.9%	95.6%		
Coefficient of Permeability							
K @ 20 ℃ (cm/sec)	**6.8×10^{-8}**	**7.5×10^{-8}**	**2.2×10^{-7}**	**1.3×10^{-7}**	**9.6×10^{-8}**		
K @ 20 ℃ (ft/min)	**1.3×10^{-7}**	**1.5×10^{-7}**	**4.3×10^{-7}**	**2.6×10^{-7}**	**1.9×10^{-7}**		
Notes:							

Hydraulic Conductivity Test Data

Project: Sherco Generating Plant Pond #3 North — Date: 10/6/2008

Reported To: McCain & Associates, Inc. — Job No.: 6717

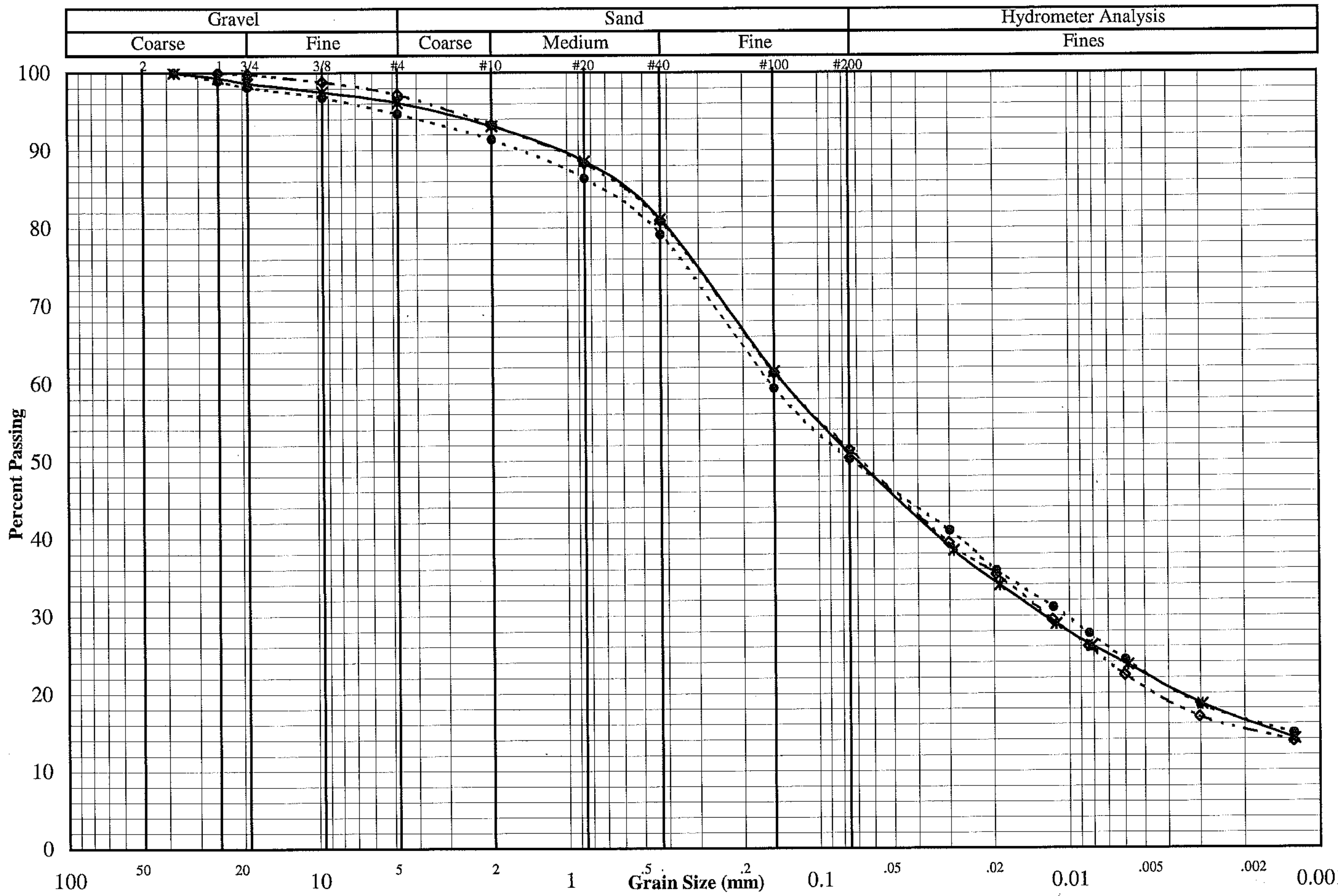
Boring No.:	CLS-7						
Sample No.:							
Elevation (ft)							
Location:							
Sample Type:	Bags						
Soil Type:	Clayey Sand w/a Little Gravel (SC/CL)						
Atterberg Limits							
LL	31.5						
PL	16.7						
PI	14.8						
Permeability Test							
Before Test Conditions: Saturation %:							
Porosity:							
Ht. (in):	3.01						
Dia. (in):	2.86						
Dry Density (pcf):	113.9						
Water Content:	15.5%						
Test Type:	Falling						
Max Head (ft):	5.0						
Confining press. (Effective-psi):	2.0						
Trial No.:	8-12						
Water Temp ℃:	20.0						
% Compaction	95.4%						
% Saturation (After Test)	95.1%						
Coefficient of Permeability							
K @ 20 ℃ (cm/sec)	**1.1×10^{-8}**						
K @ 20 ℃ (ft/min)	**2.1×10^{-8}**						
Notes:							

Grain Size Distribution ASTM D422

Job No. : **6515**

Project:	Sherco Pond #3 North - SHC 0306	Test Date:	5/14/08
Reported To:	McCain & Associates, Inc.	Report Date:	5/20/08

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		CLS-1	2-4	Bulk	Sandy Lean Clay w/a Trace of Gravel (CL/SC)
●		CLS-2	8-10	Bulk	Sandy Lean Clay w/a Little Gravel (CL/SC)
◇		CLS-4	10-12	Bulk	Sandy Lean Clay w/a Trace of Gravel (CL/SC)



Other Tests

	*	●	◇
Liquid Limit	32.6	34.5	31.6
Plastic Limit	15.2	16.0	15.1
Plasticity Index	17.4	18.5	16.5
Water Content	17.0	16.5	18.4
Dry Density (pcf)			
Specific Gravity	2.68*	2.68*	2.68*
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	16275.0	18853.0	19938.0
2"			
1.5"	100.0	100.0	
1"	99.3	98.9	100.0
3/4"	98.6	98.1	99.8
3/8"	97.5	96.8	98.8
#4	96.1	94.7	97.2
#10	93.1	91.4	93.3
#20	88.6	86.3	88.3
#40	81.1	79.1	80.9
#100	61.5	59.3	61.3
#200	51.0	50.2	51.4

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

9301 Bryant Ave. South, Suite 107

SOIL ENGINEERING TESTING, INC.

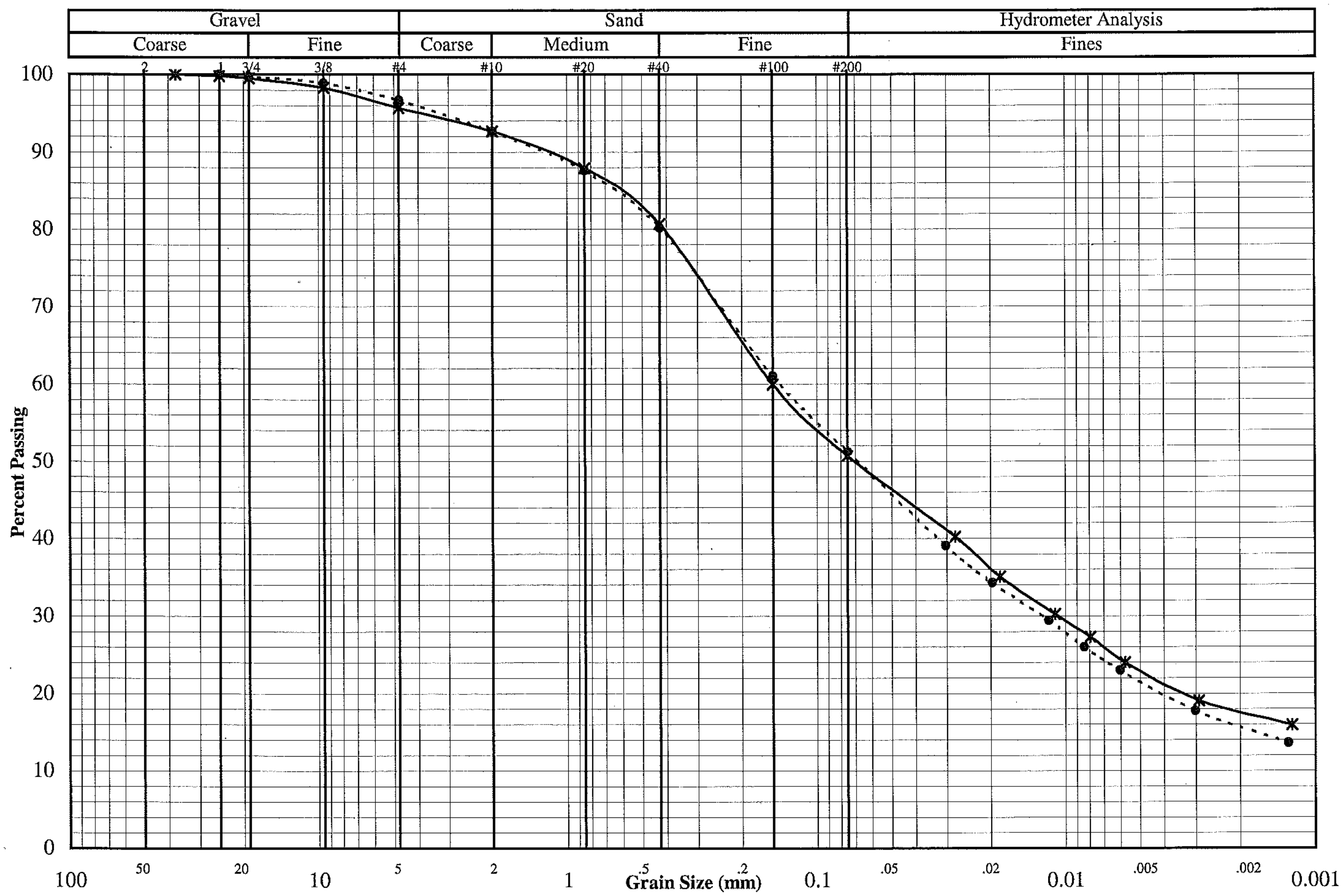
Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Project:	Sherco Pond #3 North - SHC 0306	Test Date:	5/14/08
Reported To:	McCain & Associates, Inc.	Report Date:	5/20/08

Job No. : **6515**

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		CLS-5	6-8	Bulk	Sandy Lean Clay w/a Little Gravel (CL/SC)
●		CLS-6	10-12	Bulk	Sandy Lean Clay w/a Trace of Gravel (CL/SC)
◇					



Other Tests	*	●	◇
Liquid Limit	34.1	33.2	
Plastic Limit	15.4	15.5	
Plasticity Index	18.7	17.7	
Water Content	20.8	17.4	
Dry Density (pcf)			
Specific Gravity	2.68*	2.68*	
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing	*	●	◇
Mass (g)	16632.0	19009.0	
2"			
1.5"	100.0		
1"	99.8	100.0	
3/4"	99.5	99.8	
3/8"	98.3	98.9	
#4	95.7	96.7	
#10	92.7	92.7	
#20	88.0	87.6	
#40	80.7	80.2	
#100	59.9	61.0	
#200	50.7	51.2	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

9301 Bryant Ave. South, Suite 107

SOIL ENGINEERING TESTING, INC.

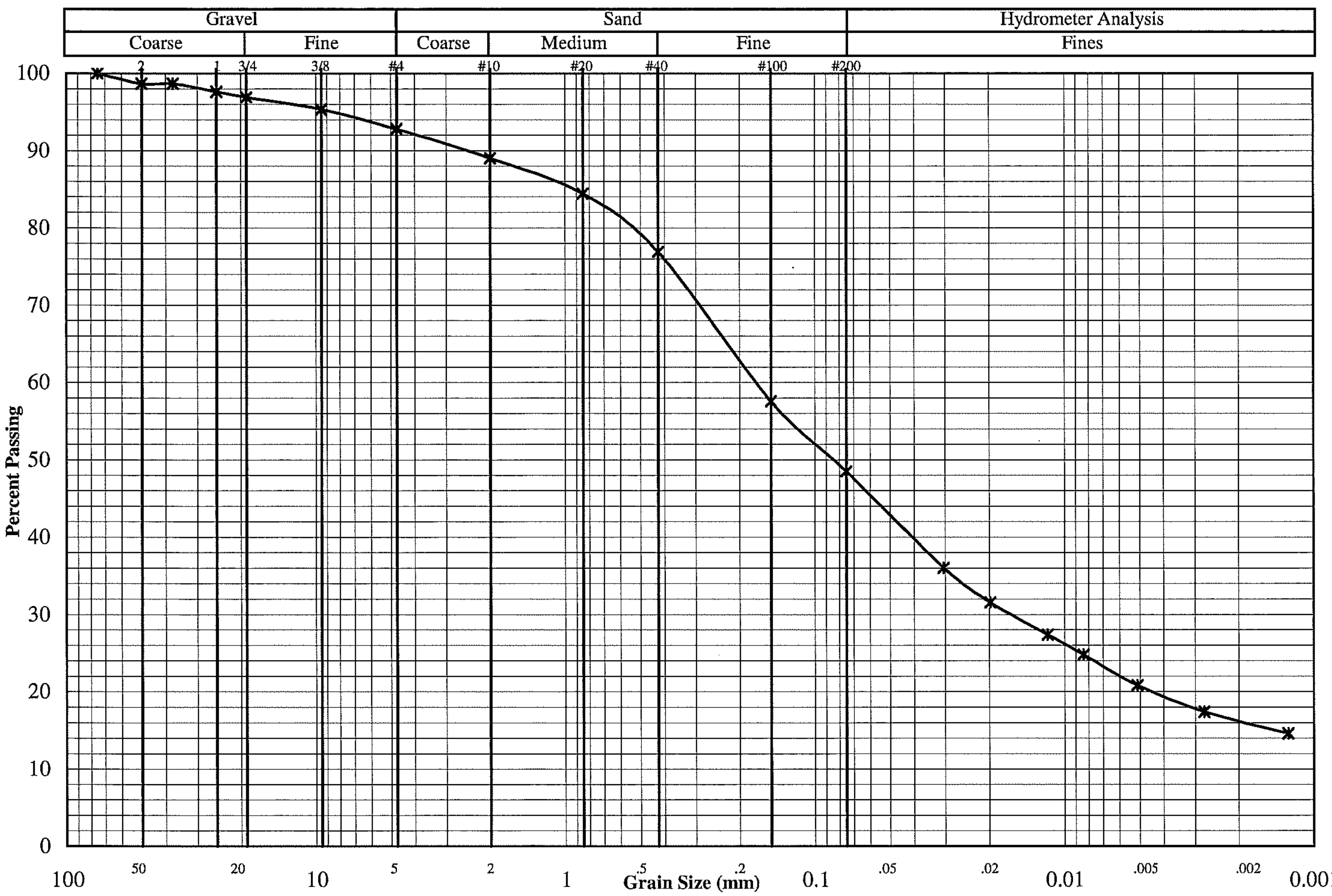
Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Job No. : **6717**

Project:	Sherco Generating Plant Pond #3 North	Test Date:	9/24/08
Reported To:	McCain & Associates, Inc.	Report Date:	9/30/08

	Location / Boring No.	Sample No.	Elev. (ft)	Sample Type	Soil Classification
*		CLS-7		Bags	Clayey Sand w/a Little Gravel (SC/CL)
●					
◇					



Other Tests

	*	●	◇
Liquid Limit	31.5		
Plastic Limit	16.7		
Plasticity Index	14.8		
Water Content	17.2		
Dry Density (pcf)			
Specific Gravity	2.69*		
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	15658.0		
2"	98.7		
1.5"	98.7		
1"	97.6		
3/4"	96.9		
3/8"	95.3		
#4	92.8		
#10	89.0		
#20	84.4		
#40	76.9		
#100	57.6		
#200	48.5		

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

Results amended on 9-30-08 to include Atterberg Limits and correct classification.

9301 Bryant Ave. South, Suite 107

SOIL ENGINEERING TESTING, INC.

Bloomington, Minnesota 55420-3436

Moisture Density Curve ASTM: D698, Method B

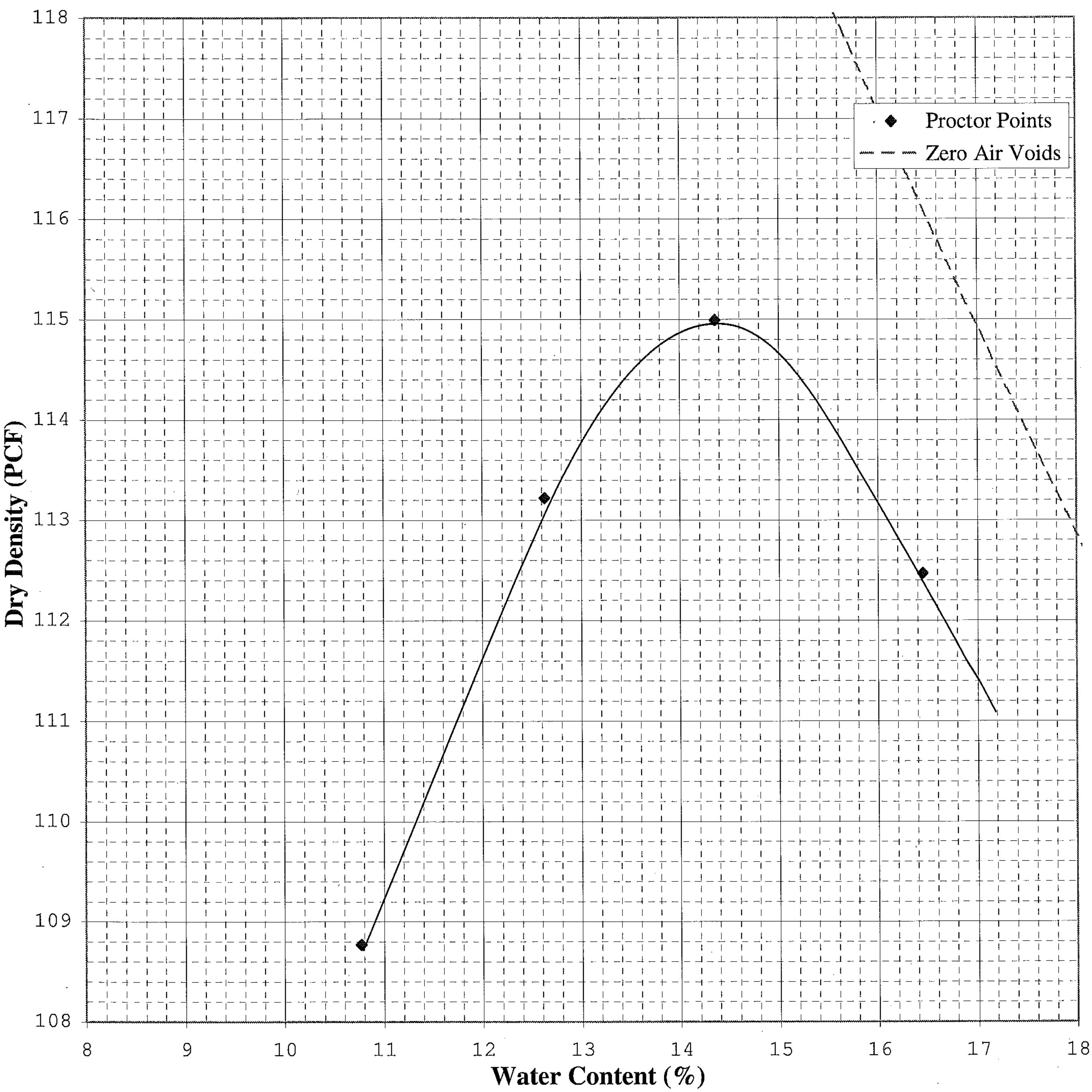
Project:	Sherco Pond #3 North - SHC 0306	Date:	5/15/08
Client:	McCain & Associates, Inc.	Job No.	6515

Boring No. Sample: CLS-1 Depth(ft): 2-4 Location:

Soil Type: Sandy Lean Clay w/a Trace of Gravel (CL/SC)

As Received W.C. (%): 17.0 LL: 32.6 PL: 15.2 PI: 17.4 Specific Gravity: 2.68 *Assumed

Maximum Dry Density (pcf): 115.0 Opt. Water Content (%): 14.4



9301 Bryant Ave. South, Suite 107 SOIL ENGINEERING TESTING, INC. Bloomington, Minnesota 55420-3436

SET-R18a

Moisture Density Curve ASTM: D698, Method B

Project: **Sherco Pond #3 North - SHC 0306** Date: **5/15/08**

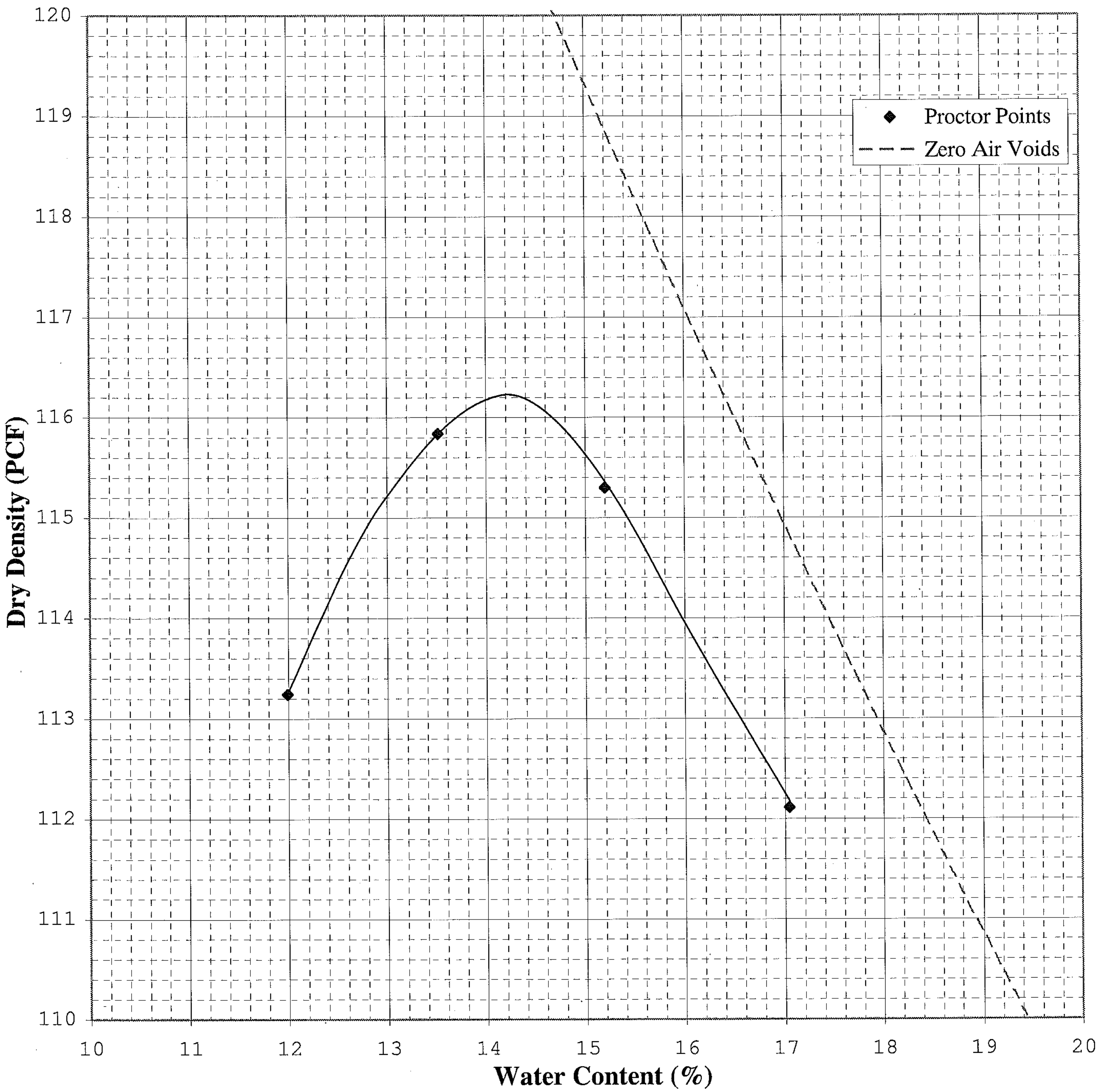
Client: **McCain & Associates, Inc.** Job No. **6515**

Boring No. Sample: **CLS-2** Depth(ft): **8-10** Location:

Soil Type: **Sandy Lean Clay w/a Little Gravel (CL/SC)**

As Received W.C. (%): **16.5** LL: **34.5** PL: **16.0** PI: **18.5** Specific Gravity: **2.68** *Assumed

Maximum Dry Density (pcf): **116.2** Opt. Water Content (%): **14.2**



Moisture Density Curve ASTM: D698, Method B

Project: **Sherco Pond #3 North - SHC 0306** Date: **5/15/08**

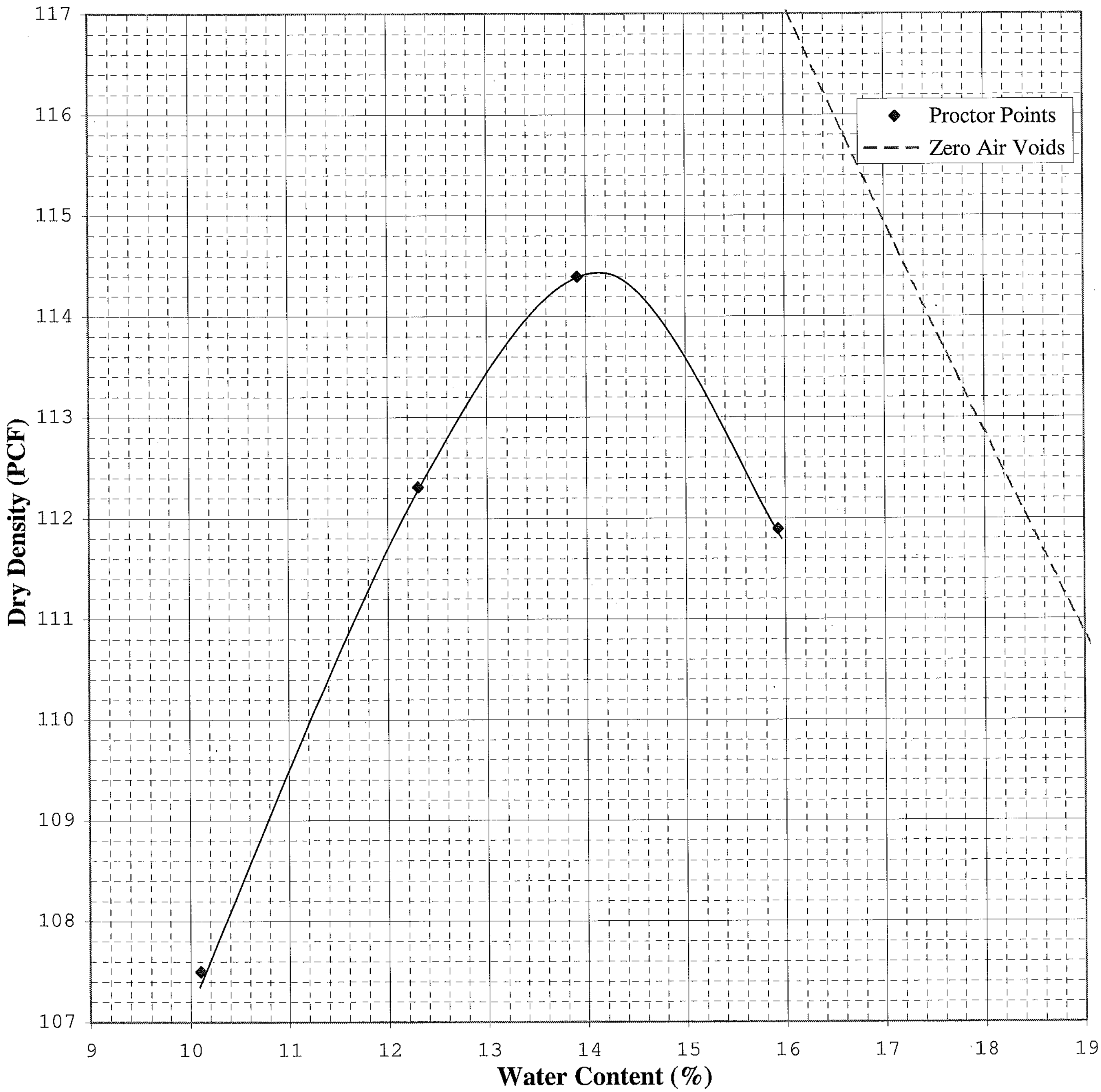
Client: **McCain & Associates, Inc.** Job No. **6515**

Boring No. Sample: **CLS-4** Depth(ft): **10-12** Location:

Soil Type: **Sandy Lean Clay w/a Trace of Gravel (CL/SC)**

As Received W.C. (%): **18.4** LL: **31.6** PL: **15.1** PI: **16.5** Specific Gravity: **2.68** *Assumed

Maximum Dry Density (pcf): **114.4** Opt. Water Content (%): **14.0**



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SOIL ENGINEERING TESTING, INC.

Bloomington, Minnesota 55420-3436

SET-R18a

Moisture Density Curve ASTM: D698, Method B

Project: **Sherco Pond #3 North - SHC 0306** Date: 5/15/08

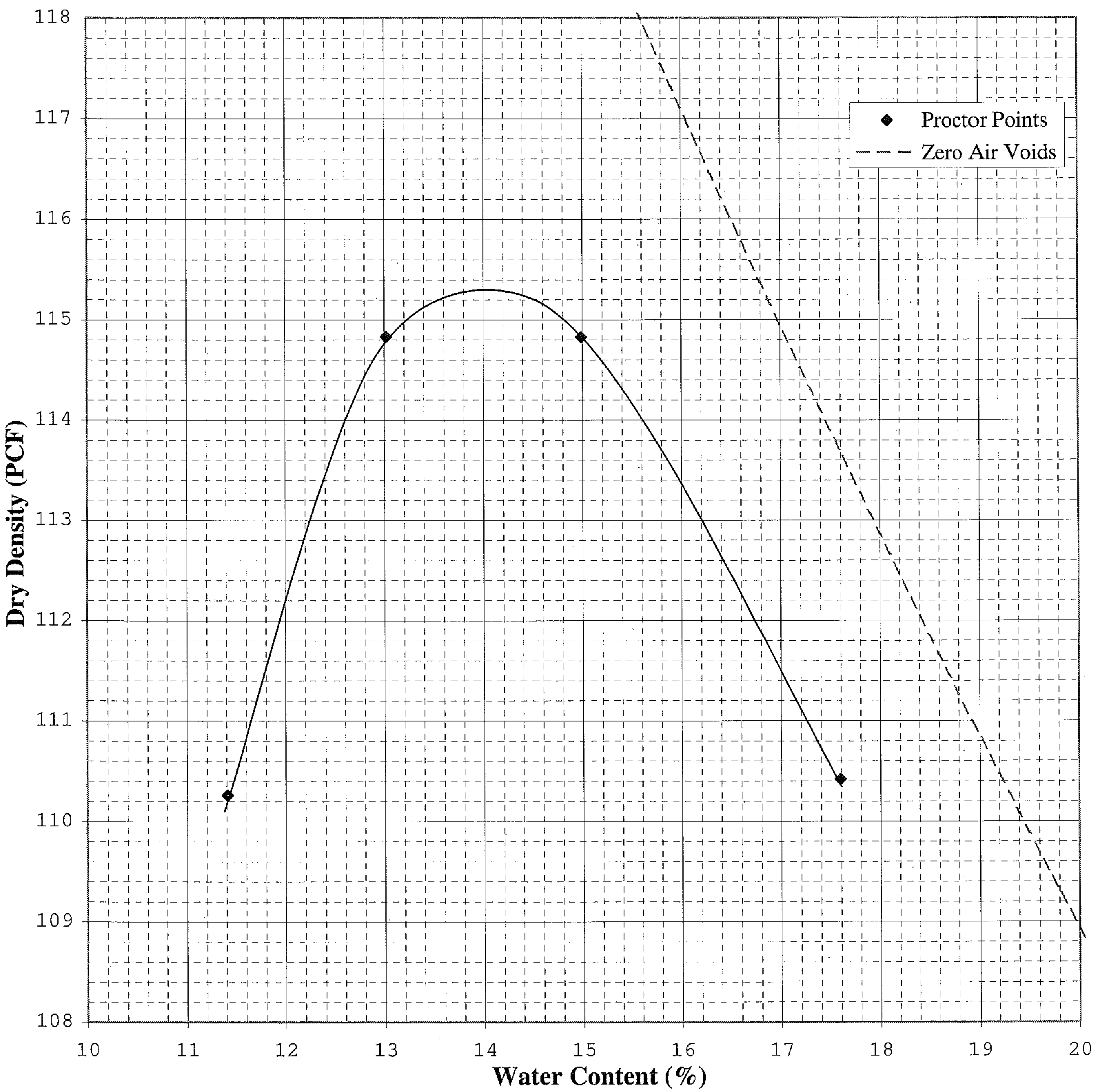
Client: **McCain & Associates, Inc.** Job No. 6515

Boring No. Sample: CLS-5 Depth(ft): 6-8 Location:

Soil Type: **Sandy Lean Clay w/a Little Gravel (CL/SC)**

As Received W.C. (%): 20.8 LL: 34.1 PL: 15.4 PI: 18.7 Specific Gravity: 2.68 *Assumed

Maximum Dry Density (pcf): 115.3 Opt. Water Content (%): 14.1



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SET-R18a

Moisture Density Curve ASTM: D698, Method B

Project: **Sherco Pond #3 North - SHC 0306** Date: **5/15/08**

Client: **McCain & Associates, Inc.** Job No. **6515**

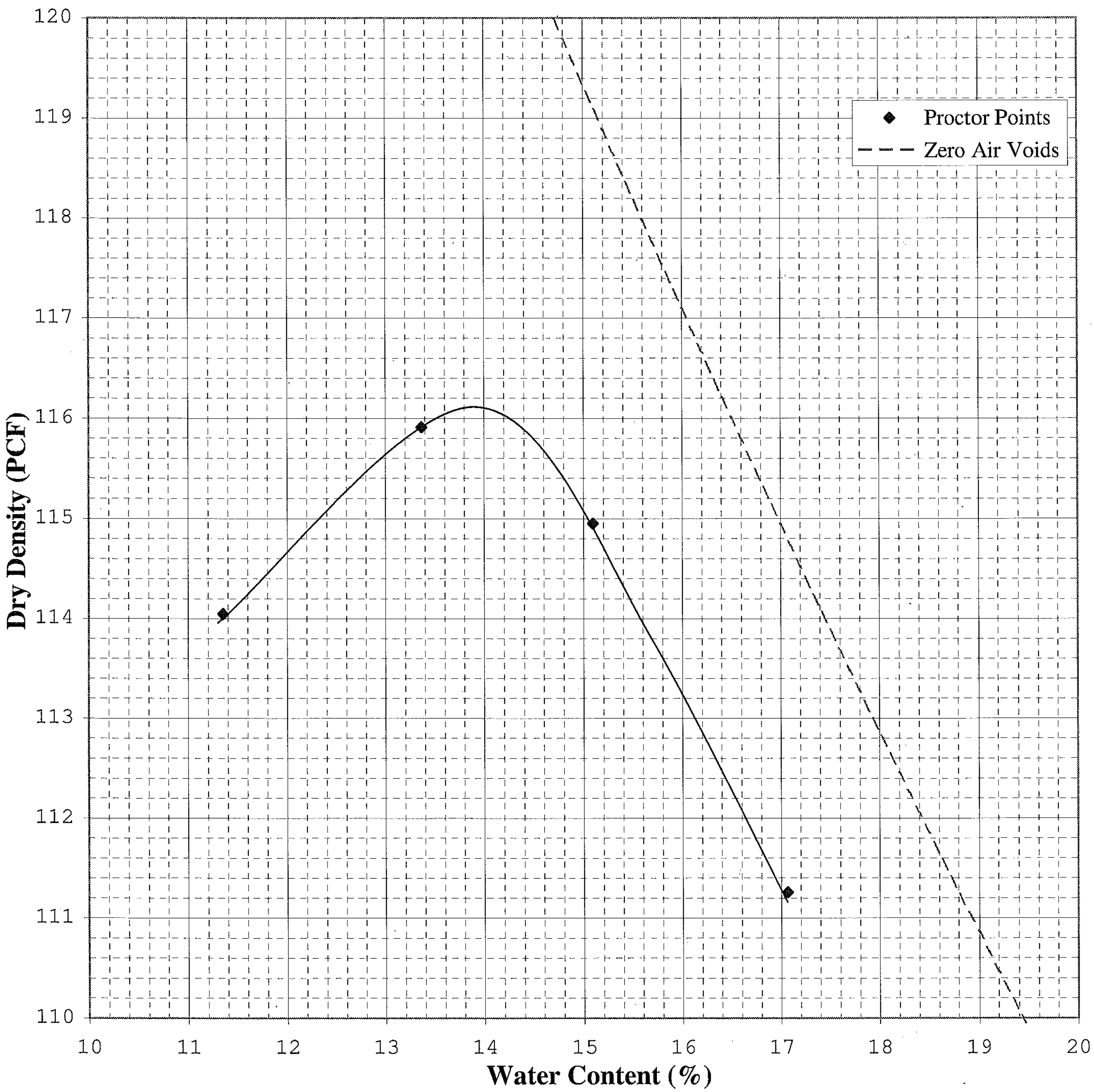
Boring No. Sample: **CLS-6** Depth(ft): **10-12** Location:

Soil Type: **Sandy Lean Clay w/a Trace of Gravel (CL/SC)**

As Received W.C. (%): **17.4** LL: **33.2** PL: **15.5** PI: 17.7 Specific Gravity: **2.68** *Assumed

◆ △ ◆ △

Maximum Dry Density (pcf): 116.1 ______ Opt. Water Content (%): 14.0 ______



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SET-R18a

Moisture Density Curve ASTM: D698, Method B

Project: **Sherco Generating Plant Pond #3 North** Date: **9/25/08**

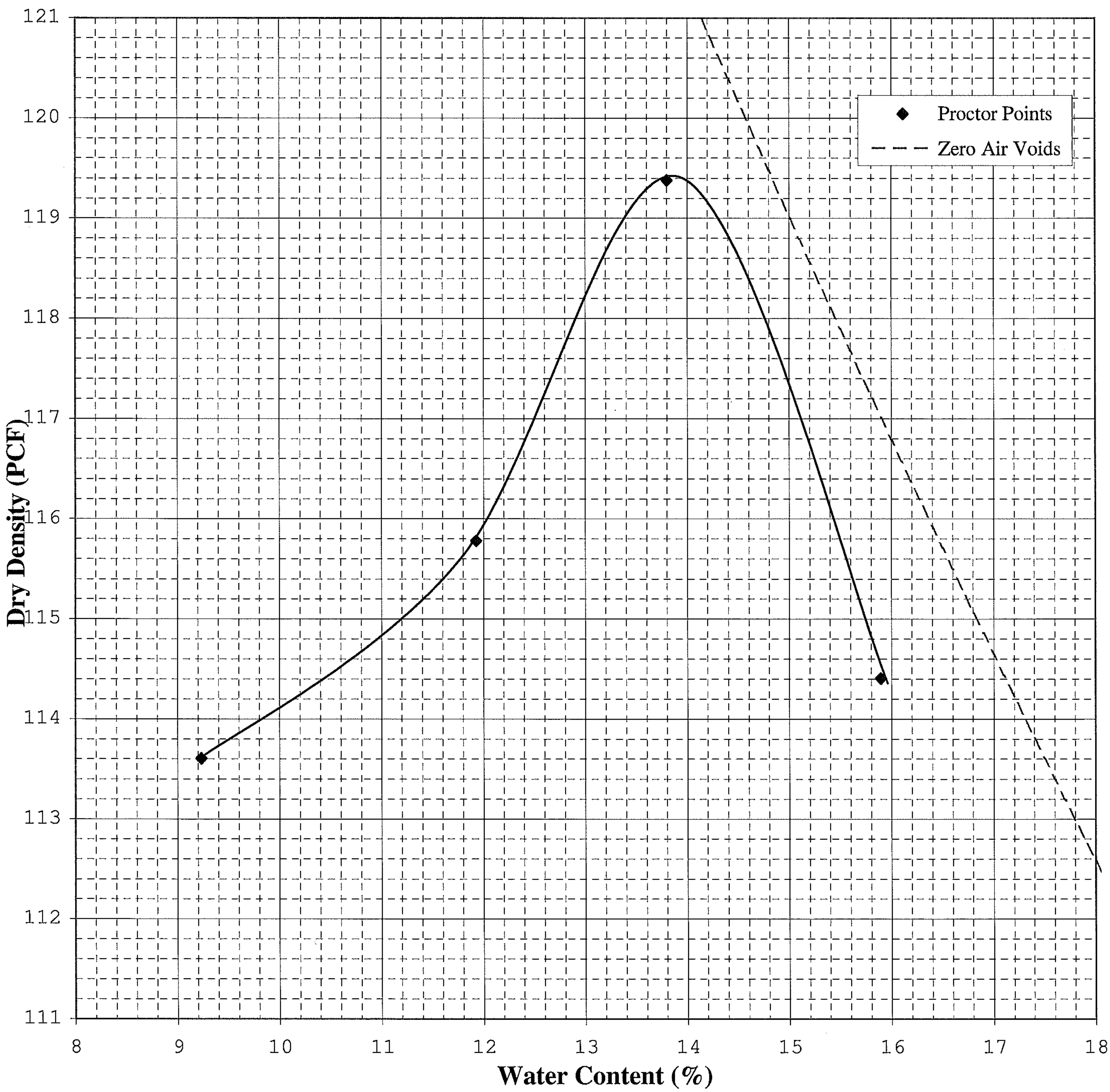
Client: **McCain & Associates, Inc.** Job No. **6717**

Boring No. Sample: **CLS-7** Elev. (ft): Location:

Soil Type: **Clayey Sand w/a Little Gravel (SC/CL)**

As Received W.C. (%): **17.2** LL: **31.5** PL: **16.7** PI: **14.8** Specific Gravity: **2.67** *Assumed

Maximum Dry Density (pcf): **119.4** Opt. Water Content (%): **13.9**



9301 Bryant Ave. South, Suite 107 SOIL ENGINEERING TESTING, INC. Bloomington, Minnesota 55420-3436

SET-R18a

Anderson Pit (Off-Site) Clay Pre-Qualification Re-Test Test Reports

Hydraulic Conductivity Test Data

Project: Sherco Pond #3 North - SHC 0306 Date: 6/10/2008

Reported To: McCain & Associates, Inc. Job No.: 6515

Location:							
Sample No.:	CLS-4	CLS-5					
Depth (ft)	10-12	6-8					
Location:							
Sample Type:	Bulk	Bulk					
Soil Type:	Sandy Lean Clay w/a Trace of Gravel (CL/SC)	Sandy Lean Clay w/a Little Gravel (CL/SC)					
Atterberg Limits							
LL	31.6	34.1					
PL	15.1	15.4					
PI	16.5	18.7					
Permeability Test							
Before Test Conditions: Saturation %:							
Porosity:							
Ht. (in):	3.00	3.00					
Dia. (in):	2.86	2.86					
Dry Density (pcf):	111.9	112.7					
Water Content:	16.0%	16.2%					
Test Type:	Falling	Falling					
Max Head (cm):	5.0	5.0					
Confining press. (Effective-psi):	2.0	2.0					
Trial No.:	12-16	12-16					
Water Temp °C:	20.0	20.0					
% Compaction	97.9%	97.8%					
% Saturation (After Test)	99.0%	96.9%					
Coefficient of Permeability							
K @ 20 °C (cm/sec)	**6.2×10^{-9}**	**6.6×10^{-9}**					
K @ 20 °C (ft/min)	**1.2×10^{-8}**	**1.3×10^{-8}**					
Notes:							

Clay Standard Proctor Test Reports

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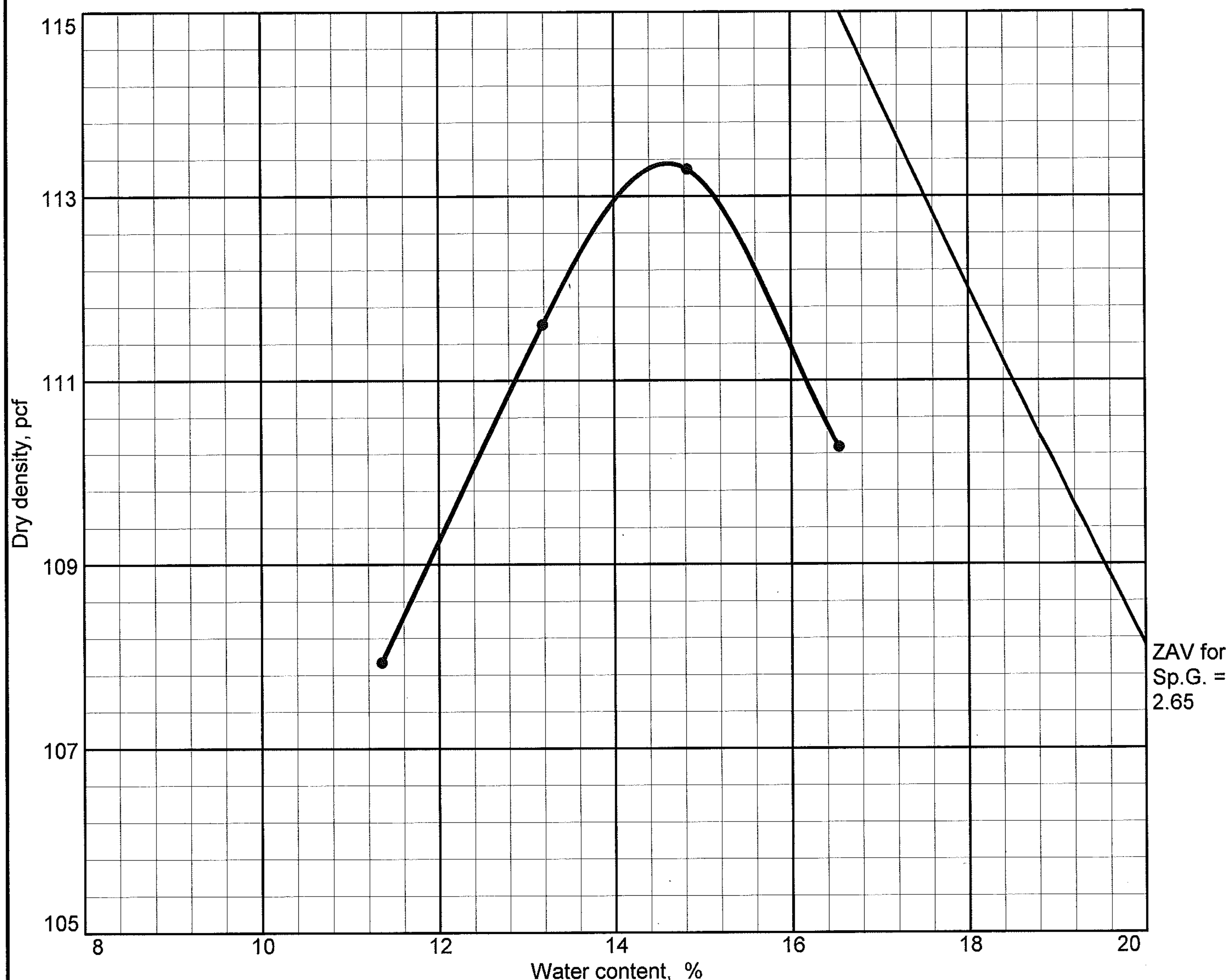
Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SC-SM		14.9	2.65	Not Tested	Not Tested		47.7

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 113.4 pcf Optimum moisture = 14.6 %	SC-SM - SILTY CLAYEY SAND, fine-to medium-grained, with a trace of Gravel, brown

Project No.: SC-08-01145 **Client:** Northern States Power Company

Project: Pond 3N Vertical Expansion

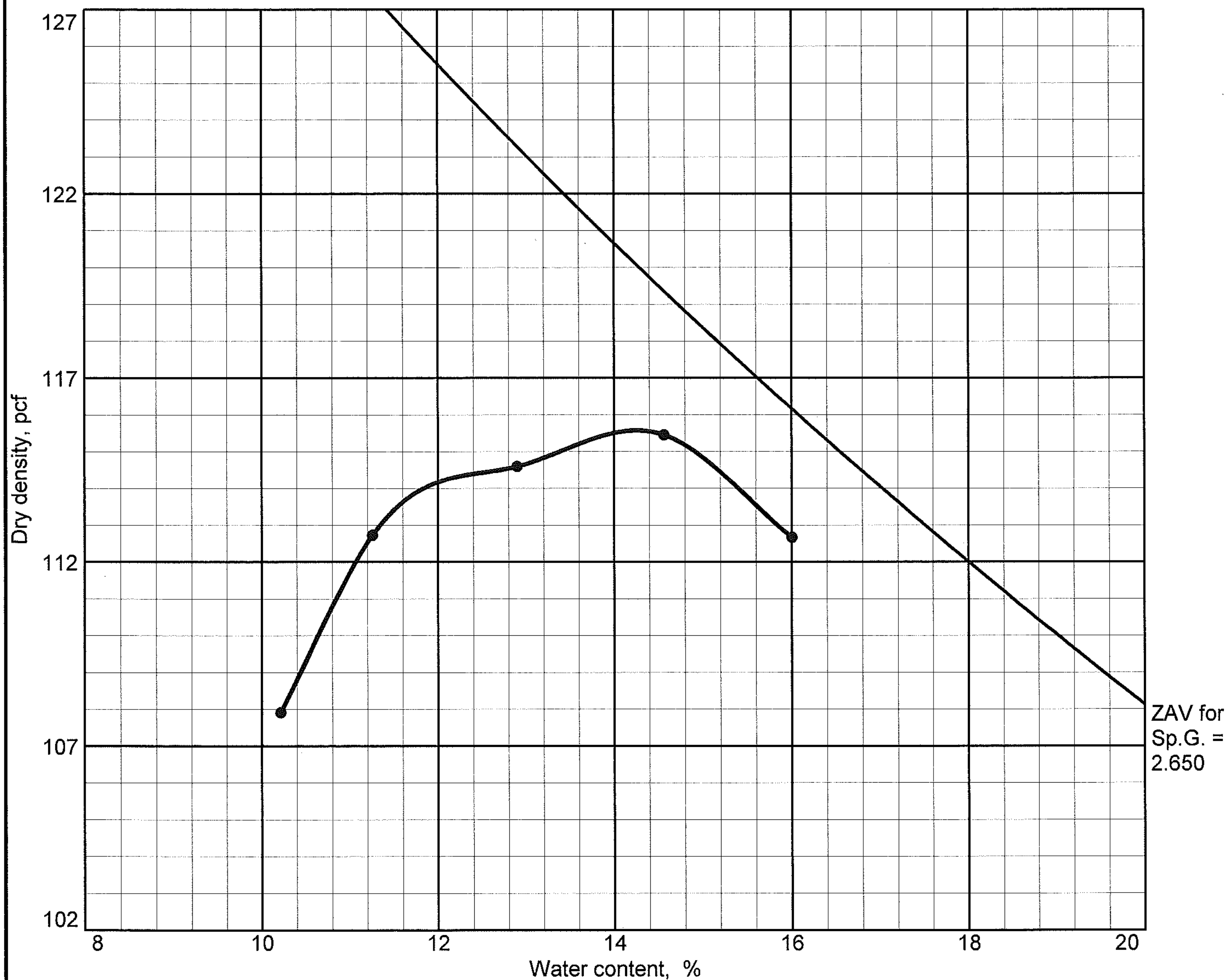
● **Source:** **Sample No.:** PCL-1

BRAUN INTERTEC

Remarks:

Anderson Clay Pit, Lat.45 20'36" Long.39 54'43"

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SC		20.6	2.650	N/A	N/A	4.7	47.4

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 115.6 pcf Optimum moisture = 14.3 %	SC - CLAYEY SAND, fine-to medium-grained, with a trace of Gravel, brown

Project No.: SC-08-01145 **Client:** Northern States Power Company

Project: Pond 3N Vertical Expansion

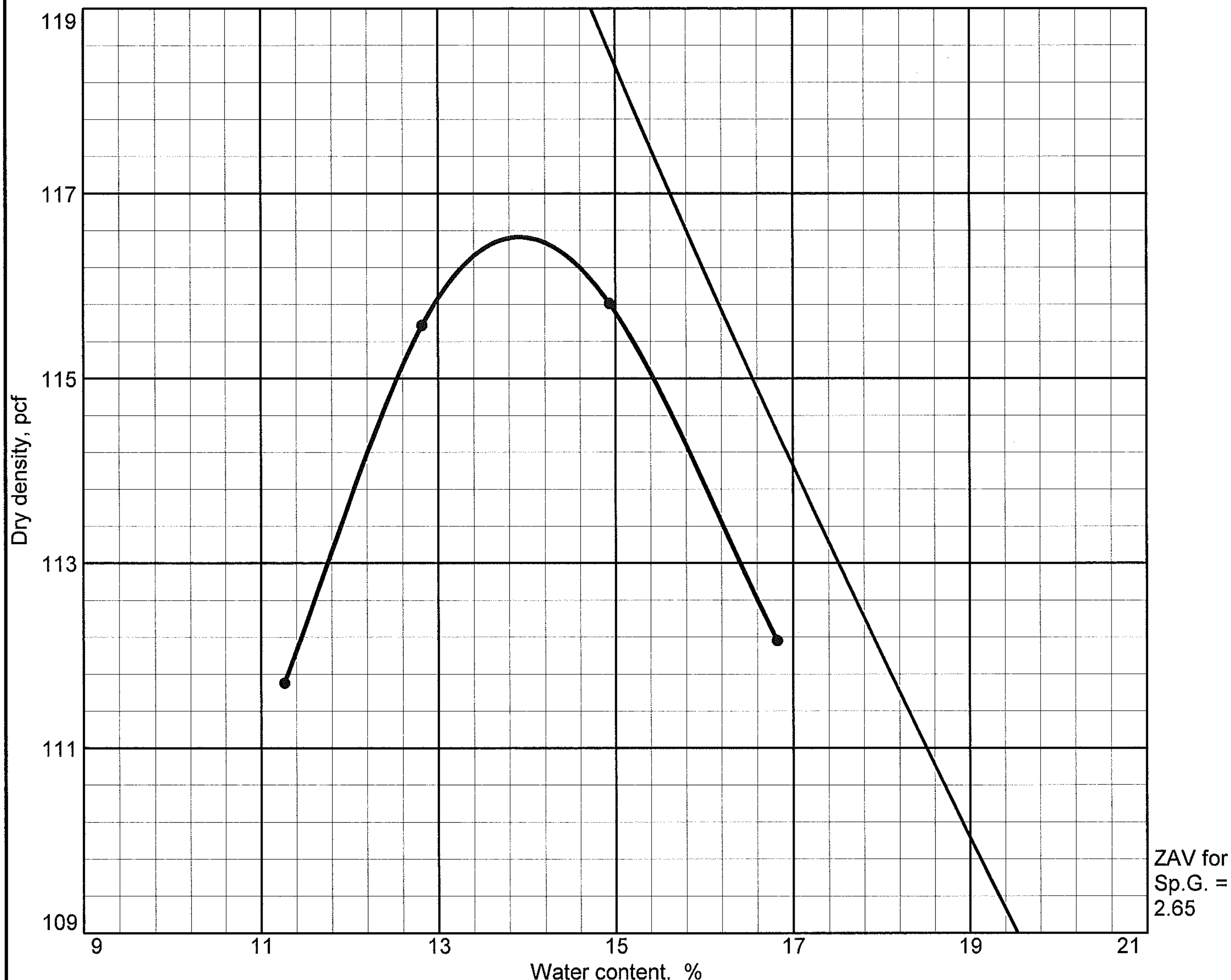
● **Source:** **Sample No.:** PCL-2

BRAUN INTERTEC

Remarks:

on site stockpile

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SC		11.8	2.65	N/A	N/A	3.3	44.8

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 116.5 pcf Optimum moisture = 13.9 %	SC - CLAYEY SAND, fine-to medium-grained, with a trace of Gravel, brown

Project No.: SC-08-01145 **Client:** Northern States Power Company

Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PCL-3

Remarks:

N. 863855.0 E. 2030610.0

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Clay Density Test Reports

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Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: June 16, 2008 **Project:** SC-08-01145 **Report:** 1

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-1	6/10/08	PCL-1	SC-SM	14.6	113.4	12	112	99	100	B
CL-2	6/10/08	PCL-1	SC-SM	14.6	113.4	14	114	101	100	A
CL-1A	6/10/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-3	6/13/08	PCL-1	SC-SM	14.6	113.4	15	118	104	100	A
CL-4	6/13/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-5	6/13/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-6	6/13/08	PCL-1	SC-SM	14.6	113.4	14	118	104	100	A
CL-7	6/13/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-8	6/13/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-9	6/13/08	PCL-1	SC-SM	14.6	113.4	18	114	101	100	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-1	N863731.0, E2031982.0	991.0
CL-2	N863668.0, E2031985.0	991.0
CL-1A	Retest of #1	991.0
CL-3	N863666.0, E2032000.0	993.2
CL-4	N863706.0, E2032001.0	993.8
CL-5	N863682.0, E2032002.0	994.5
CL-6	N863702.0, E2031991.0	995.0
CL-7	Upstream Clay notch on South Slope	1st Lift
CL-8	Upstream Clay notch on South Slope	2nd Lift
CL-9	Upstream Clay notch on South Slope	3rd Lift

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: June 16, 2008 **Project:** SC-08-01145 **Report:** 2

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-10	6/13/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-11	6/13/08	PCL-1	SC-SM	14.6	113.4	19	114	101	100	A
CL-12	6/13/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-13	6/13/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-14	6/13/08	PCL-1	SC-SM	14.6	113.4	18	114	101	100	A
CL-15	6/13/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-16	6/16/08	PCL-1	SC-SM	14.6	113.4	18	114	101	100	A
CL-17	6/16/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-18	6/16/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-19	6/16/08	PCL-1	SC-SM	14.6	113.4	16	115	101	100	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-10	Upstream Clay notch on South Slope	4th Lift
CL-11	Upstream Clay notch on South Slope	5th Lift
CL-12	Upstream Clay notch on South Slope	6th Lift
CL-13	Upstream Clay notch on South Slope	7th Lift
CL-14	Upstream Clay notch on South Slope, tie in to Existing 972 Elevation Clay	
CL-15	Upstream Clay notch on South Slope	8th Lift
CL-16	N864390.0, E2030658.0	990.9
CL-17	N864279.2, E2030659.2	991.4
CL-18	N864170.0, E2030663.0	990.5
CL-19	N864135.0, E2030660.0	991.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: June 16, 2008 **Project:** SC-08-01145 **Report:** 3

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compactio n (%)	Specified Minimum Compact. (%)	Comments
CL-20	6/16/08	PCL-1	SC-SM	14.6	113.4	20	110	97	100	B
CL-20A	6/16/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-21	6/16/08	PCL-1	SC-SM	14.6	113.4	13	114	101	100	A
CL-22	6/17/08	PCL-1	SC-SM	14.6	113.4	14	115	101	100	A
CL-23	6/17/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-24	6/17/08	PCL-1	SC-SM	14.6	113.4	14	118	104	100	A
CL-25	6/17/08	PCL-1	SC-SM	14.6	113.4	17	115	101	100	A
CL-26	6/17/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-27	6/18/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-28	6/18/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-20	N863933.4, E2030661.3	991.7
CL-20A	Retest of #20	991.7
CL-21	N864190.0, E2030675.0	988.0
CL-22	N864467.0, E2030667.0	991.0
CL-23	N864602.0, E2030664.0	991.8
CL-24	N864649.4, E2030656.0	992.8
CL-25	N864689.0, E2030659.0	993.7
CL-26	N864626.0, E2030652.9	994.3
CL-27	N864770.0, E2030666.0	991.0
CL-28	N864795.0, E2030663.0	992.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 19, 2008 **Project:** SC-08-01145 **Report:** 4

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-29	6/18/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-30	6/25/08	PCL-2	SC	14.3	115.6	8	119	103	100	A
CL-31	7/29/08	PCL-1	SC-SM	14.6	113.4	10	115	101	100	A
CL-32	7/31/08	PCL-1	SC-SM	14.6	113.4	12	116	102	100	A
CL-33	9/17/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-34	9/17/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-35	9/17/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-36	9/17/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-37	9/17/08	PCL-1	SC-SM	14.6	113.4	15	113	100	100	A
CL-38	9/17/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-29	N 865000.0, E 2030660.0	
CL-30	Clay Anchor Trench on S. Enbankment for U.S. Upstream Clay Barrier 4'S of Liner Tie In.	972.0
CL-31	N 863733.0, E 2031999.0	995.0
CL-32	N 864208.0, E 2030609.0	1010.0
CL-33	N 865399.7, E 2031333.9	972.5
CL-34	N 865402.0, E 2031724.0	972.5
CL-35	N 865090.8, E 2032034.5	972.0
CL-36	N 864696.7, E 2032033.4	972.0
CL-37	N 865400.6, E 2031358.6	973.5
CL-38	N 865399.2, E 2031174.4	975.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 19, 2008 **Project:** SC-08-01145 **Report:** 5

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-39	9/17/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-40	9/17/08	PCL-1	SC-SM	14.6	113.4	17	113	100	100	A
CL-41	9/18/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-42	9/18/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-43	9/18/08	PCL-1	SC-SM	14.6	113.4	17	113	100	100	A
CL-44	9/18/08	PCL-1	SC-SM	14.6	113.4	17	113	100	100	A
CL-45	9/18/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-46	9/18/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-47	9/18/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-48	9/18/08	PCL-1	SC-SM	14.6	113.4	18	115	101	100	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-39	N 865395.9, E 2031275.4	975.5
CL-40	N 865394.3, E 2031303.0	976.5
CL-41	N 865395.7, E 2031683.9	974.0
CL-42	N 865402.3, E 2031618.4	974.0
CL-43	N 865394.7, E 2031655.9	974.5
CL-44	N 865365.7, E 2031945.7	973.5
CL-45	N 865066.9, E 2032033.2	974.0
CL-46	N 864836.4, E 2032032.3	973.5
CL-47	N 864642.3, E 2032035.4	974.0
CL-48	N 864809.8, E 2032034.7	974.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303
Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 24, 2008 **Project:** SC-08-01145 **Report:** 6

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-49	9/18/08	PCL-1	SC-SM	14.6	113.4	16	115	101	100	A
CL-50	9/18/08	PCL-1	SC-SM	14.6	113.4	16	115	101	100	A
CL-51	9/18/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-52	9/19/08	PCL-1	SC-SM	14.6	113.4	16	118	104	100	A
CL-53	9/19/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-54	9/19/08	PCL-1	SC-SM	14.6	113.4	16	116	102	100	A
CL-55	9/19/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-56	9/19/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-57	9/23/08	PCL-1	SC-SM	14.6	113.4	17	117	103	100	A
CL-58	9/23/08	PCL-1	SC-SM	14.6	113.4	17	114	101	100	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-49	N 865394.2, E 2031601.4	975.0
CL-50	N 865277.9, E 2032021.8	974.5
CL-51	N 865056.5, E 2032030.5	975.0
CL-52	N 864624.1, E 2032033.0	974.0
CL-53	N 864472.5, E 2032030.3	974.0
CL-54	N 864643.4, E 2032030.4	975.0
CL-55	N 864439.8, E 2032027.4	975.5
CL-56	N 865394.9, E 2031482.3	975.5
CL-57	N 864706.7, E 2032026.8	976.0
CL-58	N 864452.6, E 2032027.0	977.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 25, 2008 **Project:** SC-08-01145 **Report:** 7

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-59	9/23/08	PCL-1	SC-SM	14.6	113.4	17	113	100	100	A
CL-60	9/23/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-61	9/24/08	PCL-1	SC-SM	14.6	113.4	15	113	100	100	A
CL-62	9/24/08	PCL-1	SC-SM	14.6	113.4	17	114	101	100	A
CL-63	9/24/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-64	9/24/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-65	9/24/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-66	9/24/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-67	9/24/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-68	9/25/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-59	N 864669.0, E 2032023.9	978.0
CL-60	N 863925.4, E 2032027.5	977.0
CL-61	N 865396.6, E 2031688.8	976.0
CL-62	N 865392.2, E 2031473.2	976.5
CL-63	N 865389.4, E 2031855.2	977.0
CL-64	N 865392.6, E 2031268.2	978.0
CL-65	N 865389.9, E 2031334.8	979.0
CL-66	N 865389.1, E 2031269.2	979.0
CL-67	N 865389.1, E2031214.1	980.0
CL-68	N 865386.0, E 2031675.0	981.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 29, 2008 **Project:** SC-08-01145 **Report:** 8

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compactio n (%)	Specified Minimum Compact. (%)	Comments
CL-69	9/25/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-70	9/25/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-71	9/26/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-72	9/26/08	PCL-1	SC-SM	14.6	113.4	15	113	100	100	A
CL-73	9/26/08	PCL-1	SC-SM	14.6	113.4	15	118	104	100	A
CL-74	9/26/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-75	9/26/08	PCL-1	SC-SM	14.6	113.4	17	113	100	100	A
CL-76	9/26/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-77	9/26/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-78	9/26/08	PCL-1	SC-SM	14.6	113.4	16	116	102	100	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-69	N 865013.9, E 2032029.8	975.5
CL-70	N 864666.8, E 2032023.8	979.5
CL-71	N 865111.6, E 2032026.4	977.0
CL-72	N 865015.8, E 2032026.8	976.5
CL-73	N 864860.6, E 2032022.3	979.0
CL-74	N 864851.6, E 2032020.8	980.0
CL-75	N 864890.9, E 2032022.0	978.5
CL-76	N 865018.6, E 2032023.9	977.5
CL-77	N 865383.7, E 2031866.2	982.5
CL-78	N 865384.0, E 2031763.0	982.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

TLH

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 30, 2008 **Project:** SC-08-01145 **Report:** 9

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-79	9/26/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-80	9/26/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-81	9/29/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-82	9/29/08	PCL-1	SC-SM	14.6	113.4	15	113	100	100	A
CL-83	9/29/08	PCL-1	SC-SM	14.6	113.4	14	117	103	100	A
CL-84	9/29/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-85	9/29/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-86	9/29/08	PCL-1	SC-SM	14.6	113.4	16	115	101	100	A
CL-87	9/29/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-88	9/29/08	PCL-1	SC-SM	14.6	113.4	17	117	103	100	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-79	N 865386.7, E 2031652.0	981.0
CL-80	N 865382.4, E 2031864.7	983.0
CL-81	N 865381.5, E 2031164.9	984.0
CL-82	N 865380.6, E 2031296.2	984.5
CL-83	N 865388.1, E 2031511.0	982.0
CL-84	N 865379.3, E 2031628.3	984.5
CL-85	N 865385.8, E 2031785.4	983.5
CL-86	N 865380.4, E 2031873.2	983.0
CL-87	N 865379.5, E 2031129.3	984.5
CL-88	N 864526.8, E 2032018.2	982.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 7, 2008 **Project:** SC-08-01145 **Report:** 10

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-89	9/29/08	PCL-1	SC-SM	14.6	113.4	16	117	103	100	A
CL-90	9/29/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-91	9/30/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-92	9/30/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-93	9/30/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-94	9/30/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-95	9/30/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-96	10/1/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-97	10/6/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-98	10/6/08	PCL-1	SC-SM	14.6	113.4	14	113	100	100	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-89	N 864362.2, E 2032020.6	980.0
CL-90	N 864703.3, E 2032017.8	982.0
CL-91	N 864328.7, E 2032016.8	982.0
CL-92	N 864099.9, E 2032021.0	979.5
CL-93	N 863885.6, E 2032020.8	979.0
CL-94	N 863849.7, E 2032018.9	981.0
CL-95	N 863865.5, E 2032016.6	982.5
CL-96	N 865386.1, E 2031092.6	981.5
CL-97	N 864640.0, E 2032018.0	984.0
CL-98	N 864019.0, E 2032021.1	982.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 10, 2008 **Project:** SC-08-01145 **Report:** 11

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-99	10/6/08	PCL-1	SC-SM	14.6	113.4	14	113	100	100	A
CL-100	10/6/08	PCL-1	SC-SM	14.6	113.4	15	118	104	100	A
CL-101	10/6/08	PCL-1	SC-SM	14.6	113.4	15	119	105	100	A
CL-102	10/6/08	PCL-1	SC-SM	14.6	113.4	17	114	101	100	A
CL-103	10/6/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-104	10/6/08	PCL-1	SC-SM	14.6	113.4	17	114	101	100	A
CL-105	10/9/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-106	10/9/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-107	10/9/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-108	10/9/08	PCL-1	SC-SM	14.6	113.4	15	113	100	100	A

Key:
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SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-99	N 864057.0, E 2032021.1	982.0
CL-100	N 864395.0, E 2032019.6	983.0
CL-101	N 864551.0, E 2032018.1	984.5
CL-102	N 864642.0, E 2032016.6	985.0
CL-103	N 863850.0, E 2032015.4	986.5
CL-104	N 864685.0, E 2032013.8	987.0
CL-105	N 864628.7, E 2032013.7	987.0
CL-106	N 864939.0, E 2032009.9	987.5
CL-107	N 865024.7, E 2032023.1	979.0
CL-108	N 865382.3, E 2031417.5	984.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 10, 2008 **Project:** SC-08-01145 **Report:** 12

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-109	10/9/08	PCL-1	SC-SM	14.6	113.4	14	116	102	100	A
CL-110	10/9/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-111	10/9/08	PCL-1	SC-SM	14.6	113.4	14	116	102	100	A
CL-112	10/9/08	PCL-1	SC-SM	14.6	113.4	14	115	101	100	A
CL-113	10/10/08	PCL-1	SC-SM	14.6	113.4	14	116	102	100	A
CL-114	10/10/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-115	10/10/08	PCL-1	SC-SM	14.6	113.4	15	113	100	100	A
CL-116	10/10/08	PCL-1	SC-SM	14.6	113.4	19	111	98	100	B
CL-116A	10/10/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-117	10/10/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A

Key:
N = Nuclear, ASTM D 2922
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* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-109	N 865173.3, E 2032021.3	981.0
CL-110	N 863871.9, E 2032006.9	988.5
CL-111	N 865380.3, E 2031611.8	985.5
CL-112	N 865381.5, E 2031263.8	986.5
CL-113	N 865378.3, E 2030974.1	989.6
CL-114	N 864238.2, E 2032005.6	991.0
CL-115	N 865373.9, E 2030920.0	985.0
CL-116	N 865380.6, E 2031056.4	985.0
CL-116A	Retest of #116	985.0
CL-117	N 865381.5, E 2031055.9	985.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 13, 2008 **Project:** SC-08-01145 **Report:** 13

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-118	10/10/08	PCL-1	SC-SM	14.6	113.4	16	113	100	100	A
CL-119	10/10/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-120	10/10/08	PCL-1	SC-SM	14.6	113.4	14	118	104	100	A
CL-121	10/10/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-122	10/10/08	PCL-1	SC-SM	14.6	113.4	14	118	104	100	A
CL-123	10/10/08	PCL-1	SC-SM	14.6	113.4	14	114	101	100	A
CL-124	10/10/08	PCL-1	SC-SM	14.6	113.4	14	115	101	100	A
CL-125	10/11/08	PCL-1	SC-SM	14.6	113.4	15	115	101	100	A
CL-126	10/11/08	PCL-1	SC-SM	14.6	113.4	15	119	105	100	A
CL-127	10/11/08	PCL-1	SC-SM	14.6	113.4	14	119	105	100	A

Key: N = Nuclear, ASTM D 2922
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* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
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C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-118	N 865378.2, E 2031033.2	986.5
CL-119	N 865371.0, E 2031136.0	986.5
CL-120	N 863876.0, E 2032003.0	991.0
CL-121	N 865372.5, E 2031323.0	987.0
CL-122	N 865375.4, E 2030997.1	989.0
CL-123	N 863881.6, E 2032003.5	991.0
CL-124	N 865140.0, E 2032021.1	982.0
CL-125	N 865037.1, E 2032019.1	981.5
CL-126	N 864732.1, E 2032002.6	991.0
CL-127	N 864618.9, E 2032003.5	990.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 17, 2008 **Project:** SC-08-01145 **Report:** 14

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-128	10/11/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-129	10/11/08	PCL-1	SC-SM	14.6	113.4	15	118	104	100	A
CL-130	10/11/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-131	10/11/08	PCL-1	SC-SM	14.6	113.4	16	115	101	100	A
CL-132	10/11/08	PCL-1	SC-SM	14.6	113.4	16	117	103	100	A
CL-133	10/11/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-134	10/14/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-135	10/14/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-136	10/14/08	PCL-1	SC-SM	14.6	113.4	15	114	101	100	A
CL-137	10/15/08	PCL-1	SC-SM	14.6	113.4	15	119	105	100	A

Key: N = Nuclear, ASTM D 2922
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* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
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C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-128	N 865374.5, E 2031633.4	988.5
CL-129	N 865377.4, E 2031545.9	989.0
CL-130	N 865773.8, E 2031675.3	989.5
CL-131	N 865140.0, E 2032013.5	984.0
CL-132	N 865373.1, E 2031123.0	990.0
CL-133	N 865372.5, E 2031653.2	992.0
CL-134	N 865371.8, E 2031296.1	992.5
CL-135	N 865367.1, E 2031008.6	993.0
CL-136	N 865370.6, E 2031602.3	992.0
CL-137	N 865366.0, E 2031086.0	993.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: brauninterlec.com

Report of Field Compaction Tests

Date: October 22, 2008 **Project:** SC-08-01145 **Report:** 15

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-138	10/15/08	PCL-1	SC-SM	14.6	113.4	15	119	105	100	A
CL-139	10/15/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-140	10/21/08	PCL-1	SC-SM	14.6	113.4	16	116	102	100	A
CL-141	10/21/08	PCL-1	SC-SM	14.6	113.4	16	117	103	100	A
CL-142	10/21/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-143	10/21/08	PCL-1	SC-SM	14.6	113.4	16	117	103	100	A
CL-144	10/21/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-145	10/21/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A
CL-146	10/21/08	PCL-1	SC-SM	14.6	113.4	15	116	102	100	A
CL-147	10/22/08	PCL-1	SC-SM	14.6	113.4	15	117	103	100	A

Key: N = Nuclear, ASTM D 2922
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* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
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C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-138	N 865367.8, E 2031054.1	994.0
CL-139	N 865363.3, E 2031384.2	995.5
CL-140	N 863944.8, E 2032007.6	991.0
CL-141	N 864066.6, E 2032005.0	992.0
CL-142	N 864332.9, E 2032001.8	993.0
CL-143	N 865328.8, E 2031941.8	990.0
CL-144	N 865353.0, E 2031911.7	992.0
CL-145	N 865121.8, E 2032009.3	984.5
CL-146	N 865104.4, E 2032013.3	985.5
CL-147	N 863889.1, E 2031997.5	994.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: October 28, 2008 **Project:** SC-08-01145 **Report:** 16

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-148	10/27/08	PCL-1	SC-SM	14.6	113.4	14	118	104	100	A
CL-149	10/27/08	PCL-1	SC-SM	14.6	113.4	16	116	102	100	A
CL-150	10/27/08	PCL-1	SC-SM	14.6	113.4	14	117	103	100	A
CL-151	10/27/08	PCL-1	SC-SM	14.6	113.4	14	116	102	100	A
CL-152	10/27/08	PCL-1	SC-SM	14.6	113.4	16	114	101	100	A
CL-153	10/27/08	PCL-1	SC-SM	14.6	113.4	17	115	101	100	A
CL-154	10/28/08	PCL-1	SC-SM	14.6	113.4	16	116	102	100	A
CL-155	10/28/08	PCL-1	SC-SM	14.6	113.4	15	119	105	100	A
CL-156	10/28/08	PCL-1	SC-SM	14.6	113.4	15	118	104	100	A
CL-157	10/28/08	PCL-1	SC-SM	14.6	113.4	15	118	104	100	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-148	N 865366.7, E 2031854.1	995.0
CL-149	N 865270.8, E 2031992.4	933.0
CL-150	N 865051.6, E 2032010.1	988.5
CL-151	N 864860.2, E 2032006.4	990.0
CL-152	N 865095.4, E 2032003.9	992.0
CL-153	N 864648.0, E 2032003.9	992.5
CL-154	N865026.0, E2032009.0	992.5
CL-155	N864516.9, E2031995.4	995.5
CL-156	N863981.5, E2031996.8	995.5
CL-157	N864235.3, E2031998.3	995.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: November 6, 2008 **Project:** SC-08-01145 **Report:** 17

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL-158	10/28/08	PCL-1	SC-SM	14.6	113.4	16	118	104	100	A
CL-159	10/28/08	PCL-1	SC-SM	14.6	113.4	16	115	101	100	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
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C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL-158	N864535.8, E2031994.9	995.5
CL-159	N865153.3, E2031998.9	994.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Clay In-Place Permeability and Index Test Reports

Hydraulic Conductivity Test Data

Project: Sherco Pond #3 North - SHC 0306 Date: 7/31/2008

Reported To: McCain & Associates, Inc. Job No.: 6515-A

Boring No.:							
Sample No.:	ST-1 Middle						
Elevation (ft)	992.75-993-75						
Location:	N.863, 697 E.2,031, 995						
Sample Type:	TWT						
Soil Type:	Sandy Lean Clay w/a Little Gravel, Brown and Gray Mottled (CL)						
Atterberg Limits							
LL							
PL							
PI							
Permeability Test							
Before Test Conditions: Saturation %:							
Porosity:							
Ht. (in):	2.82						
Dia. (in):	2.86						
Dry Density (pcf):	112.8						
Water Content:	16.1%						
Test Type:	Falling						
Max Head (ft):	5.0						
Confining press. (Effective-psi):	2.0						
Trial No.:	13-17						
Water Temp ℃:	20.4						
% Compaction							
% Saturation (After Test)	95.7%						
Coefficient of Permeability							
K @ 20 ℃ (cm/sec)	**1.5×10^{-8}**						
K @ 20 ℃ (ft/min)	**2.9×10^{-8}**						
Notes:							

Hydraulic Conductivity Test Data

Project: Sherco Generating Plant Pond #3 North — Date: 10/23/2008

Reported To: McCain & Associates, Inc. — Job No.: 6717

Boring No.:							
Sample No.:	ST-2	ST-3	ST-4	ST-5	ST-6		
Depth (ft)							
Location:							
Sample Type:	3T	3T	3T	3T	3T		
Soil Type:	Sandy Lean Clay w/a trace of gravel (CL/SC)	Clayey Sand w/a little gravel (SC/CL)	Clayey Sand w/a trace of gravel (SC/CL)	Sandy Lean Clay w/a little gravel (CL/SC)	Clayey Sand w/a little gravel (SC)		
Atterberg Limits							
LL	30.3	31.0	32.1	31.8	31.8		
PL	14.3	11.4	14.3	15.4	15.1		
PI	16.0	19.6	17.8	16.4	16.7		
Permeability Test							
Before Test Conditions: Saturation %:							
Porosity:							
Ht. (in):	2.97	2.32	2.74	3.18	2.77		
Dia. (in):	2.87	2.89	2.88	2.89	2.90		
Dry Density (pcf):	113.2	112.1	111.5	115.9	110.3		
Water Content:	16.1%	16.0%	16.9%	15.4%	15.8%		
Test Type:	Falling	Falling	Falling	Falling	Falling		
Max Head (ft):	5.0	5.0	5.0	5.0	5.0		
Confining press. (Effective-psi):	2.0	2.0	2.0	2.0	2.0		
Trial No.:	14-18	14-18	7-11	16-20	12-16		
Water Temp °C:	20.4	20.4	20.0	21.0	20.0		
% Compaction							
% Saturation (After Test)	96.6%	97.1%	95.0%	97.1%	95.2%		
Coefficient of Permeability							
K @ 20 °C (cm/sec)	**2.5×10^{-8}**	**3.6×10^{-8}**	**1.2×10^{-8}**	**2.3×10^{-8}**	**4.4×10^{-8}**		
K @ 20 °C (ft/min)	**4.9×10^{-8}**	**7.1×10^{-8}**	**2.5×10^{-8}**	**4.5×10^{-8}**	**8.7×10^{-8}**		
Notes:							

Hydraulic Conductivity Test Data

Project: Sherco Generating Plant Pond #3 North — Date: 11/8/2008

Reported To: McCain & Associates, Inc. — Job No.: 6717-A

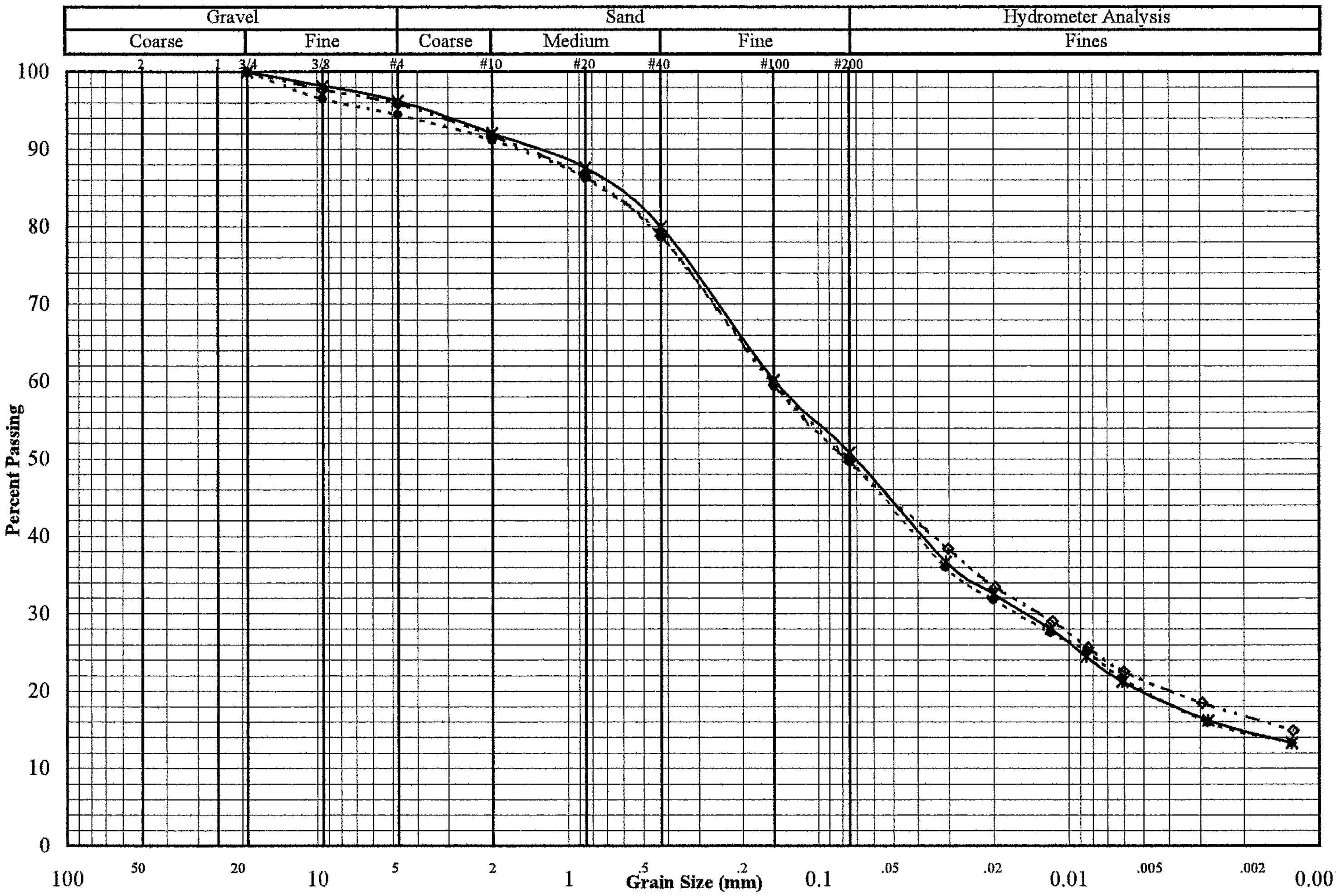
Boring No.:							
Sample No.:	ST-7						
Elevation (ft)	995.2						
Location:	N. 865364.4 E. 2031864.0						
Sample Type:	3T						
Soil Type:	Clayey Sand w/a Little Gravel (SC)						
Atterberg Limits							
LL	32.7						
PL	14.8						
PI	17.9						
Permeability Test							
Before Test Conditions: Saturation %:							
Porosity:							
Ht. (in):	2.74						
Dia. (in):	2.88						
Dry Density (pcf):	115.7						
Water Content:	15.2%						
Test Type:	Falling						
Max Head (ft):	5.0						
Confining press. (Effective-psi):	2.0						
Trial No.:	12 - 16						
Water Temp °C:	20.0						
% Compaction							
% Saturation (After Test)	95.3%						
Coefficient of Permeability							
K @ 20 °C (cm/sec)	**6.4×10^{-9}**						
K @ 20 °C (ft/min)	**1.3×10^{-8}**						
Notes:							

9301 Bryant Ave. South Suite 107 — Soil Engineering Testing, Inc. — Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Project:	Sherco Generating Plant Pond #3 North	Job No. :	6717
		Test Date:	9/19/08
Reported To:	McCain & Associates, Inc.	Report Date:	10/6/08

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		ST-2		TWT	Sandy Lean Clay w/a trace of gravel (CL/SC)
●		ST-3		TWT	Clayey Sand w/a little gravel (SC/CL)
◇		ST-4		TWT	Clayey Sand w/a trace of gravel (SC/CL)



Other Tests

	*	●	◇
Liquid Limit	30.3	31.0	32.1
Plastic Limit	14.3	11.4	14.3
Plasticity Index	16.0	19.6	17.8
Water Content			
Dry Density (pcf)			
Specific Gravity	2.69*	2.69*	2.69*
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	770.6	702.6	262.7
2"			
1.5"			
1"			
3/4"	100.0	100.0	100.0
3/8"	98.2	96.5	97.7
#4	96.2	94.5	95.9
#10	92.0	91.2	91.7
#20	87.6	86.3	86.4
#40	80.0	78.7	78.8
#100	60.2	59.8	59.5
#200	50.9	49.9	49.7

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

9301 Bryant Ave. South, Suite 107

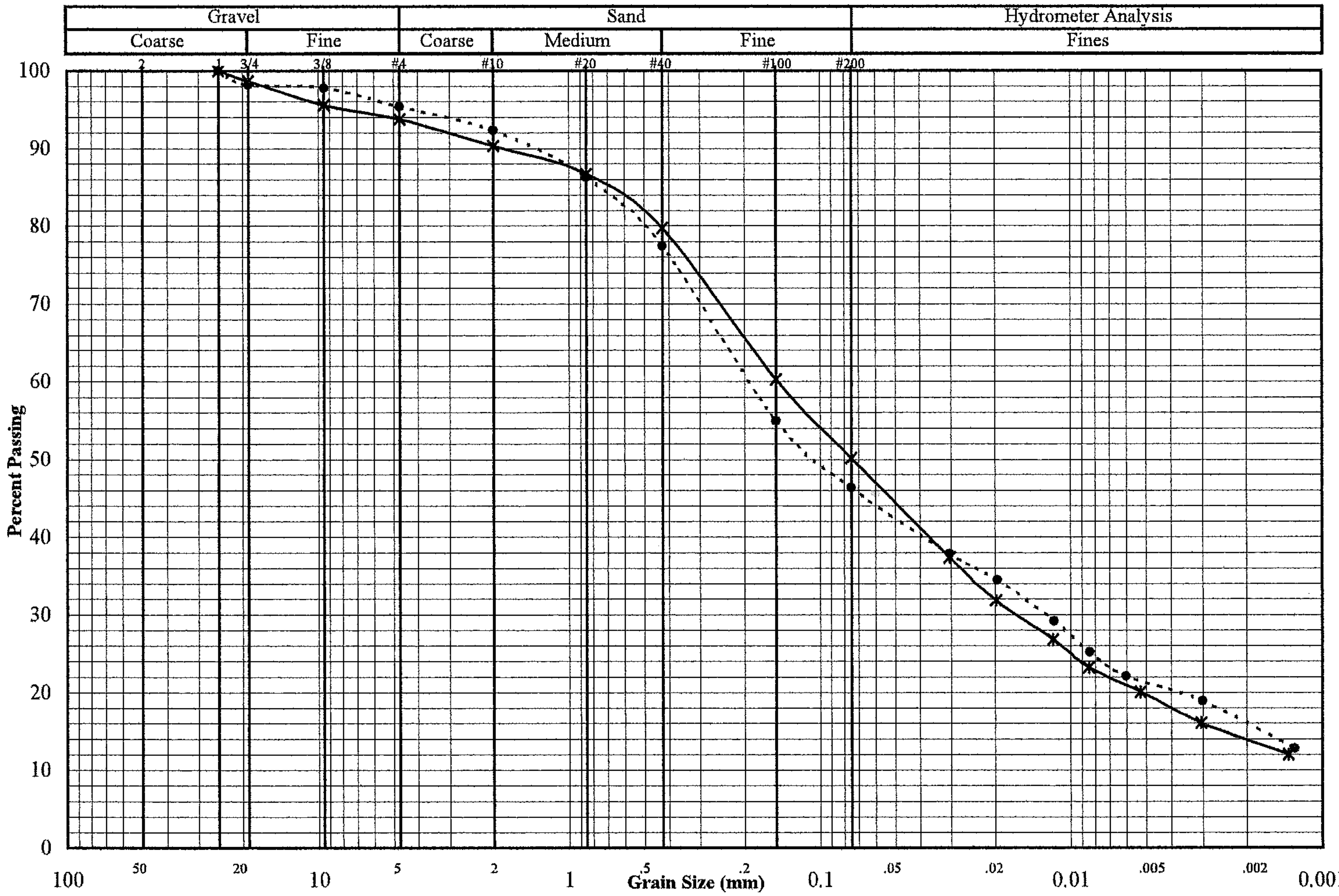
SOIL ENGINEERING TESTING, INC.

Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Project:	Sherco Generating Plant Pond #3 North	Job No. :	6717
		Test Date:	10/6/08
Reported To:	McCain & Associates, Inc.	Report Date:	10/10/08

	Location / Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Classification
*		ST-5		TWT	Sandy Lean Clay w/a little gravel (CL)
●		ST-6		TWT	Clayey Sand w/a little gravel (SC)
◇					



Other Tests

	*	●	◇
Liquid Limit	31.8	31.8	
Plastic Limit	15.4	15.1	
Plasticity Index	16.4	16.7	
Water Content			
Dry Density (pcf)			
Specific Gravity	2.68*	2.68*	
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	997.7	943.7	
2"			
1.5"			
1"	100.0	100.0	
3/4"	98.7	98.2	
3/8"	95.6	97.8	
#4	93.8	95.4	
#10	90.3	92.3	
#20	86.8	86.3	
#40	79.8	77.4	
#100	60.3	55.0	
#200	50.2	46.4	

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

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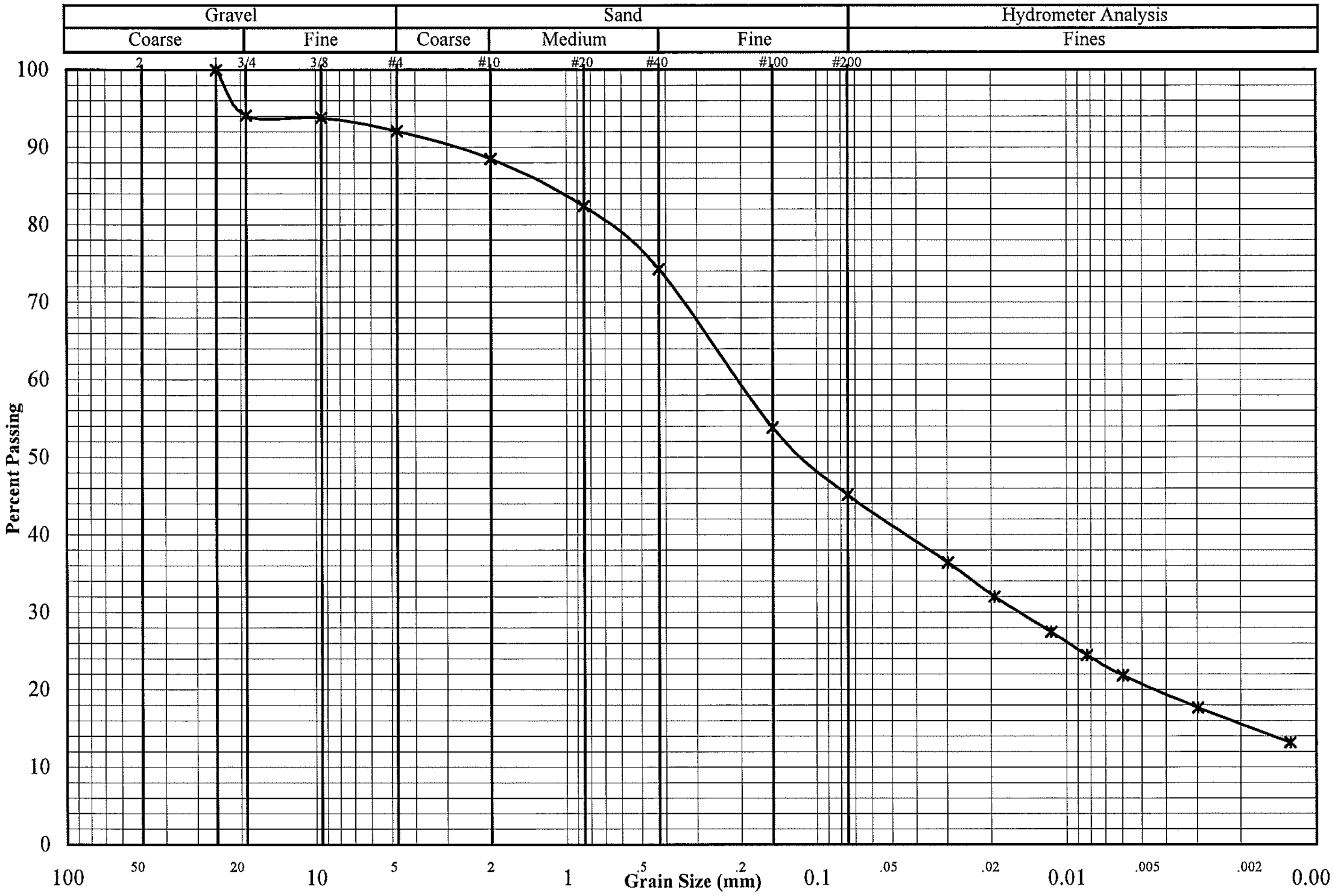
SOIL ENGINEERING TESTING, INC.

Bloomington, Minnesota 55420-3436

Grain Size Distribution ASTM D422

Project:	Sherco Generating Plant Pond #3 North	Job No. :	6717-A
		Test Date:	10/29/08
Reported To:	McCain & Associates, Inc.	Report Date:	11/3/08

	Location / Boring No.	Sample No.	Elev. (ft)	Sample Type	Soil Classification
*	N865,364.4 E2,031,864.0	ST-7	995.2	TWT	Clayey Sand w/a little gravel (SC)
●					
◇					



Other Tests

	*	●	◇
Liquid Limit	32.7		
Plastic Limit	14.8		
Plasticity Index	17.9		
Water Content			
Dry Density (pcf)			
Specific Gravity	2.68*		
Porosity			
Organic Content			
pH			
Shrinkage Limit			
Penetrometer			
Qu (psf)			

(* = assumed)

Percent Passing

	*	●	◇
Mass (g)	498.6		
2"			
1.5"			
1"	100.0		
3/4"	94.1		
3/8"	93.8		
#4	92.1		
#10	88.5		
#20	82.4		
#40	74.3		
#100	53.8		
#200	45.1		

	*	●	◇
D_{60}			
D_{30}			
D_{10}			
C_U			
C_C			

Remarks:

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SOIL ENGINEERING TESTING, INC.

Bloomington, Minnesota 55420-3436

SET Job#: **6717** **Extrusion Log** Date: 10/10/2008

Project/Client: Sherco Generating Plant Pond #3 North / McCain & Associates, Inc.

Boring #	Sample#	Depth(ft)	Recovery (in)		Soil Description
ST-2	Elevation	975.6-976.8	BE:	12	Sandy Lean Clay w/a little gravel, brown and grayish brown (CL/SC)
Upstream Clay			AE:	12	Bottom 6" Disturbed by 1.5" piece of gravel
Barrier	N	865,392			
9/17/2008	E	2,031,307			
ST-3	Elevation	973.7-974.9	BE:	14	Clayey Sand w/a trace of gravel, brown and grayish brown (SC/CL)
Pond 3N			AE:	14	Large chunk of gravel 2.5" - 3.5" from bottom of sample
Upstream Clay	N	865,069			
	E	2,032,031			
ST-4	Elevation	981.6-982.7	BE:	13.25	Clayey Sand w/a trace of gravel, brown and grayish brown (SC/CL)
Upstream Clay			AE:	13	
Barrier	N	864,500			
	E	2,032,016			
ST-5	Elevation	985.4-986.4	BE:	14.375	Sandy Lean Clay w/a trace of gravel, brown and gray (CL/SC)
Pond 3N			AE:	13.75	1" Chunk of soil is missing from bottom of tube
Upstream Clay	N	863,859			1.5" Gouge out of side of sample 4" from the top
Barrier	E	2,032,010			* Brown soil is sandier*
ST-6	Elevation	993-994.4			
Upstream Clay					
Barrier	N	865,365	BE:	15	Clayey Sand w/a trace of gravel, brown and grayish brown,
	E	2,031,118	AE:	15	a few pockets of fine grained sand (SC)

SET Job#: **6717-A**

Extrusion Log

Date: 10/28/2008

Project/Client: Sherco Generating Plant Pond #3 North / McCain And Asscoiates

Boring #	Sample#	Elev. (ft)	Recovery (in)		Soil Description
ST-7		N 865,364.4	BE:	7.5	Clayey Sand w/a little gravel, brown (CH)
		E 2,031,864	AE:	7.5	

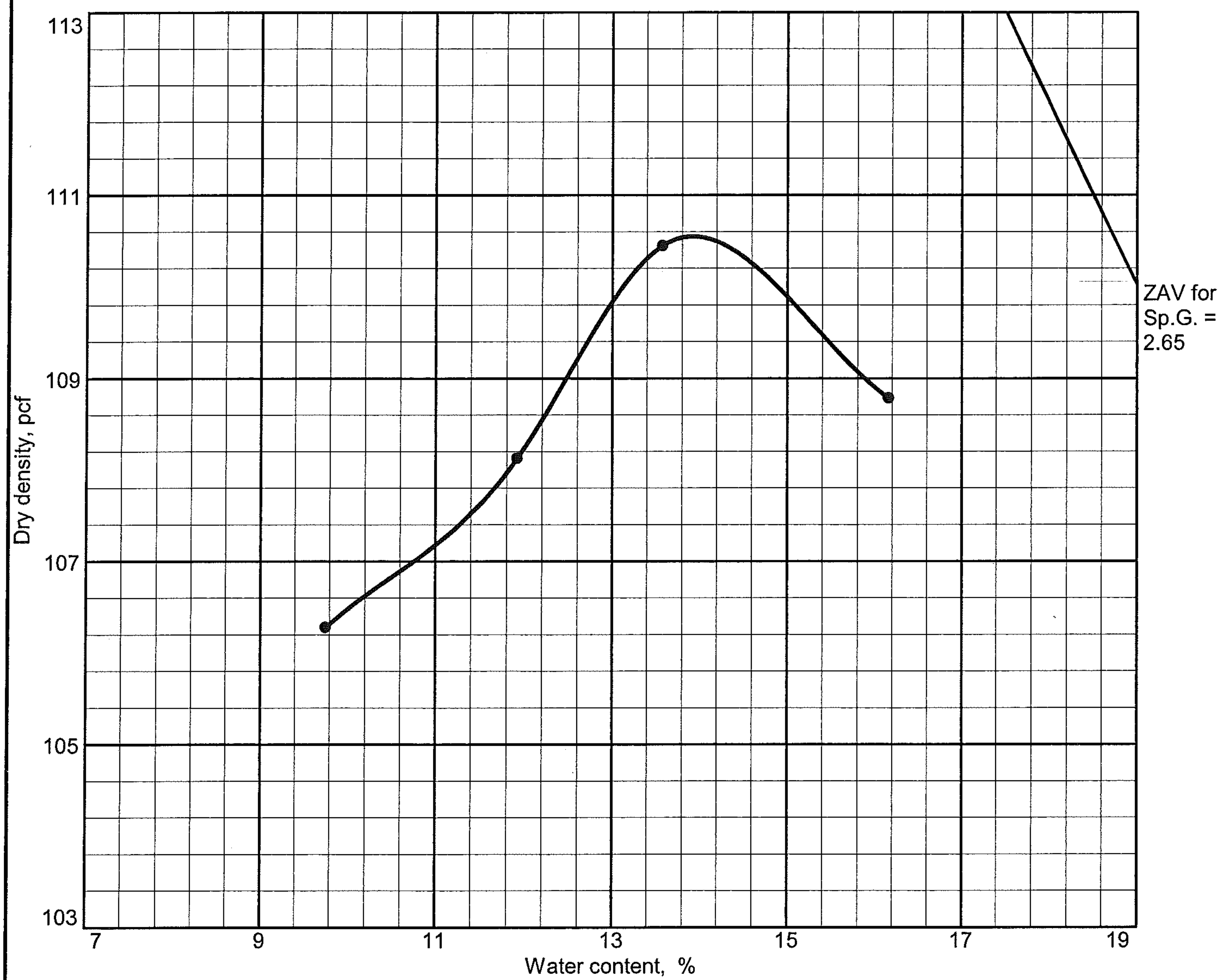
Appendix D

Granular Drainage Test Reports

Granular Drainage Standard Proctor Test Reports
Granular Drainage Gradation Test Reports
Granular Drainage Permeability Test Reports

Granular Drainage Standard Proctor Test Reports

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP			2.65			3.0	

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 110.5 pcf Optimum moisture = 13.9 %	Poorly Graded Sand, fine-medium grained, brown

Project No.: SC-08-01145 **Client:** Northern States Power Company

Project: Pond 3N Vertical Expansion

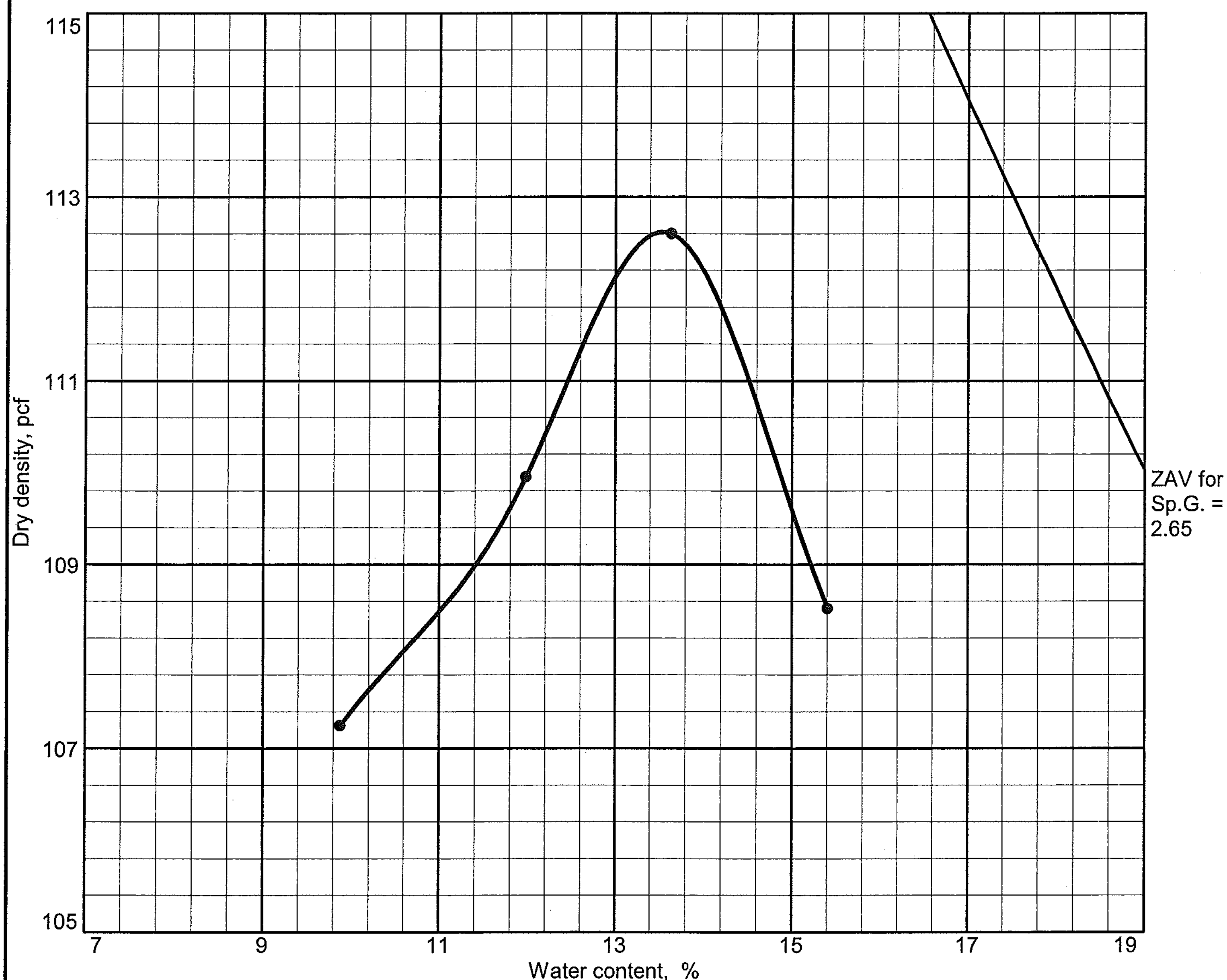
● **Source:** **Sample No.:** PGDM-2

BRAUN INTERTEC

Remarks:

Specific Gravity was assumed.
N.864,920.0 E.2030655.0
7/17/08

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	SP			2.65			5.0	

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 112.6 pcf Optimum moisture = 13.5 %	Poorly Graded Sand, fine - medium grained, brown

Project No.: SC-08-01145 **Client:** Northern States Power Company

Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PGDM-3

BRAUN INTERTEC

Remarks:

Specific Gravity was assumed.
N.863840.0 AE.2030661.0
7/17/08

Granular Drainage Gradation Test Reports

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Gradation Testing

ASTM C 136 & C 117

Date: June 27, 2008 **Project No:** SC-08-01145

Client: Xcel Energy
Travis Peterson
Sherburne Cty Generating Plant
13999 Industrial Blvd.
Becer, MN 55308

Description: Pond 3N Vertical Expansion
13999 Industrial Blvd.
Becker, MN

Field Data:

Sample No.:	G-1
Sampled By:	AJJ
Date Sampled:	06/26/08
Date Received:	06/26/08
Date Tested:	06/27/08
Classification:	Granular Sand
Sample Location:	Pond 3 North, N863758.0 and E. 2031877.0

Laboratory Results

Sieve Size	% Passing	MN/Dot Specifications
1 1/4"	100	
1"	100	
3/4"	100	
5/8"	100	
1/2"	100	
3/8"	100	100
#4	98	
#10	91	
#20	71	
#40	37	
#100	4	
#200	2.2	0 - 12
200:1	2.24	

Remarks: This sample meets the requirements of Mn/Dot Specifications 3149.2B2 for Select Granular Borrow

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Gradation Testing
ASTM C 136 & C 117

Date: July 17, 2008 **Project No:** SC-08-01145

Client: Xcel Energy
Travis Peterson
Sherburne Cty Generating Plant
13999 Industrial Blvd.
Becer, MN 55308

Description: Pond 3N Vertical Expansion
13999 Industrial Blvd.
Becker, MN

Field Data:

Sample No.:	G-2
Sampled By:	AJJ
Date Sampled:	07/16/08
Date Received:	07/16/08
Date Tested:	07/17/08
Classification:	Granular Sand
Sample Location:	Pond 3 North, N864920.0 and E. 2030655.0

Laboratory Results

Sieve Size	% Passing	Mn/DOT Specifications
1 1/4"	100	
1"	100	
3/4"	100	
5/8"	100	
1/2"	100	
3/8"	100	100
#4	97	
#10	90	
#20	72	
#40	39	
#100	5	
#200	2.7	0 - 5
200:1	2.70	

Remarks: This sample meets the requirements of Mn/Dot Specifications 3149.2B2 for Select Granular Borrow

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Gradation Testing

ASTM C 136 & C 117

Date: July 17, 2008

Project No: SC-08-01145

Client: Xcel Energy
Travis Peterson
Sherburne Cty Generating Plant
13999 Industrial Blvd.
Becer, MN 55308

Description: Pond 3N Vertical Expansion
13999 Industrial Blvd.
Becker, MN

Field Data:

Sample No.:	G-3
Sampled By:	AJJ
Date Sampled:	07/16/08
Date Received:	07/16/08
Date Tested:	07/17/08
Classification:	Select Granular Sand
Sample Location:	Pond 3 North, N863840.0 and E. 2030661.0

Laboratory Results

Sieve Size	% Passing	Mn/DOT Specifications
1 1/4"	100	
1"	100	
3/4"	100	
5/8"	100	
1/2"	100	
3/8"	100	100
#4	97	
#10	90	
#20	72	
#40	41	
#100	6	
#200	3.3	0 - 5
200:1	3.32	

Remarks: This sample meets the requirements of Mn/Dot Specifications 3149.2B2 for Select Granular Borrow

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Granular Drainage Permeability Test Reports

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Constant Head Permeability-ASTM D2434

Date: 25-Jul-08

Project Number: SC-08-01145

Client: Travis Peterson
Xcel Energy
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project: Pond 3N Vertical Expansion
13999 Industrial Blvd
Becker, MN

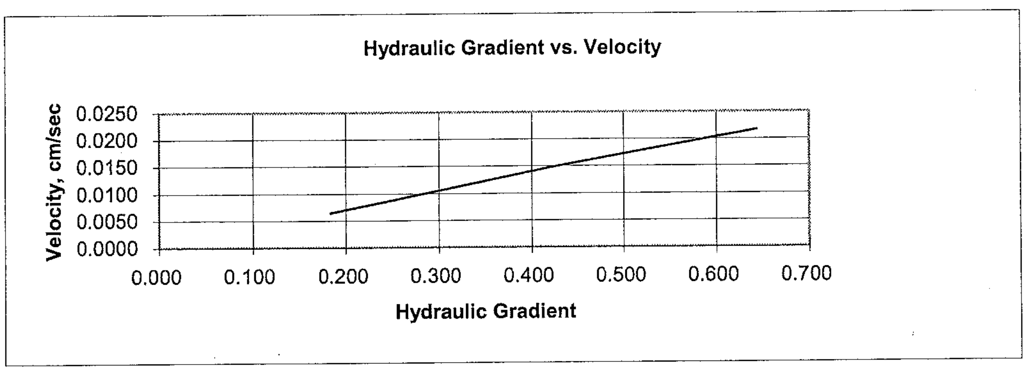
Background Information

Sample No:	GDM-1	Date Sampled:	26-Jun-08
Classification:	Poorly Graded Sand	Date tested:	01-Jul-08
Sample Location:	N 863758.0, E 2031877.0	Sampled by:	A Jelinski
Sample type:	remold	Depth:	na

Test Results

Dry Density(pcf):	109.9	Maximum Density:	na
Void ratio:	0.50	% of Maximum:	na
Type of Permeant:	Tap Water		

Trial	Temp, C	Head (cm)	Hydraulic Gradient	Velocity (cm/sec)	Coefficient of Permeability (cm/sec)
1	19.2	2.1	0.18	0.0064	3.6E-02
2	19.2	4.7	0.42	0.0148	3.6E-02
3	19.2	7.2	0.64	0.0217	3.4E-02
4	19.2	9.5	0.85	0.0279	3.4E-02



Average coefficient of permeability (@20°C) = 3.5E-02 cm/sec

Remarks: The test results meet the minimum requirement for permeability which is 1E-03cm/sec

Sincerely,
Braun Intertec Corporation

Thomas L Henkemeyer
Project Manager

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: brauninterlec.com

Constant Head Permeability-ASTM D2434

Date: 25-Jul-08

Project Number: SC-08-01145

Client: Travis Peterson
Xcel Energy
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project: Pond 3N Vertical Expansion
13999 Industrial Blvd
Becker, MN

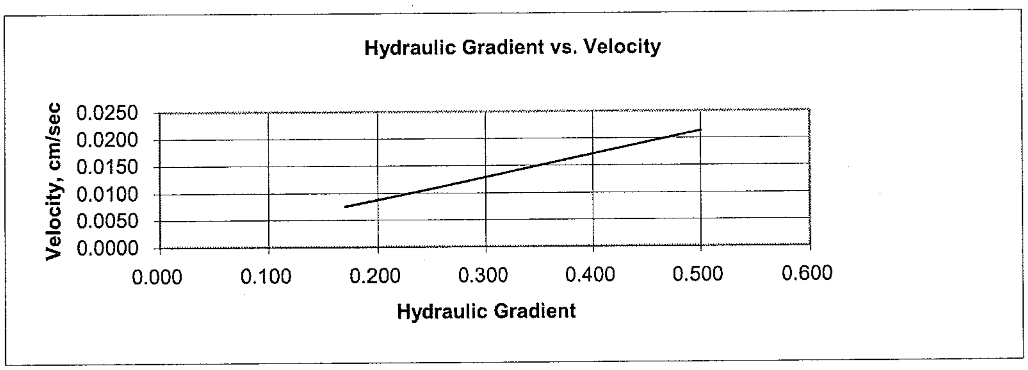
Background Information

Sample No:	GDM-2	Date Sampled:	16-Jul-08
Classification:	Poorly Graded Sand	Date tested:	21-Jul-08
Sample Location:	N.864920.0,E.2030655.0	Sampled by:	A Jelinski
Sample type:	remold	Depth:	na

Test Results

Dry Density(pcf):	107.4	Maximum Density:	110.5
Void ratio:	0.54	% of Maximum:	97.2%
Type of Permeant:	Tap Water		

Trial	Temp, C	Head (cm)	Hydraulic Gradient	Velocity (cm/sec)	Coefficient of Permeability (cm/sec)
1	19.2	1.9	0.17	0.0075	4.5E-02
2	19.2	2.8	0.25	0.0108	4.4E-02
3	19.2	5.6	0.50	0.0214	4.4E-02
4	19.2	7.2	0.64	0.0274	4.4E-02



Average coefficient of permeability (@20°C) = 4.4E-02 cm/sec

Remarks: The test results meet the minimum requirement for permeability which is 1E-03cm/sec

Sincerely,
Braun Intertec Corporation

Thomas L Henkemeyer
Project Manager

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: brauninterte c.com

Constant Head Permeability-ASTM D2434

Date: 25-Jul-08

Project Number: SC-08-01145

Client: Travis Peterson
Xcel Energy
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project: Pond 3N Vertical Expansion
13999 Industrial Blvd
Becker, MN

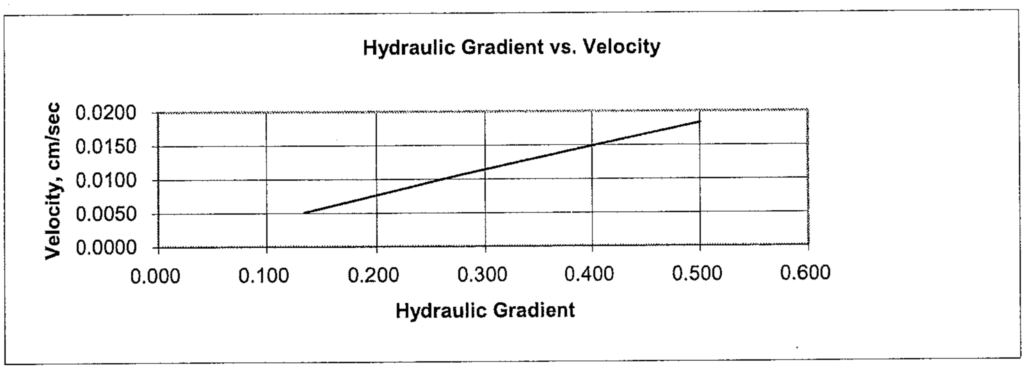
Background Information

Sample No:	GDM-3	Date Sampled:	16-Jul-08
Classification:	Poorly Graded Sand	Date tested:	23-Jul-08
Sample Location:	N.863840.0,E.2030661.0	Sampled by:	A Jelinski
Sample type:	remold	Depth:	na

Test Results

Dry Density(pcf):	108.6	Maximum Density:	112.6
Void ratio:	0.52	% of Maximum:	96.4%
Type of Permeant:	Tap Water		

Trial	Temp, C	Head (cm)	Hydraulic Gradient	Velocity (cm/sec)	Coefficient of Permeability (cm/sec)
1	19.2	1.5	0.13	0.0051	3.9E-02
2	19.2	3.1	0.28	0.0106	3.9E-02
3	19.2	5.6	0.50	0.0184	3.8E-02
4	19.2	6.9	0.62	0.0229	3.8E-02



Average coefficient of permeability (@20°C) = 3.8E-02 cm/sec

Remarks: The test results meet the minimum requirement for permeability which is 1E-03cm/sec

Sincerely,
Braun Intertec Corporation

Thomas L Henkemeyer
Project Manager

Providing engineering and environmental solutions since 1957

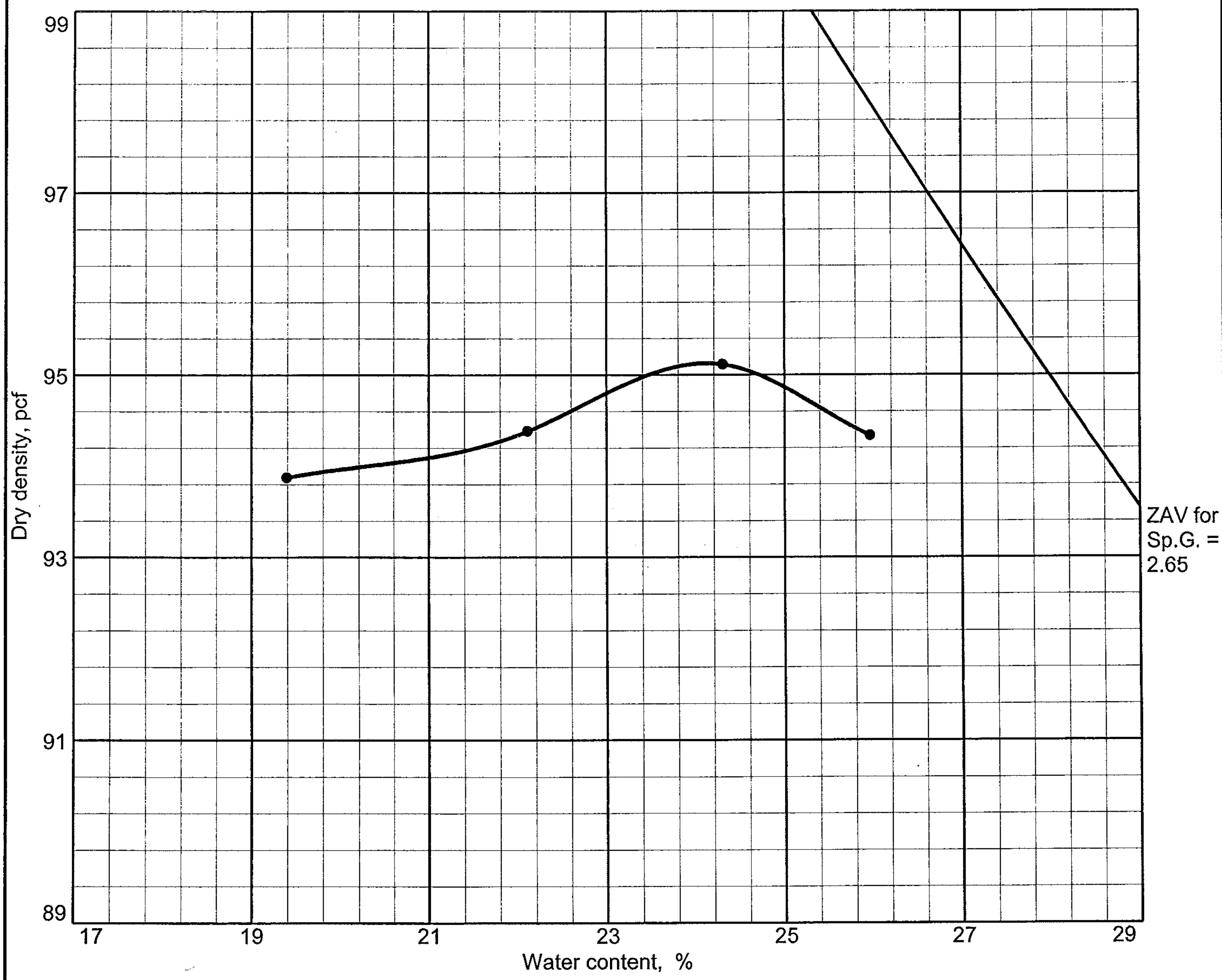
Appendix E

Bottom Ash Reports

Bottom Ash Standard Proctor Test Reports
Bottom Ash Density Test Reports

Bottom Ash Standard Proctor Test Reports

Moisture-Density Relationship



Test specification: ASTM D 698-00a Method B Standard
Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
				2.65			11.0	

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 99.8 pcf Optimum moisture = 21.6 %	Bottom Ash

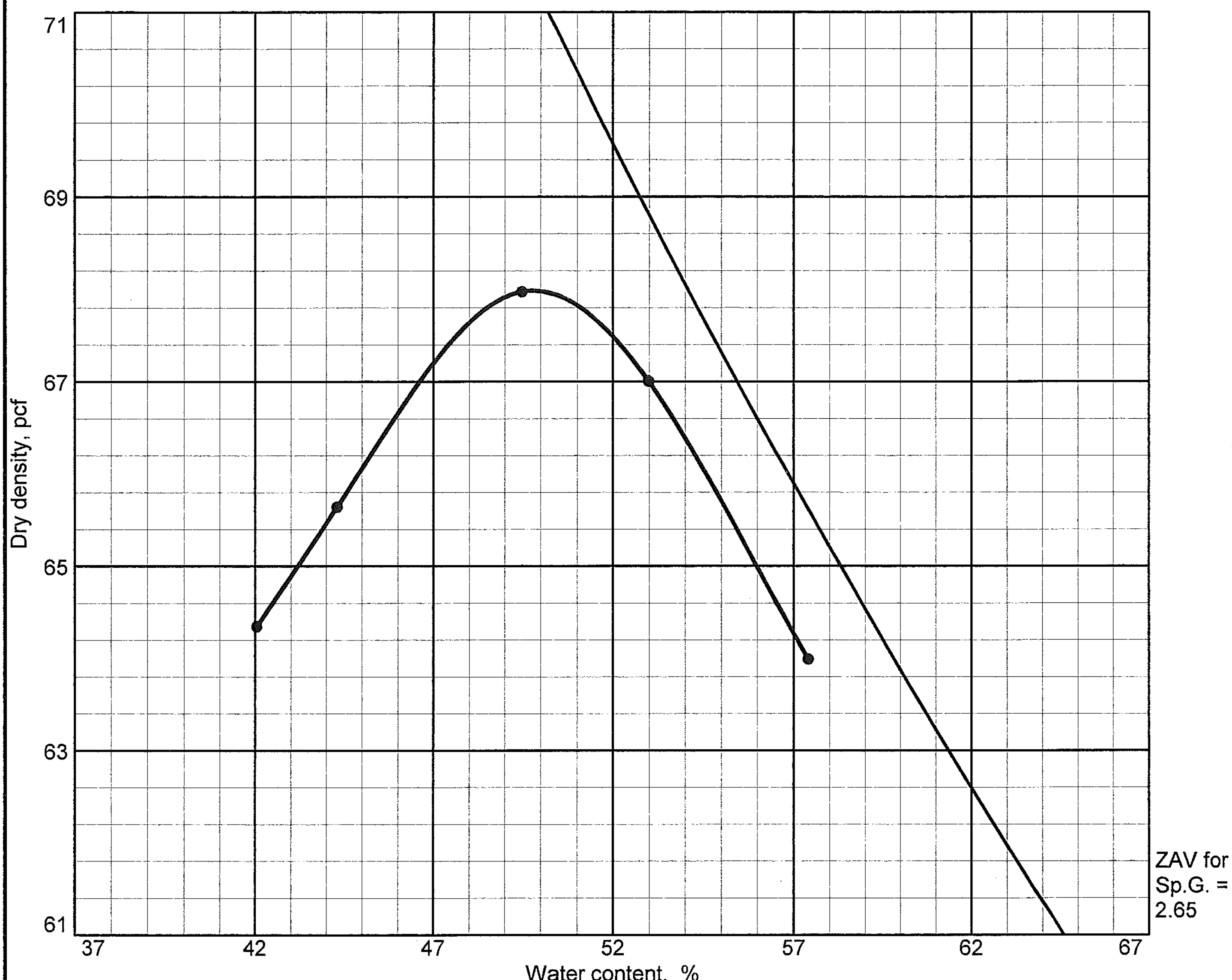
Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PBA-1

BRAUN INTERTEC

Remarks:
Specific Gravity was assumed
Stockpile
5/8/08

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method A Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > No.4	% < No.200
	USCS	AASHTO						
	ASH		70.2	2.65	N/A	N/A	1.9	46.3

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 68.0 pcf Optimum moisture = 49.8 %	ASH

Project No.: SC-08-01145 **Client:** Northern States Power Company

Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PBA-2

Remarks:

Bottom ash ditch cleanout

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Bottom Ash Density Test Reports

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Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: September 29, 2008 **Project:** SC-08-01145 **Report:** 1

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
BA-1	5/19/08	PBA-1	Bottom Ash	21.6	99.8	7	102	102	95	A
BA-2	5/20/08	PBA-1	Bottom Ash	21.6	99.8	9	100	100	95	A
BA-3	6/23/08	PBA-1	Bottom Ash	21.6	99.8	2	98	98	95	A
BA-4	9/16/08	PBA-1	Bottom Ash	21.6	99.8	5	101	102	95	A
BA-5	9/16/08	PBA-1	Bottom Ash	21.6	99.8	12	96	96	95	A
BA-6	9/26/08	PBA-1	Bottom Ash	21.6	99.8	15	96	96	95	A
BA-7	9/29/08	PBA-1	Bottom Ash	21.6	99.8	8	95	95	95	A
BA-8	9/29/08	PBA-1	Bottom Ash	21.6	99.8	6	95	95	95	A
BA-9	9/29/08	PBA-1	Bottom Ash	21.6	99.8	6	104	104	95	A
BA-10	9/29/08	PBA-1	Bottom Ash	21.6	99.8	8	100	100	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
BA-1	N864450.0, E2030247.0	1008.5
BA-1	N864480.0, E2030467.0	1012.0
BA-3	N865352.0, E2031610.0	971.0
BA-4	N865321.0, E2031343.0	974.5
BA-5	N865318.0, E2031828.0	973.5
BA-6	N864903.4, E2031960.7	976.0
BA-7	N864170.3, E2031968.9	980.5
BA-8	N863137.8, E2031967.0	979.5
BA-9	N865333.2, E2031741.9	980.5
BA-10	N865324.4, E2031751.5	979.5

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: November 6, 2008 **Project:** SC-08-01145 **Report:** 2

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
BA-11	9/29/08	PBA-1	Bottom Ash	21.6	99.8	5	104	104	95	A
BA-12	9/29/08	PBA-1	Bottom Ash	21.6	99.8	7	99	99	95	A
BA-13	9/30/08	PBA-1	Bottom Ash	21.6	99.8	6	99	99	95	A
BA-14	9/30/08	PBA-1	Bottom Ash	21.6	99.8	6	104	104	95	A
BA-15	9/30/08	PBA-1	Bottom Ash	21.6	99.8	7	98	98	95	A
BA-16	9/30/08	PBA-1	Bottom Ash	21.6	99.8	13	97	97	95	A
BA-17	10/1/08	PBA-1	Bottom Ash	21.6	99.8	6	105	105	95	A
BA-18	10/1/08	PBA-1	Bottom Ash	21.6	99.8	23	96	96	95	A
BA-19	10/2/08	PBA-1	Bottom Ash	21.6	99.8	3	104	104	95	A

Key:
N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
BA-11	N865318.2, E2031159.5	980.5
BA-12	N864054.3, E2031954.0	979.5
BA-13	N864156.4, E2031964.5	982.0
BA-14	N865097.5, E2031967.4	982.5
BA-15	N865329.7, E2031159.8	983.5
BA-16	N865337.8, E2031455.3	984.5
BA-17	N865342.8, E2031390.5	987.0
BA-18	N864285.6, E2031971.6	984.5
BA-19	N863871.0, E2031988.3	991.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

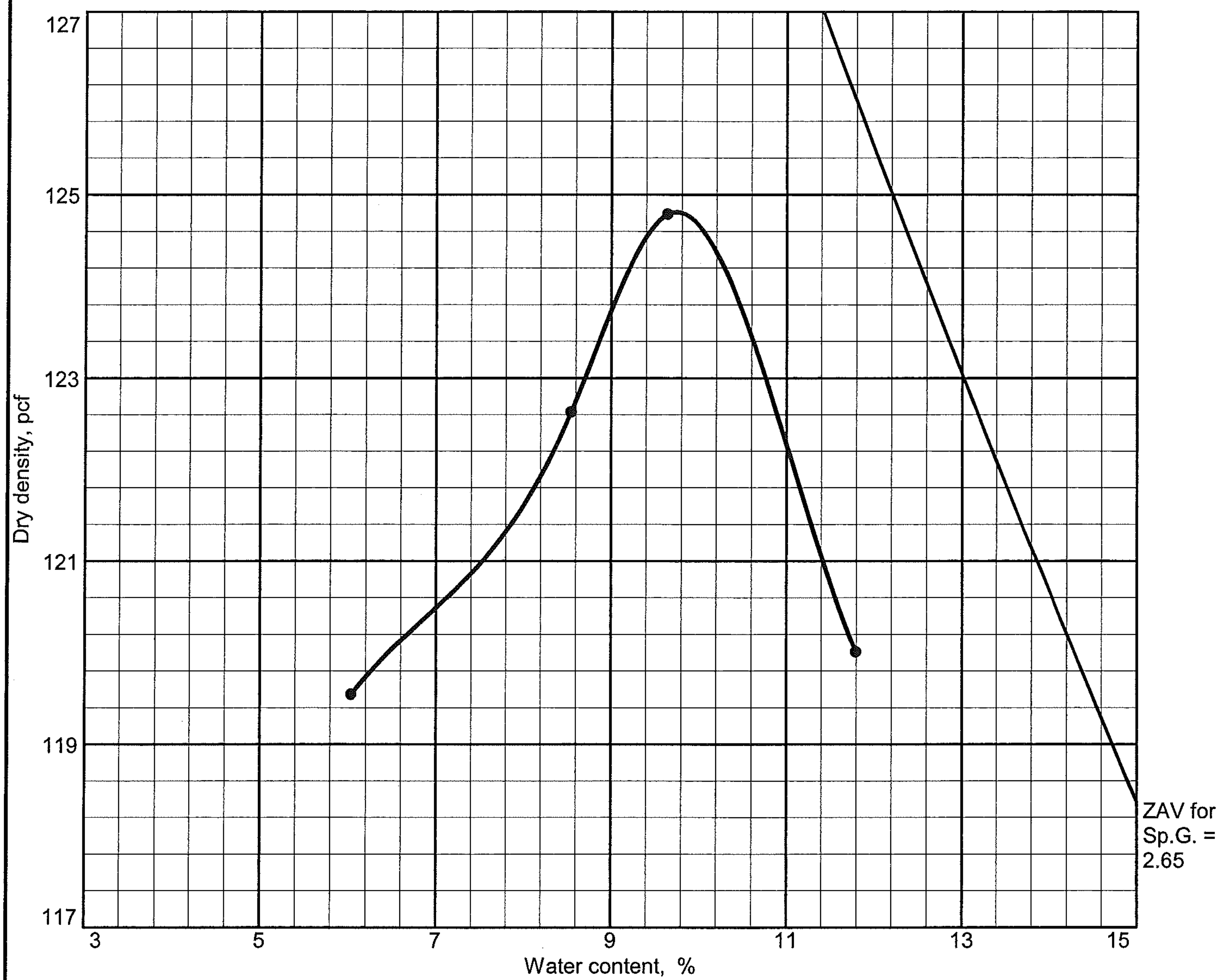
Appendix F

Class 5 Test Reports

Class 5 Standard Proctor Test Reports
Class 5 Gradation Test Reports
Class 5 Density Test Reports

Class 5 Standard Proctor Test Reports

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method B Standard
Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	SP-SM			2.65			15	

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 129.6 pcf Optimum moisture = 8.4 %	Poorly Graded Sand with Silt and Gravel, fine grained, brown

Project No.: SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PCL5-1

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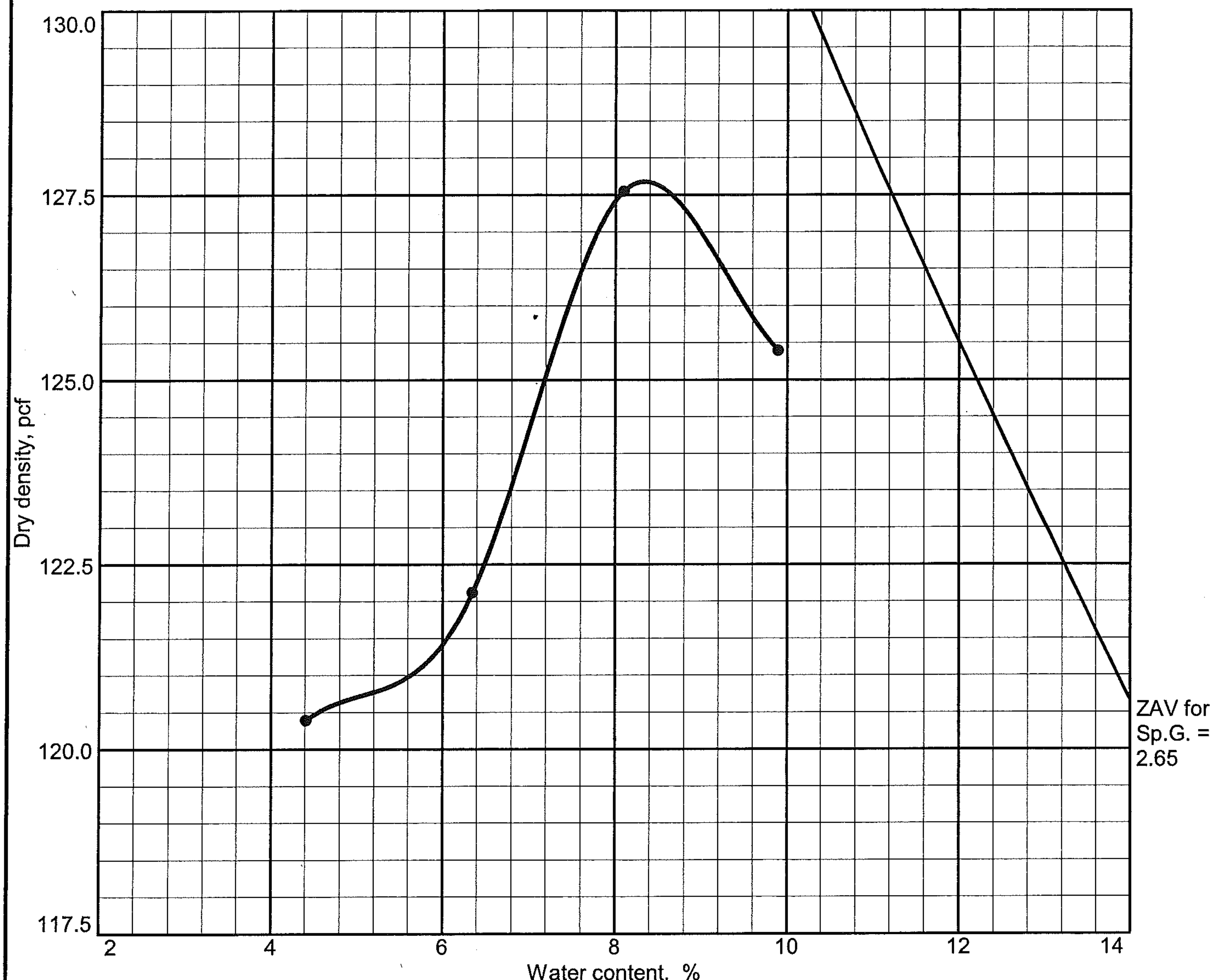
Remarks:
Specific Gravity was assumed.
On-site stockpile
7/22/08

Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method B Standard
Oversize correction applied to final results

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
	SP-SM			2.65			13.0	

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 131.6 pcf Optimum moisture = 7.4 %	Poorly Graded Sand with Silt and Gravel, fine grained, brown

Project No. SC-08-01145 **Client:** Northern States Power Company
Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PCL5-2

Remarks:
Specific Gravity was assumed.
On-site stockpile
7/22/08

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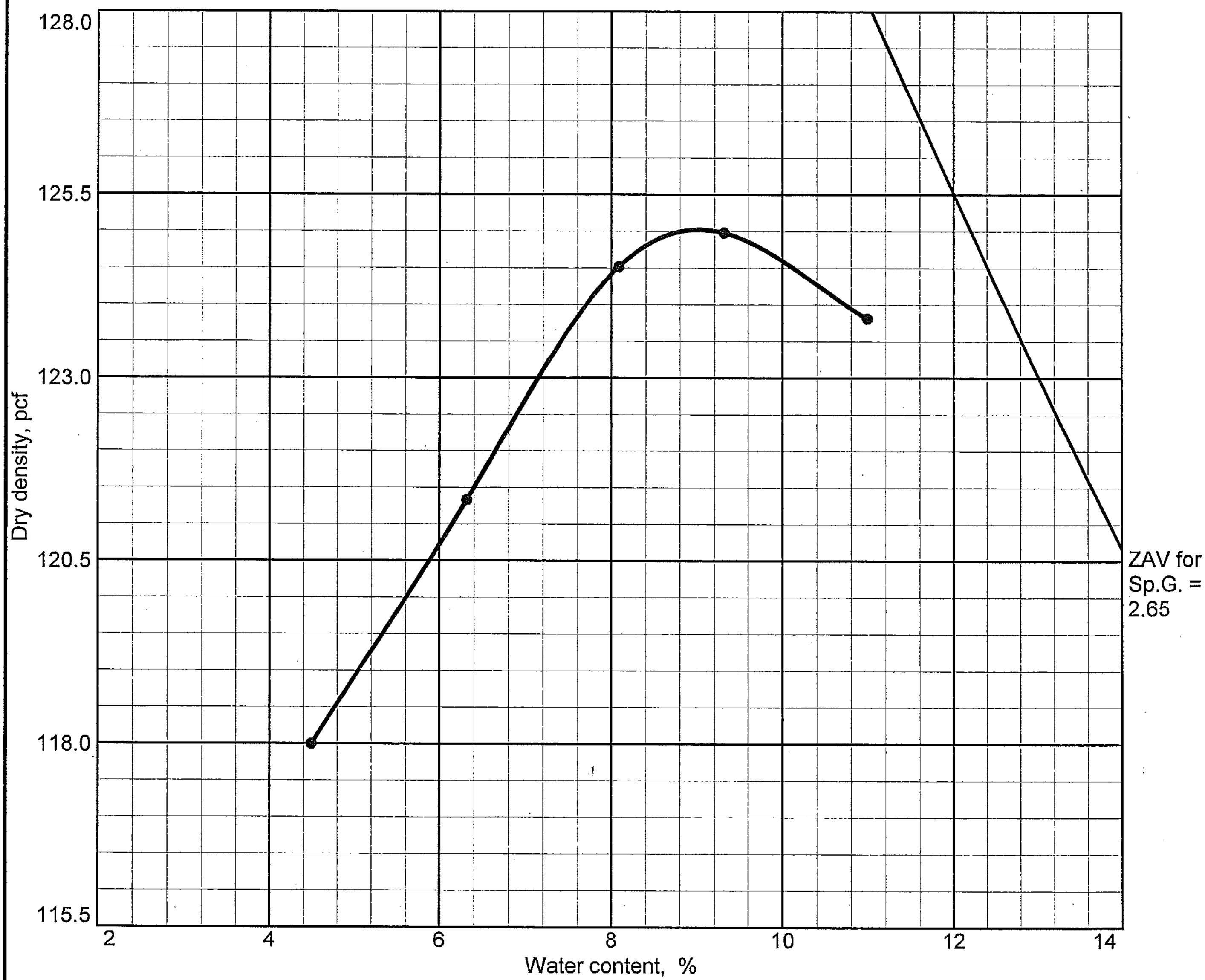
Moisture-Density Relationship



Test specification: ASTM D 698-07e1 Method C Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/4 in.	% < No.200
	USCS	AASHTO						
	Recycled Class 5		7.1	2.65	N/A	N/A		

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 125.0 pcf Optimum moisture = 9.0 %	Recycled Class 5

Project No.: SC-08-01145 **Client:** Northern States Power Company

Project: Pond 3N Vertical Expansion

● **Source:** **Sample No.:** PCL5-3

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Remarks:

Vonco Pit

Class 5 Gradation Test Reports

BRAUN INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Gradation Testing

ASTM C 136 & C 117

Date: July 22, 2008

Project No: SC-08-01145

Client: Xcel Energy
Travis Peterson
Sherburne Cty Generating Plant
13999 Industrial Blvd.
Becer, MN 55308

Description: Pond 3N Vertical Expansion
13999 Industrial Blvd.
Becker, MN

Field Data:

Sample No.:	G-4
Sampled By:	AJJ
Date Sampled:	07/21/08
Date Received:	07/21/08
Date Tested:	07/22/08
Classification:	Class 5
Sample Location:	On-site Stockpile; Pond 3N Vertical Expansion JOB TRAILER PARKING LOT

Laboratory Results

Sieve Size	% Passing	MN/Dot Specifications
1"	100	100
3/4"	98	90 - 100
5/8"	94	
1/2"	91	
3/8"	88	50 - 90
#4	81	35 - 80
#10	75	20 - 65
#20	62	
#40	41	10 - 35
#100	13	
#200	8.7	3 - 10

Remarks: This sample does not meet the requirements for Mn/DOT Specification 3138 for Class 5 aggregate.

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Gradation Testing
ASTM C 136 & C 117

Date: July 22, 2008 **Project No:** SC-08-01145

Client: Xcel Energy
Travis Peterson
Sherburne Cty Generating Plant
13999 Industrial Blvd.
Becer, MN 55308

Description: Pond 3N Vertical Expansion
13999 Industrial Blvd.
Becker, MN

Field Data:

Sample No.:	G-5
Sampled By:	AJJ
Date Sampled:	07/21/08
Date Received:	07/21/08
Date Tested:	07/22/08
Classification:	Class 5
Sample Location:	On-site Stockpile; Pond 3N Vertical Expansion

Laboratory Results

Sieve Size	% Passing	MN/Dot Specifications
1"	100	100
3/4"	97	90 - 100
5/8"	94	
1/2"	89	
3/8"	86	50 - 90
#4	80	35 - 80
#10	71	20 - 65
#20	56	
#40	36	10 - 35
#100	12	
#200	8.8	3 - 10

Remarks: This sample does not meet the requirements for Mn/DOT Specification 3138 for Class 5 aggregate.

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

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INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: brauninterlec.com

Gradation Testing

ASTM C 136 & C 117

Date: September 8, 2008

Project No: SC-08-01145

Client: Xcel Energy
Travis Peterson
Sherburne Cty Generating Plant
13999 Industrial Blvd.
Becer, MN 55308

Description: Pond 3N Vertical Expansion
13999 Industrial Blvd.
Becker, MN

Field Data:

Sample No.: G-6
Sampled By: AJJ
Date Sampled: 09/04/08
Date Received: 09/04/08
Date Tested: 09/08/08
Classification: Class 5
Sample Location: On-site Stockpile; Pond 3N Vertical Expansion

Laboratory Results

Sieve Size	% Passing	MN/Dot Specifications
1"	100	100
3/4"	96	90 - 100
5/8"	90	
1/2"	81	
3/8"	75	50 - 90
#4	64	35 - 80
#10	51	20 - 65
#20	37	
#40	23	10 - 35
#100	11	
#200	8.5	3 - 10

Remarks: This sample meets the requirements for Mn/DOT Specification 3138 for Class 5 aggregate.

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Class 5 Density Test Reports

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: November 13, 2008 **Project:** SC-08-01145 **Report:** 1

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compactio n (%)	Specified Minimum Compact. (%)	Comments
CL5-1	7/21/08	PCL5-1	Class 5	8.4	129.6	8	131	101	100	A
CL5-2	10/14/08	PCL5-3	Class 5	9.0	125.0	10	125	100	100	A
CL5-3	10/14/08	PCL5-3	Class 5	9.0	125.0	8	127	102	100	A
CL5-4	10/14/08	PCL5-3	Class 5	9.0	125.0	8	127	102	100	A
CL5-5	10/14/08	PCL5-2	Class 5	7.4	131.6	5	131	100	100	A
CL5-6	10/14/08	PCL5-2	Class 5	7.4	131.6	5	134	102	100	A
CL5-7	10/14/08	PCL5-2	Class 5	7.4	131.6	4	131	100	100	A
CL5-8	11/12/08	PCL5-3	Class 5	9.0	125.0	9	127	102	95	A
CL5-9	11/12/08	PCL5-3	Class 5	9.0	125.0	11	124	99	95	A
CL5-10	11/12/08	PCL5-3	Class 5	9.0	125.0	11	122	98	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL5-1	North Half of East End of Parking Lot	FCL-5
CL5-2	N864949.8, E2030617.9	1012.0
CL5-3	N864428.6, E2030617.9	1012.0
CL5-4	N863915.1, E2030616.1	1012.0
CL5-5	N863803.8, E2030867.3	997.5
CL5-6	N863788.5, E2031614.9	997.0
CL5-7	N863464.9, E2032074.1	991.5
CL5-8	N864737.5, E2032119.6	978.5
CL5-9	N864017.5, E2032026.3	999.0
CL5-10	N864473.0, E2032020.7	999.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

BRAUN
INTERTEC

Braun Intertec Corporation
1520 24th Avenue North
Saint Cloud, MN 56303

Phone: 320.253.9940
Fax: 320.253.3054
Web: braunintertec.com

Report of Field Compaction Tests

Date: November 13, 2008 **Project:** SC-08-01145 **Report:** 2

Client:
Xcel Energy
Travis Peterson
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Project Description:
Pond 3N Vertical Expansion
13999 Industrial Boulevard
Becker, Minnesota

Test	Date	Type	Soil ID and Classification	Optimum Moisture* (%)	Max. Lab Dry Density* (pcf)	Inplace Moisture (%)	Inplace Dry Density (pcf)	Relative Compaction (%)	Specified Minimum Compact. (%)	Comments
CL5-11	11/12/08	PCL5-3	Class 5	9.0	125.0	10	121	97	95	A
CL5-12	11/12/08	PCL5-3	Class 5	9.0	125.0	10	122	98	95	A
CL5-13	11/12/08	PCL5-3	Class 5	9.0	125.0	9	123	98	95	A
CL5-14	11/12/08	PCL5-3	Class 5	9.0	125.0	10	119	95	95	A

Key: N = Nuclear, ASTM D 2922
SC = Sand Cone, ASTM D 1556
* = O.M. and M.L.D.D. rounded to nearest 0.1

A = Test results comply with specifications.
B = Test results do not comply with specifications.
C = Test results comply with air-voids specifications.

Test	Test Location	Elevation
CL5-11	N865238.0, E2032012.7	999.0
CL5-12	N865393.2, E2031523.1	999.0
CL5-13	N865394.1, E2031014.0	999.0
CL5-14	N865453.9, E2031586.8	984.0

Elevation Reference:

c: McCain & Associates
Scott Schwake

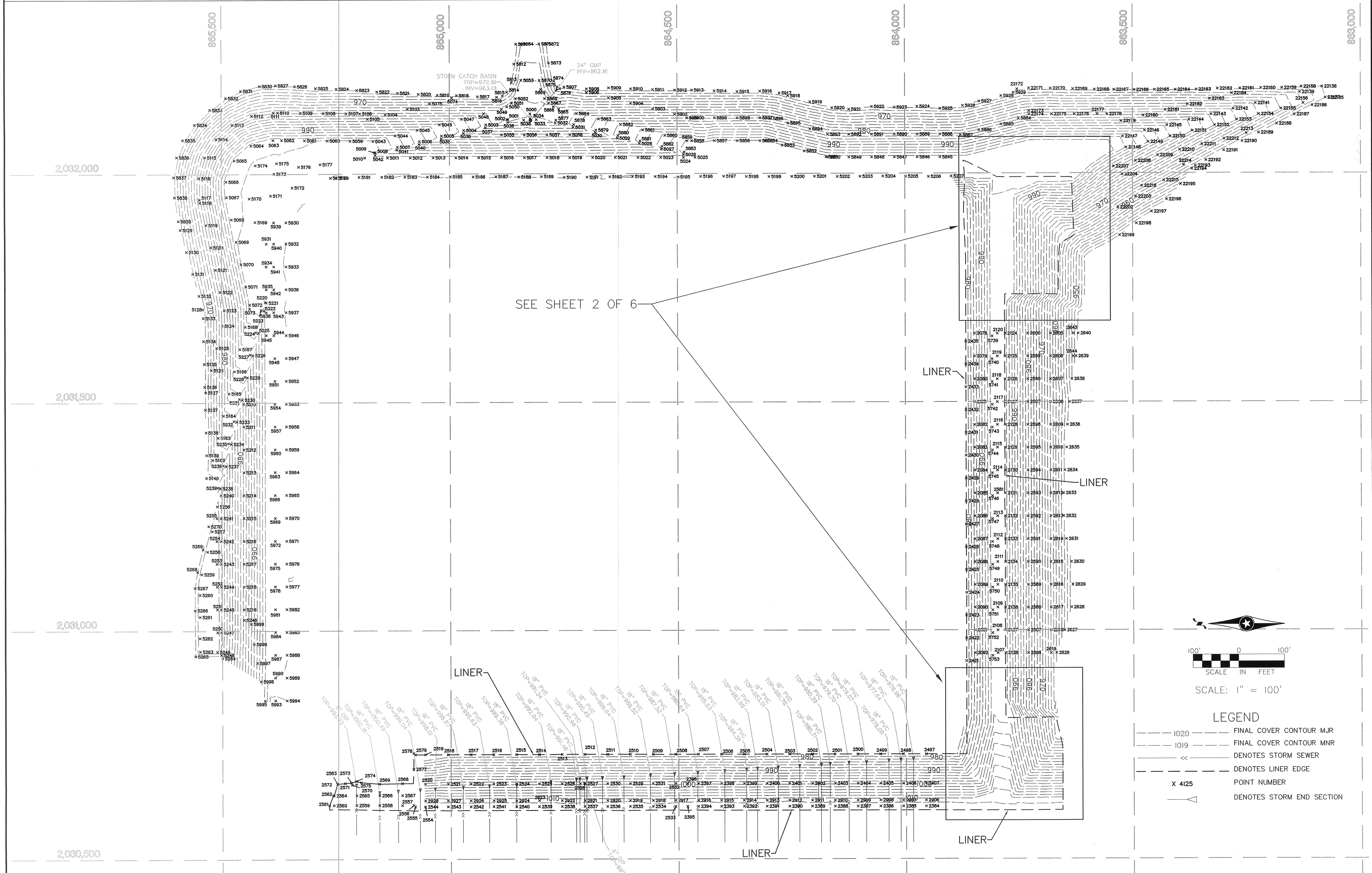
Braun Intertec Corporation

Thomas L. Henkemeyer
Project Manager

Appendix G

Survey Verification Data

POND 3 NORTH CONSTRUCTION
2008 AS- BUILT AND TOP SOIL CONTOURS WITH THICKNESS CHART



REV NO.	DATE	DESCRIPTION

DATE: 12/1/08
DESIGN BY: JEN
DRAWN BY: JEN
CHECKED BY: BEP
DWG FILE: FINAL COVER
FILE NO.: 08-0074.00

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

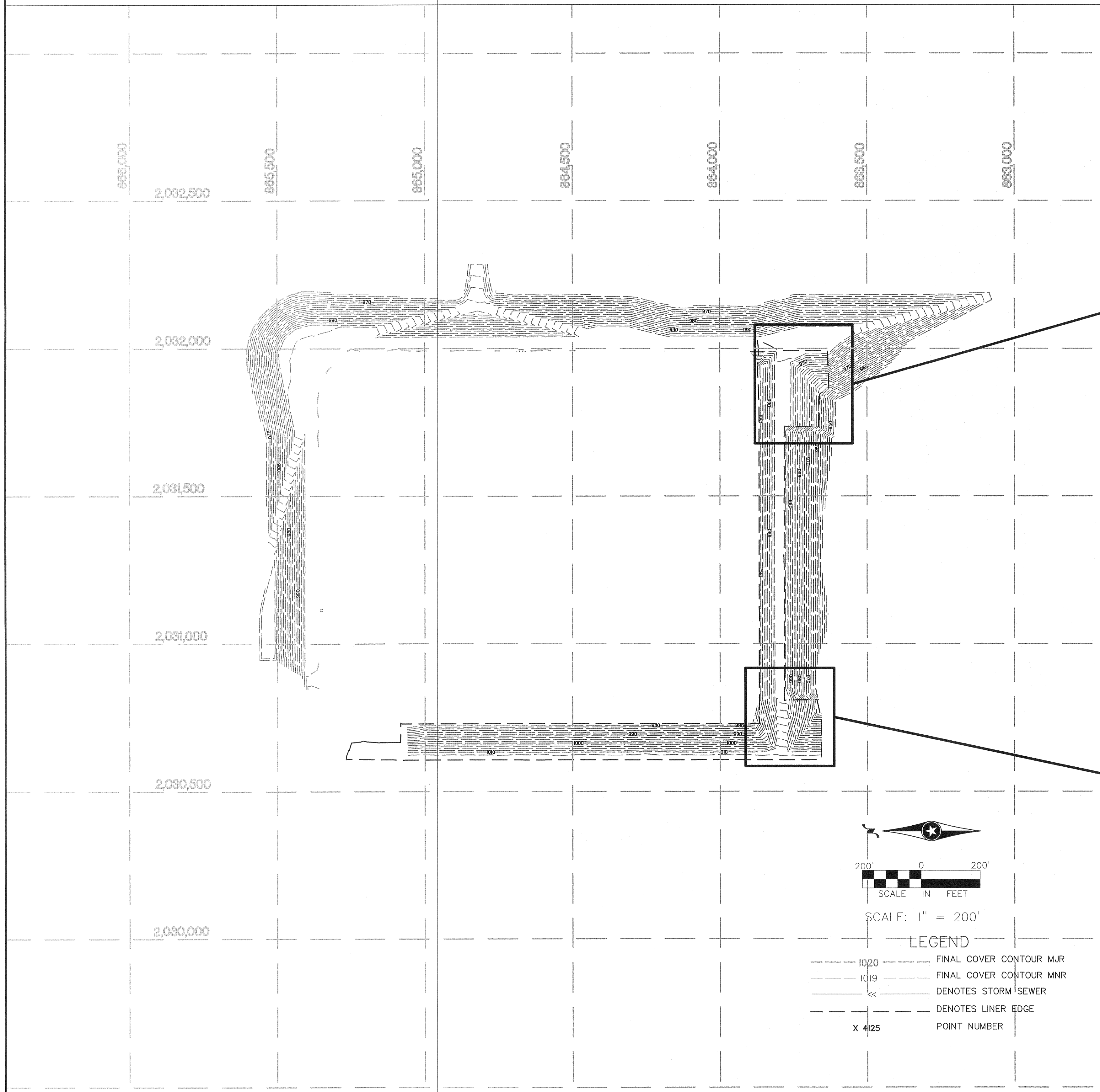
Signed: BRIAN E. PRASKE Reg. No. 44646
Date: 12/1/08

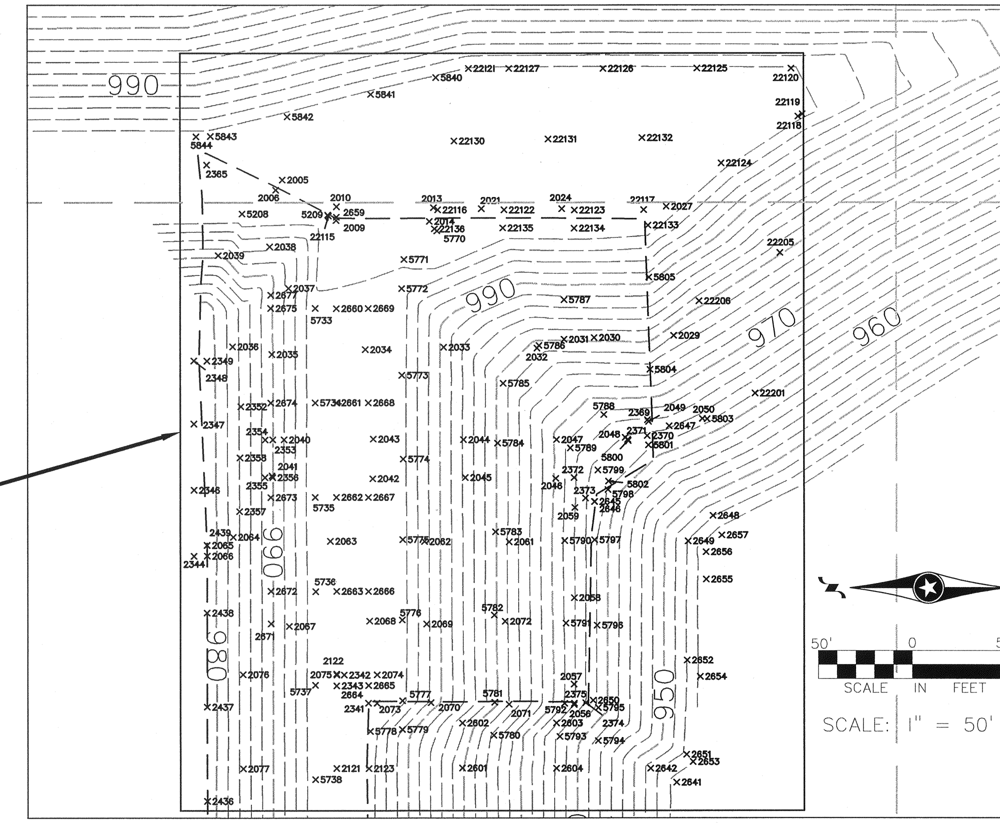
BOGART, PEDERSON & ASSOCIATES, INC.
LAND SURVEYING
CIVIL ENGINEERING
MAPPING
13076 FIRST STREET, BECKER, MN 55308-9322
TEL: 763-262-8822 FAX: 763-262-8844

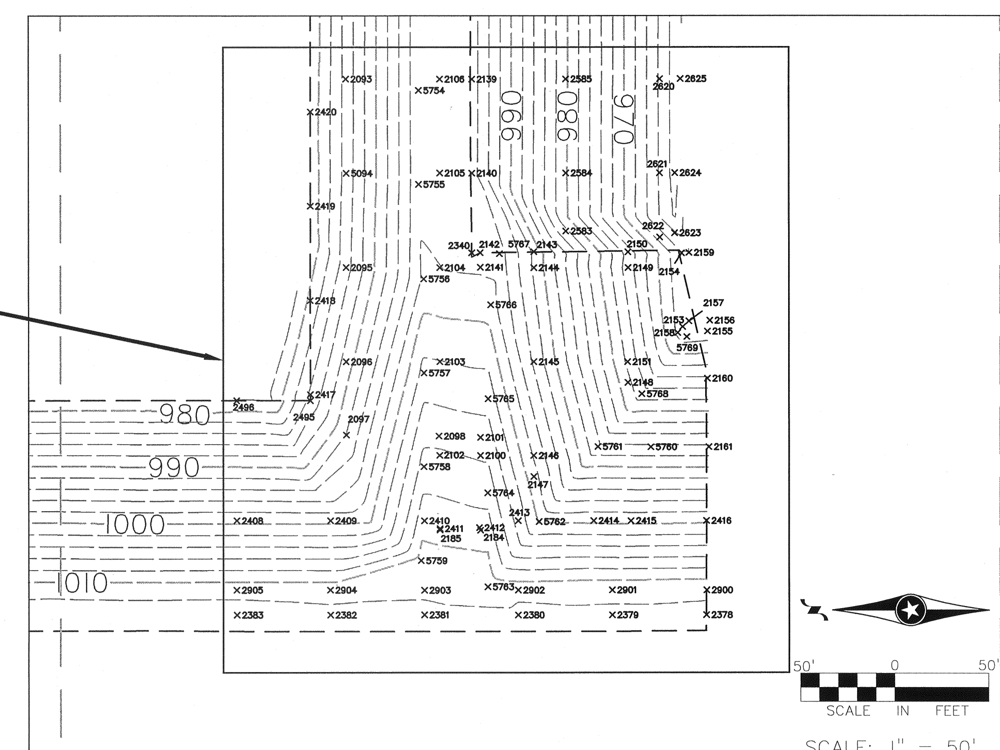
SHERCO PONDS
POND 3
SEPTEMBER 2008
BECKER, MN

SHEET NO.
6

POND 3 NORTH CONSTRUCTION
2008 AS- BUILT AND TOP SOIL CONTOURS WITH THICKNESS CHART







DESCRIPTION | DATE | REV NO.

DATE: 12/1/08
DESIGN BY: JEN
DRAWN BY: JEN
CHECKED BY: BEP
DWG FILE: FINAL COVER
FILE NO.: 08-0074.00

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Signed: BRIAN E. PRASKE Reg. No. 44646
Date: 12/4/08

BOGART, PEDERSON & ASSOCIATES, INC.
LAND SURVEYING
CIVIL ENGINEERING
MAPPING
13076 FIRST STREET, BECKER, MN 55308-9322
TEL: 763-262-8822 FAX: 763-262-8844

SHERCO PONDS
POND 3
SEPTEMBER 2008
BECKER, MN

SHEET NO.
2
6

POND 3 NORTH CONSTRUCTION

2008 AS BUILT AND TOP SOIL CONTOURS WITH THICKNESS CHART

Top of Subgrade Number	Northing	Easting	Top of Subgrade Elevation	Top of Clay Point Number	Top of Clay Elevation	Clay Thickness	Random Fill Point Number	Top of Random Fill Elevation	Random Fill Thickness	Topsoil Point Number	Top of Topsoil Layer Elevation	Topsoil Layer Thickness
2005	863826.69	2032012.08	980.26	3005	985.47	5.21						
2006	863830.24	2032006.67	979.65	3006	984.65	5.01						
2009	863798.01	2031990.45	990.21	3009	995.24	5.02						
2010	863797.82	2031997.70	989.72	3010	994.91	5.19						
2013	863746.15	2031997.25	990.18	3013	995.18	5.00						
2014	863748.34	2031989.95	990.12	3014	995.12	5.00						
2021	863720.62	2031996.66	990.27	3021	995.32	5.05						
2024	863677.90	2031996.64	990.04	3024	995.05	5.01						
2027	863622.28	2031997.85	990.14	3027	995.17	5.03						
				Top of Sand Point Number	Top of Sand Elevation	Sand Thickness						
2029	863618.44	2031929.06	974.35	4029	976.53	2.17						
2030	863660.77	2031928.01	974.55	4030	976.57	2.01						
2031	863676.75	2031927.08	974.50	4031	976.55	2.05						
2032	863691.16	2031922.38	976.12	4032	978.12	2.01						
2033	863740.79	2031922.93	976.29	4033	978.32	2.04						
2034	863782.53	2031921.69	975.89	4034	977.90	2.02						
2035	863832.36	2031919.19	975.09	4035	977.09	2.00						
2036	863853.30	2031923.28	976.11	4036	978.12	2.01						
2037	863823.45	2031954.32	986.43	4037	988.52	2.09						
2038	863833.42	2031976.40	983.28	4038	985.33	2.05						
2039	863860.90	2031971.77	974.10	4039	976.22	2.12						
2040	863825.84	2031874.10	960.14	4040	962.32	2.18						
2041	863832.35	2031855.02	960.20	4041	963.07	2.86						
2042	863778.61	2031853.53	960.35	4042	962.48	2.13						
2043	863778.28	2031874.39	960.06	4043	962.16	2.09						
2044	863730.28	2031874.11	960.09	4044	962.13	2.04						
2045	863729.35	2031854.10	960.19	4045	962.19	2.00						
2046	863681.22	2031853.58	960.21	4046	962.34	2.14						
2047	863680.78	2031874.06	960.14	4047	962.14	2.00						
2048	863644.24	2031875.19	960.23	4048	962.32	2.09						
2049	863631.84	2031883.57	960.11	4049	962.13	2.01						
2050	863603.25	2031885.08	960.00	4050	962.18	2.18						
2056	863671.56	2031733.25	960.20	4056	962.23	2.03						
2057	863671.68	2031744.18	960.28	4057	962.30	2.02						
2058	863671.42	2031790.15	960.18	4058	962.19	2.01						
2059	863671.06	2031838.10	960.15	4059	962.15	2.00						
2061	863705.98	2031819.94	971.42	4061	973.43	2.01						
2062	863751.05	2031820.15	971.24	4062	973.30	2.06						
2063	863801.24	2031820.29	971.21	4063	973.36	2.15						
2064	863853.07	2031822.49	970.63	4064	972.74	2.11						
2065	863866.95	2031818.16	971.81	4065	973.99	2.18						
2066	863866.90	2031812.45	971.94	4066	974.61	2.67						
2067	863823.24	2031774.99	986.52	4067	988.52	2.00						
2068	863780.42	2031777.77	985.53	4068	987.54	2.01						
2069	863749.97	2031776.20	986.10	4069	988.12	2.02						
2070	863747.73	2031734.40	985.47	4070	987.52	2.05						
2071	863706.17	2031733.57	971.80	4071	973.82	2.01						
2072	863708.19	2031777.62	972.35	4072	974.38	2.03						
2073	863776.44	2031734.13	995.16	4073	996.69	1.53						
2074	863776.42	2031749.24	995.08	4074	996.59	1.51						
2075	863797.91	2031749.15	994.98	4075	996.52	1.54						
2076	863847.91	2031749.40	978.39	4076	980.39	2.00	5076	984.07	3.68	8076	984.70	0.63
2077	863847.83	2031699.40	978.40	4077	980.47	2.07	5077	984.01	3.54	8077	984.64	0.63
2078	863847.96	2031649.64	978.13	4078	980.17	2.04	5078	983.86	3.69	8078	984.51	0.65
2079	863847.96	2031599.68	978.25	4079	980.39	2.14	5079	984.00	3.62	8079	984.66	0.66
2080	863847.87	2031549.69	978.39	4080	980.50	2.11	5080	984.11	3.61	8080	984.75	0.64
2081	863847.83	2031499.78	978.25	4081	980.41	2.16	5081	984.10	3.69	8081	984.64	0.53
2082	863847.95	2031449.62	978.25	4082	980.35	2.10	5082	984.01	3.66	8082	984.64	0.63
2083	863847.96	2031399.70	978.24	4083	980.26	2.02	5083	983.95	3.69	8083	984.61	0.66
2084	863847.96	2031349.54	978.41	4084	980.45	2.04	5084	984.14	3.69	8084	984.64	0.50
2085	863847.90	2031299.57	978.45	4085	980.46	2.01	5085	984.15	3.69	8085	984.70	0.55
2086	863847.89	2031249.57	978.36	4086	980.45	2.10	5086	984.15	3.69	8086	984.75	0.60
2087	863847.96	2031199.62	978.39	4087	980.42	2.03	5087	984.09	3.67	8087	984.62	0.53
2088	863847.97	2031149.55	978.33	4088	980.34	2.01	5088	984.03	3.69	8088	984.68	0.65
2089	863847.95	2031099.59	978.33	4089	980.35	2.02	5089	984.01	3.66	8089	984.54	0.53
2090	863848.00	2031049.63	978.22	4090	980.29	2.07	5090	983.96	3.67	8090	984.58	0.62
2091	863847.85	2030999.65	978.28	4091	980.36	2.08	5091	984.03	3.67	8091	984.67	0.64
2092	863847.90	2030949.77	978.48	4092	980.49	2.01	5092	984.13	3.64	8092	984.71	0.58
2093	863848.02	2030899.65	978.31	4093	980.35	2.04	5093	984.02	3.66	8093	984.64	0.62
2094	863847.92	2030849.59	978.41	4094	980.44	2.03	5094	984.23	3.79	8094	984.78	0.54
2095	863847.89	2030799.62	978.44	4095	980.45	2.02	5095	984.69	4.23	8095	985.20	0.51
2096	863847.92	2030749.54	978.34	4096	980.34	2.00	5096	988.42	8.08	8096	988.92	0.51
2097	863847.83	2030710.48	978.40	4097	980.46	2.06	5097	991.54	11.08	8097	992.12	0.57
2098	863798.47	2030709.87	994.94	4098	996.48	1.54						
2099	863797.92	2030699.51	995.04	4099	996.57	1.54						
2100	863776.41	2030699.53	994.81	4100	996.48	1.67	5100	1005.15	8.67	8100	1005.76	0.61
2101	863776.37	2030709.23	994.85	4101	996.45	1.60	5101	1004.40	7.95	8101	1004.95	0.55
2102	863798.02	2030699.57	995.08	4102	996.59	1.50	5102	1005.74	9.15	8102	1006.29	0.54
2103	863797.98	2030749.59	995.01	4103	996.54	1.53						
2104	863797.96	2030799.55	994.96	4104	996.48	1.52						
2105	863797.96	2030849.60	994.90	4105	996.49	1.59						
2106	863797.99	2030899.56	995.04	4106	996.63	1.60						
2107	863797.99	2030949.59	995.10	4107	996.73	1.63						
2108	863797.95	2030999.57	995.06	4108	996.64	1.58						
2109	863797.99	2031049.64	994.99	4109	996.52	1.53						
2110	863797.97	2031099.64	994.97	4110	996.52	1.55						
2111	863798.03	2031149.55	995.03	4111	996.55	1.52						
2112	863797.94	2031199.63	995.03	4112	996.56	1.53						
2113	863797.94	2031249.54	995.01	4113	996.52	1.51						
2114	863797.93	2031349.59	995.02	4114	996.56	1.54						
2115	863797.98	2031399.55	994.99	4115	996.52	1.53						
2116	863798.00	2031449.56	995.01	4116	996.56	1.54						
2117	863798.00	2031499.56	994.98	4117	996.56	1.57						
2118	863797.97	2031549.60	995.12	4118	996.63	1.51						
2119	863797.97	2031599.56	994.90	4119	996.45	1.55						
2120	863797.96	2031649.63	995.07	4120	996.60	1.53						
2121	863798.00	2031699.56	994.92	4121	996.50	1.58						
2122	863797.97	2031749.66	994.97	4122	996.48	1.51						
2123	863780.82	2031699.46	994.96	4123	996.49	1.53						
2124	863780.86	2031649.52	994.91	4124	996.46	1.54						
2125	863780.88	2031599.59	995.20	4125	996.72	1.52						
2126	863780.84	2031549.61	995.02	4126	996.54	1.52						
2127	863780.88	2031499.54	994.85	4127	996.50	1.65						
2128	863780.92	2031449.54	994.99	4128	996.52	1.53						
2129	863780.84	2031399.57	994.89	4129	996.42	1.54						
2130	863780.92	2031349.54	994.96	4130	996.49	1.53						
2131	863780.89	2031299.50	994.99	4131	996.50	1.51						
2132	863780.95	2031249.57	995.03	4132	996.56	1.52						
2133	863780.89	2031199.58	995.06	4133	996.57	1.51						
2134	863780.90	2031149.57	995.07	4134	996.61	1.54						
2135	863780.97	2031099.56	995.04	4135	996.56	1.51						
2136	863780.89	2031049.55	995.11	4136	996.66	1.55						
2137	863780.93	2030999.61	995.10	4137	996.65	1.55						
2138	863780.83	2030949.62	995.11	4138	996.63	1.52						
2139	863780.90	2030899.55	995.07	4139	996.58	1.51						
2140	863780.91	2030849.56	994.93	4140	996.49	1.56						
2141	863776.40	2030799.69	995.02	4141	996.53	1.51	5141	997.07	0.54	8141	997.70	0.63
2142	863776.49	2030807.46	994.99	4142	996.50	1.51	5142	996.60	0.10	8142	997.25	0.65
2143	863748.01	2030807.98	985.60	4143	987.67	2.07	5143	991.20	3.53	8143	991.70	0.50
2144	863747.98	2030799.51	985.55	4144	987.59	2.04	5144	991.15	3.56	8144	991.74	0.59
2145	863747.98	2030749.56	985.54	4145	987.64	2.09	5145	993.21	5.57	8145	993.71	0.50
2146	863748.02	2030699.46	985.39	4146	987.49	2.10	5146	997.21	9.72	8146	997.74	0.53
2147	863748.00	2030688.32	985.64	4147	987.69	2.04	5147	998.27	10.58	8147	998.84	0.57
2148	863697.88	2030738.50	968.84	4148	970.96	2.12	5148	978.00	7.04	8148	978.51	0.51
2149	863697.83	2030799.48	968.88	4149	970.94	2.06	5149	974.49	3.55	8149	974.99	0.50
2150	863697.88	2030807.80	969.01	4150	971.10	2.09	5150	974.69	3.59	8150	975.21	0.52
2151	863698.04	2030749.47	968.86	4151	970.95	2.09	5151	977.08	6.12	8151	977.59	0.52
2154	863669.43	2030807.24	959.99	4154	962.00	2.01	5154	965.51	3.51	8154	966.19	0.68
2155	863655.62	2030765.77	960.24	4155	962.35	2.10	5155	965.89	3.54	8155	966.42	0.54
2156	863654.45	2030771.55	960.05	4156	962.06	2.01	5156	965.56	3.50	8156	966.12	0.55
2157	863665.48	2030771.19	959.71	4157	961.86	2.15	5157	965.42	3.56	8157	966.58	1.16
2158	863671.37	2030765.00	960.01	4158	962.17	2.16	5158	967.50	5.33	8158	967.60	0.10
2159	863665.46	2030807.44	960.14	4159	962.16	2.02	5159	965.67	3.51	8159	966.25	0.58
2160	863655.63	2030740.66	968.16	4160	970.30	2.13	5160	973.80	3.50	8160	974.34	0.53
2161	863654.89	2030704.16	980.27	4161	982.38	2.11	5161	985.88	3.50	8161	986.38	0.50
2184	863776.41	2030659.79	989.67	4184	996.68	7.02						
2185	863797.94	2030659.90	989.85	4185	996.66	6.81						
2340	863780.99	2030807.35	995.00	4340	996.53	1.52						
2341	863781.05	2031734.14	995.09	4341	996.60	1.50						
2342	863793.98	2031749.16	994.92	4342	996.48	1.56						
2343	863797.93	2031743.40	995.00	4343	996.56	1.56						
2344	863873.96	2031812.38	972.08	4344	974.11	2.03						
2346	863873.87	2031847.41	972.02	4346	974.08	2.07						
2347	863873.98	2031882.47	972.05	4347	974.09	2.04						
2348	863873.97	2031915.74	972.36	4348	974.23	1.86						
2349	863866.92	2031915.68	972.26	4349	974.29	2.03						

Top of Subgrade Number	Northing	Easting	Top of Subgrade Elevation	Top of Sand Point Number	Top of Sand Elevation	Sand Thickness	Random Fill Point Number	Top of Random Fill Elevation	Random Fill Thickness	Gravel Point Number	Top of Gravel Layer Elevation	Gravel Layer Thickness	Topsoil Point Number	Top of Topsoil Layer Elevation	Topsoil Layer Thickness
2352	863848.94	2031891.59	966.09	4352	968.27	2.18									
2353	863831.93	2031874.09	960.06	4353	963.01	2.95									
2354	863835.96	2031874.06	960.74	4354	963.71	2.97									
2355	863836.02	2031854.16	960.61	4355	963.65	3.04									
2356	863831.99	2031854.19	960.16	4356	963.09	2.93									
2357	863849.61	2031836.12	966.09	4357	968.25	2.16									
2358	863849.33	2031864.62	966.15	4358	968.20	2.05									
2365	863866.99	2032020.05	972.16	4365	974.34	2.18									
2369	863632.36	2031884.52	960.18	4369	962.19	2.00									
2370	863632.47	2031876.07	959.91	4370	962.10	2.19									
2371	863642.88	2031874.22	960.06	4371	962.27	2.20									
2372	863671.48	2031854.01	960.01	4372	962.12	2.11									
2373	863665.36	2031843.14	959.77	4373	961.92	2.15									
2374	863665.38	2031734.28	959.72	4374	961.81	2.08									
2375	863671.44	2031734.08	960.08	4375	962.09	2.01									
2378	863656.25	2030614.92	1010.17	4378	1011.67	1.50				6378	1012.18	0.51			
2379	863706.29	2030614.83	1010.00	4379	1011.55	1.55				6379	1012.10	0.55			
2380	863756.31	2030614.87	1010.14	4380	1011.66	1.51				6380	1012.19	0.54			
2381	863806.19	2030614.92	1009.88	4381	1011.48	1.60				6381	1012.29	0.81			
2382	863856.33	2030614.85	1010.15	4382	1011.66	1.51				6382	1012.18	0.52			
2383	863906.16	2030614.89	1009.87	4383	1011.41	1.55				6383	1012.27	0.85			
2384	863956.31	2030614.90	1010.12	4384	1011.67	1.54				6384	1012.25	0.59			
2385	864006.29	2030614.90	1010.08	4385	1011.62	1.54				6385	1012.31	0.69			
2386	864056.21	2030614.94	1010.15	4386	1011.69	1.53				6386	1012.33	0.65			
2387	864106.20	2030614.81	1009.86	4387	1011.47	1.61				6387	1012.31	0.83			
2388	864156.27	2030614.96	1009.99	4388	1011.50	1.51				6388	1012.25	0.76			
2389	864206.42	2030615.01	1010.07	4389	1011.58	1.51				6389	1012.22	0.64			
2390	864256.23	2030614.96	1010.02	4390	1011.53	1.51				6390	1012.26	0.73			
2391	864306.31	2030614.94	1009.93	4391	1011.44	1.51				6391	1012.34	0.91			
2392	864356.30	2030614.92	1010.02	4392	1011.54	1.52				6392	1012.26	0.72			
2393	864406.27	2030614.95	1010.03	4393	1011.53	1.51				6393	1012.31	0.77			
2394	864456.28	2030614.83	1009.92	4394	1011.48	1.57				6394	1012.27	0.79			
2395	864480.24	2030614.89	1009.94	4395	1011.46	1.52				6395	1012.23	0.78			
2396	864480.22	2030664.90	993.31	4396	995.32	2.01	5396	998.82	3.50				8396	999.48	0.66
2397	864456.28	2030664.91	993.25	4397	995.34	2.09	5397	998.91	3.57				8397	999.45	0.54
2398	864406.30	2030664.95	993.35	4398	995.40	2.06	5398	998.98	3.57				8398	999.49	0.52
2399	864356.25	2030664.92	993.28	4399	995.28	2.01	5399	998.79	3.50				8399	999.36	0.57
2400	864306.23	2030664.94	993.29	4400	995.35	2.07	5400	998.95	3.59				8400	999.46	0.51
2401	864256.35	2030664.98	993.32	4401	995.32	2.01	5401	998.89	3.56				8401	999.40	0.51
2402	864206.25	2030664.94	993.39	4402	995.55	2.16	5402	999.06	3.51				8402	999.58	0.52
2403	864156.24	2030664.89	993.34	4403	995.40	2.06	5403	998.91	3.51				8403	999.45	0.54
2404	864106.24	2030664.95	993.30	4404	995.40	2.11	5404	998.98	3.58				8404	999.49	0.51
2405	864056.26	2030664.91	993.45	4405	995.48	2.03	5405	999.03	3.55				8405	999.56	0.53
2406	864006.18	2030664.85	993.49	4406	995.49	2.00	5406	999.01	3.52				8406	999.51	0.50
2407	863956.23	2030664.91	993.39	4407	995.40	2.01	5407	998.92	3.52				8407	999.47	0.55
2408	863906.21	2030664.90	993.35	4408	995.40	2.05	5408	998.98	3.58				8408	999.54	0.56
2409	863856.28	2030664.89	993.36	4409	995.41	2.05	5409	998.94	3.53				8409	999.46	0.52
2410	863806.24	2030664.84	993.47	4410	995.58	2.11	5410	1008.66	13.09						
2411	863798.00	2030660.64	995.01	4411	997.03	2.02									
2412	863776.93	2030661.17	995.11	4412	997.15	2.04									
2413	863756.27	2030664.89	993.37	4413	995.41	2.04	5413	1002.55	7.14						
2414	863716.23	2030664.91	993.44	4414	995.47	2.03	5414	999.03	3.55				8414	999.58	0.55
2415	863696.28	2030664.85	993.40	4415	995.43	2.03	5415	998.96	3.53				8415	999.46	0.50
2416	863656.23	2030664.88	993.40	4416	995.43	2.03	5416	999.00	3.56				8416	999.59	0.59
2417	863866.94	2030732.05	972.20	4417	974.33	2.13	5417	983.82	9.48						
2418	863867.02	2030782.10	971.92	4418	974.08	2.16	5418	979.71	5.63						
2419	863866.98	2030832.12	972.04	4419	974.24	2.20	5419	978.28	4.04				8419	978.49	0.21
2420	863866.92	2030882.18	971.98	4420	974.07	2.09	5420	978.08	4.01				8420	978.63	0.55
2421	863866.96	2030932.06	972.40	4421	974.52	2.12	5421	978.55	4.03				8421	978.26	0.29
2422	863866.98	2030982.15	972.14	4422	974.33	2.19	5422	978.34	4.00				8422	978.44	0.11
2423	863866.94	2031032.16	972.02	4423	974.19	2.17	5423	978.21	4.02				8423	978.45	0.23
2424	863866.40	2031081.96	972.17	4424	974.29	2.12	5424	978.30	4.00				8424	978.49	0.19
2425	863866.71	2031132.20	972.48	4425	974.55	2.07	5425	978.59	4.04				8425	978.61	0.02
2426	863866.91	2031182.08	972.58	4426	974.74	2.17	5426	978.76	4.02				8426	978.39	0.37
2427	863866.92	2031232.12	972.29	4427	974.38	2.09	5427	978.39	4.01				8427	978.45	0.06
2428	863866.99	2031282.15	972.42	4428	974.48	2.06	5428	978.48	4.00				8428	978.18	0.29
2429	863866.88	2031332.10	971.99	4429	974.12	2.13	5429	978.13	4.01				8429	978.23	0.10
2430	863867.01	2031382.11	972.18	4430	974.18	2.01	5430	978.22	4.04				8430	978.36	0.14
2431	863866.84	2031432.10	972.10	4431	974.19	2.09	5431	978.21	4.02				8431	978.36	0.15
2432	863866.99	2031482.08	971.98	4432	974.08	2.10	5432	978.12	4.03				8432	978.41	0.30
2433	863866.94	2031532.07	972.00	4433	974.05	2.04	5433	978.09	4.04				8433	978.17	0.08
2434	863866.90	2031582.12	972.12	4434	974.22	2.11	5434	978.25	4.03				8434	978.38	0.13
2435	863866.90	2031632.04	972.11	4435	974.18	2.07	5435	978.21	4.03				8435	978.35	0.14
2436	863866.89	2031682.12	972.07	4436	974.13	2.06	5436	978.14	4.01				8436	978.37	0.23
2437	863866.98	2031732.08	972.15	4437	974.25	2.10	5437	978.25	4.00				8437	978.22	0.03
2438	863866.93	2031782.12	972.44	4438	974.51	2.07	5438	978.55	4.05				8438	978.42	0.13
2439	863866.93	2031818.12	971.74	4439	973.83	2.09	5439	977.91	4.09				8439	978.25	0.34
2495	863866.99	2030728.86	972.73	4495	974.80	2.07	5495	984.04	9.24						
2496	863906.31	2030728.83	971.97	4496	974.02	2.05	5496	977.62	3.61				8496	978.13	0.51
2497	863956.23	2030728.84	972.16	4497	974.17	2.01	5497	977.67	3.50				8497	978.19	0.52
2498	864006.20	2030728.94	971.97	4498	974.13	2.16	5498	977.63	3.50				8498	978.14	0.51
2499	864056.27	2030728.68	971.82	4499	974.00	2.19	5499	977.61	3.61				8499	978.14	0.53
2500	864106.26	2030728.71	972.10	4500	974.27	2.17	5500	977.81	3.54				8500	978.31	0.50
2501	864156.32	2030728.87	971.88	4501	974.05	2.16	5501	977.58	3.53				8501	978.08	0.50
2502	864206.24	2030729.03	971.81	4502	973.97	2.16	5502	977.50	3.54				8502	978.02	0.51
2503	864256.30	2030728.95	972.08	4503	974.09	2.01	5503	977.65	3.56				8503	978.18	0.52
2504	864306.19	2030728.83	972.18	4504	974.19	2.01	5504	977.75	3.56				8504	978.26	0.51
2505	864356.20	2030728.90	971.84	4505	973.94	2.10	5505	977.48	3.54				8505	978.08	0.60
2506	864406.25	2030728.92	972.20	4506	974.21	2.01	5506	977.73	3.52				8506	978.27	0.55
2507	864456.29	2030728.89	971.82	4507	973.97	2.15	5507	977.60	3.64				8507	978.14	0.54
2508	864506.29	2030728.86	972.20	4508	974.20	2.00	5508	977.72	3.51				8508	978.24	0.52
2509	864556.25	2030728.89	972.20	4509	974.28	2.09	5509	977.80	3.51				8509	978.34	0.54
2510	864606.22	2030729.00	972.02	4510	974.11	2.09	5510	977.71	3.59				8510	978.21	0.51
2511	864656.30	2030728.92	972.20	4511	974.20	2.00	5511	977.74	3.54				8511	978.25	0.52
2512	864706.28	2030728.93	971.88	4512	973.95	2.06	5512	977.49	3.55				8512	978.08	0.58
2513	864756.25	2030728.95	972.05	4513	974.06	2.01	5513	977.66	3.60				8513	978.16	0.51
2514	864806.23	2030728.84	972.14	4514	974.19	2.05	5514	977.73	3.54				8514	978.25	0.52
2515	864856.30	2030728.88	972.02	4515	974.08	2.06	5515	977.59	3.51				8515	978.09	0.50
2516	864906.26	2030728.85	972.14	4516	974.19	2.05	5516	977.77	3.58				8516	978.28	0.51
2517	864956.29	2030728.94	972.15	4517	974.17	2.02	5517	977.71	3.53				8517	978.23	0.53
2518	865006.25	2030728.90	971.98	4518	974.03	2.05	5518	977.56	3.53				8518	978.16	0.60
2519	865056.27	2030728.92	972.10	4519	974.23	2.13	5519	977.76	3.53				8519	978.27	0.51
2520	865056.27	2030664.89	993.44	4520	995.44	2.00	5520	998.95	3.51						
2521	865006.23	2030664.90	993.25	4521	995.38	2.13	5521	998.90	3.51				8521	999.44	0.55
2522	864956.28	2030664.93	993.16	4522	995.28	2.11	5522	998.82	3.54				8522	999.38	0.57
2523	864906.29	2030664.85	993.33	4523	995.35	2.03	5523	998.94	3.59				8523	999.47	0.53
2524	864856.25	2030664.89	993.28	4524	995.30	2.02	5524	998.81	3.51				8524	999.38	0.56
2525	864806.21	2030664.92	993.31	4525	995.38	2.08	5525	998.90	3.52				8525	999.43	0.53
2526	864756.31	2030664.91	993.15	4526	995.31	2.16	5526	998.85	3.55				8526	999.37	0.52
2527	864706.03	2030664.76	993.20	4527	995.39	2.19	5527	998.92	3.53				8527	999.49	0.57
2528	864716.24	2030665.02	993.29	4528	995.42	2.13	5528	998.95	3.53				8528	999.45	0.50
2529	864606.27	2030664.92	993.46	4529	995.45	2.00	5529	998.96	3.51				8529	999.46	0.50
2530	864656.27	2030664.91	993.35	4530	995.45	2.09	5530	998.98	3.54				8530	999.50	0.52
2531	864556.30	2030665.00	993.40	4531	995.40	2.00	5531	998.90	3.50				8531	999.42	0.52
2532	864506.27	2030664.91	993.31	4532	995.32	2.01	5532	998.85	3.53				8532	999.41	0.56
2533	864506.25	2030614.84	1009.80	4533	1011.41	1.61				6533	1012.21	0.80			
2534	864556.15	2030614.92	1009.80	4534	1011.47	1.66				6534	1012.17	0.70			
2535	864606.45	2030614.87	1009.83	4535	1011.49	1.66				6535	1012.29	0.80			
2536	864656.26	2030614.87	1009.89	4536	1011.55	1.66				6536	1012.33	0.78			
2537	864706.22	2030614.91	1009.83	4537	1011.44	1.60				6537	1012.35	0.91			
2538	864756.29	2030614.89	1009.87	4538	1011.39	1.52				6538	1012.19	0.80			
2539	864806.25	2030614.87	1009.80	4539	1011.36	1.56				6539	1012.32	0.96			
2540	864856.23	2030614.86	1009.87	4540	1011.52	1.66				6540	1012.31	0.79			
2541	864906.28	2030614.97	1010.03	4541	1011.54	1.52				6541	1012.29	0.75			
2542	864956.28	2030614.83	1010.10	4542	1011.64	1.54				6542	1012.28	0.64			
2543	865006.34	2030614.92	1009.83	4543	1011.47	1.63				6543	1012.25	0.78			
2544	865056.30	2030614.89	1009.99	4544	1011.51	1.52				6544	1012.23	0.72			
2554	865056.27	2030614.91	1009.99	4554	1011.61	1.61									
2555	865078.26	2030614.91	1010.10	4555	1011.19	1.09									
2556	865081.47	2030618.13	1010.12	4556	1011.24	1.12									
2557	865106.47	2030618.00	1010.20	4557	1011.24	1.04									
2558	865156.51	2030618.21	1010.20	4558	1011.21	1.01									
2559	865206.46	2030618.27	1010.20	4559	1011.21	1.01									
2560	865256.29	2030618.12	1010.14	4560	1011.17	1.03									
2561	865266.25	2030618.15	1010.07	4561	1011.14	1.07									
2562	865257.78	2030639.83	1003.98	4562	1006.13	2.15	5562	1008.65	2.52						
2563	865248.41	2030664.94	994.87	4563	997.04	2.17	5563	1000.67	3.63						
2564	865256.24	2030639.83	1003.85	4564	1006.01	2.15	5564	1009.51	3.51						
2565	865206.27	2030639.79	1002.95	4565	1005.06	2.11	5565	1008.66	3.60						
2566	865156.25	2030639.92	1002.75	4566	1004.93	2.18	5566	1008.55	3.62						
2567	865106.23	2030639.83	1002.75	4567	1004.84	2.10	5567	1008.46	3.62						
2568	865106.62	2030666.04	994.94	4568	997.00	2.06	5568	1000.50	3.50						
2569	865156.53	2030665.04	994.84	4569	996.87	2.03	5569	1000.40	3.53						
2570	865216.60	2030663.09	995.06	4570	997.18	2.12	5570	1000.86	3.68						
2571	865231.78	2030666.54	994.86	4571	996.91	2.05	5571	1000.52	3.60						
2572	865248.28	2030665.13	994.83	4572	996.97	2.14	5572	1000.50	3.53						
2573	865218.08	2030667.62	994.60	4573	996.63	2.03	5573	1000.17	3.54						
2574	865208.06	2030671.00	992.76	4574	994.78	2.02	5574	998.33	3.55						
2575	865196.81	2030668.38	994.87	4575	996.93	2.07	5575	1000.62	3.69						
2577	865081.42	2030697.64	983.53	4577	985.54	2.02	5577	989.08	3.54						
2578	865081.48	2030731.83	972.15	4578	974.18	2.03	5578	977.73	3.56						

DESCRIPTION

DATE

REV NO.

DATE: 12/1/08
DESIGN BY: JEN
DRAWN BY: JEN
CHECKED BY: BEP
DWG FILE: FINAL COVER
FILE NO.: 08-0074.00

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Signed: BRIAN E. PRASKE

Date: 12/01/08 Reg. No. 44646

BOGART, PEDERSON & ASSOCIATES, INC.
LAND SURVEYING
CIVIL ENGINEERING
MAPPING
13076 FIRST STREET, BECKER, MN 55308-9322
TEL: 763-262-8822 FAX: 763-262-8844

SHERCO PONDS
POND 3
SEPTEMBER 2008
BECKER, MN

SHEET NO.
3

6

POND 3 NORTH CONSTRUCTION

2008 AS BUILT AND TOP SOIL CONTOURS WITH THICKNESS CHART

Top of Subgrade Number	Northing	Easting	Top of Subgrade Elevation	Top of Sand Point Number	Top of Sand Elevation	Clay/Sand Thickness	Random Fill Point Number	Top of Random Fill Elevation	Random Fill Thickness	Gravel Point Number	Top of Gravel Layer Elevation	Gravel Layer Thickness	Topsoil Point Number	Top of Topsoil Layer Elevation	Topsoil Layer Thickness
2579	865078.28	2030728.90	972.67	4579	974.69	2.02	5579	978.20	3.51						
2581	863797.91	2031299.56	995.10	4581	996.68	1.58									
2583	863730.93	2030818.88	979.62										8583	980.27	0.65
2584	863730.85	2030849.63	979.68										8584	980.22	0.54
2585	863730.92	2030899.58	979.77										8585	980.38	0.61
2586	863730.93	2030949.53	979.85										8586	980.37	0.53
2587	863730.88	2030999.48	979.88										8587	980.39	0.51
2588	863730.94	2031049.58	979.67										8588	980.25	0.57
2589	863730.85	2031099.51	979.81										8589	980.36	0.56
2590	863730.98	2031149.54	979.70										8590	980.32	0.62
2591	863731.08	2031199.59	979.82										8591	980.44	0.62
2592	863731.09	2031249.41	979.71										8592	980.25	0.54
2593	863730.99	2031299.58	979.70										8593	980.32	0.63
2594	863731.00	2031349.56	979.74										8594	980.36	0.63
2595	863730.97	2031399.65	979.76										8595	980.36	0.60
2596	863731.02	2031449.56	979.68										8596	980.35	0.68
2597	863730.98	2031499.63	979.83										8597	980.36	0.54
2598	863730.99	2031549.63	979.73										8598	980.32	0.59
2599	863730.91	2031599.71	979.79										8599	980.35	0.56
2600	863730.87	2031649.59	979.68										8600	980.35	0.67
2601	863731.01	2031699.70	979.69										8601	980.19	0.50
2601	863731.01	2031699.70	979.69										8601	980.19	0.50
2602	863730.96	2031723.57	979.76										8602	982.61	2.85
2603	863680.95	2031723.50	963.14										8603	963.84	0.70
2604	863681.00	2031699.52	963.16										8604	963.73	0.57
2605	863680.95	2031649.54	963.01										8605	963.67	0.66
2606	863680.86	2031599.59	963.16										8606	963.68	0.53
2607	863681.00	2031549.59	963.08										8607	963.70	0.62
2608	863680.93	2031499.53	963.04										8608	963.71	0.67
2609	863680.86	2031449.58	963.05										8609	963.71	0.67
2610	863680.94	2031399.62	963.21										8610	963.72	0.50
2611	863680.94	2031349.62	963.04										8611	963.72	0.68
2612	863681.00	2031299.70	963.04										8612	963.70	0.66
2613	863680.88	2031249.54	963.09										8613	963.72	0.63
2614	863681.04	2031199.55	963.10										8614	963.83	0.72
2615	863681.07	2031149.52	963.05										8615	963.66	0.60
2616	863680.94	2031099.56	963.15										8616	963.72	0.57
2617	863680.93	2031049.58	963.17										8617	963.78	0.61
2618	863680.90	2030999.52	963.22										8618	963.78	0.56
2619	863680.92	2030949.54	963.10										8619	963.72	0.61
2620	863680.93	2030899.60	963.01										8620	963.72	0.71
2621	863681.01	2030849.64	963.07										8621	963.75	0.68
2622	863680.99	2030815.66	963.15										8622	963.92	0.77
2623	863673.04	2030817.91	960.67										8623	961.72	1.05
2624	863672.90	2030849.71	960.57										8624	961.16	0.59
2625	863669.96	2030899.67	959.61										8625	960.19	0.57
2626	863668.95	2030949.58	959.37										8626	959.87	0.50
2627	863651.23	2030999.56	953.13										8627	953.73	0.60
2628	863635.89	2031049.86	948.35										8628	948.90	0.54
2629	863633.01	2031099.65	947.36										8629	947.94	0.58
2630	863635.94	2031149.50	948.26										8630	949.27	1.01
2631	863646.94	2031199.66	951.82										8631	952.35	0.53
2632	863652.94	2031249.55	953.86										8632	954.45	0.59
2633	863652.95	2031299.65	953.89										8633	954.41	0.51
2634	863649.98	2031349.63	952.80										8634	953.49	0.69
2635	863645.95	2031399.57	951.57										8635	952.16	0.58
2636	863643.91	2031449.54	950.93										8636	952.06	1.13
2637	863639.95	2031499.55	949.49										8637	951.57	2.08
2638	863633.96	2031549.65	947.43										8638	948.03	0.60
2639	863624.95	2031599.59	944.45										8639	945.05	0.60
2640	863619.96	2031649.68	942.97										8640	943.52	0.54
2641	863617.04	2031692.07	942.15										8641	943.10	0.95
2642	863630.93	2031699.50	946.54										8642	947.14	0.60
2643	863631.00	2031649.57	946.38										8643	947.01	0.62
2644	863630.90	2031599.61	946.48										8644	947.01	0.53
2645	863660.63	2031841.26	961.88										8645	962.62	0.73
2646	863660.52	2031841.26	961.88										8646	962.74	0.86
2647	863620.86	2031881.26	961.68										8647	964.41	2.72
2648	863597.64	2031833.74	945.25										8648	946.08	0.83
2649	863610.85	2031820.31	945.05										8649	945.86	0.81
2650	863661.51	2031735.60	961.60										8650	962.64	1.04
2651	863611.77	2031706.80	944.85										8651	945.40	0.55
2652	863611.51	2031756.85	945.17										8652	945.89	0.72
2653	863608.29	2031702.95	944.11										8653	944.60	0.50
2654	863601.21	2031748.20	942.91										8654	943.63	0.72
2655	863601.22	2031799.93	941.77										8655	942.44	0.67
2656	863601.30	2031814.53	941.65										8656	942.44	0.79
2657	863592.91	2031823.40	941.56										8657	942.72	1.16
2659	863797.90	2031992.15	995.15	4659	997.15	2.00									
2660	863797.93	2031943.53	994.91	4660	996.92	2.01									
2661	863797.95	2031893.62	994.93	4661	996.94	2.01									
2662	863797.96	2031843.63	994.92	4662	996.94	2.02									
2663	863797.88	2031793.59	995.17	4663	997.17	2.00									
2664	863797.98	2031743.41	995.02	4664	997.03	2.01									
2665	863780.96	2031743.54	995.19	4665	996.70	1.51									
2666	863780.94	2031793.65	995.16	4666	996.72	1.56									
2667	863780.95	2031843.58	994.99	4667	996.53	1.54									
2668	863780.97	2031893.61	995.15	4668	996.65	1.50									
2669	863780.97	2031943.61	995.13	4669	996.64	1.52									
2671	863832.91	2031776.35	983.29	4671	985.33	2.04	5671	989.015	3.69						
2672	863832.97	2031793.70	983.48	4672	985.59	2.10	5672	989.267	3.68						
2673	863832.93	2031843.53	983.44	4673	985.53	2.09	5673	989.180	3.65						
2674	863832.94	2031893.50	983.44	4674	985.53	2.09	5674	989.185	3.65						
2675	863832.94	2031943.66	983.51	4676	985.35	1.84	5676	989.017	3.67						
2677	863832.88	2031950.65	983.40	4677	985.40	2.01	5677	989.014	3.61						
2900	863656.1111	2030627.992	1011.35							6900	1011.86	0.50			
2901	863706.3144	2030628.07	1011.37							6901	1011.88	0.51			
2902	863756.2674	2030627.986	1011.32							6902	1011.86	0.54			
2903	863806.2214	2030627.94	1011.30							6903	1011.81	0.51			
2904	863856.3595	2030628.05	1011.31							6904	1011.82	0.51			
2905	863906.2567	2030628.079	1011.29							6905	1011.89	0.61			
2906	863956.2953	2030628.063	1011.29							6906	1011.88	0.59			
2907	864006.2716	2030627.962	1011.36							6907	1011.90	0.55			
2908	864056.2525	2030628.096	1011.32							6908	1011.84	0.52			
2909	864106.3007	2030627.885	1011.33							6909	1011.89	0.56			
2910	864156.3034	2030627.896	1011.35							6910	1011.93	0.58			
2911	864206.3035	2030627.941	1011.33							6911	1011.85	0.52			
2912	864256.1417	2030627.857	1011.35							6912	1011.99	0.64			
2913	864306.2067	2030627.981	1011.34							6913	1011.89	0.55			
2914	864356.3182	2030628.012	1011.31							6914	1011.83	0.52			
2915	864406.2857	2030627.989	1011.31							6915	1011.88	0.57			
2916	864456.2167	2030628.06	1011.38							6916	1011.97	0.60			
2917	864506.259	2030627.992	1011.36							6917	1011.91	0.55			
2918	864555.9758	2030627.818	1011.32							6918	1011.85	0.54			
2919	864606.3174	2030627.873	1011.37							6919	1012.04	0.67			
2920	864656.2481	2030628.008	1011.32							6920	1011.91	0.59			
2921	864706.2749	2030627.87	1011.39							6921	1011.91	0.52			
2922	864756.2567	2030627.989	1011.34							6922	1011.86	0.51			
2923	864806.2476	2030628.05	1011.31							6923	1011.83	0.52			
2924	864856.2341	2030627.925	1011.31							6924	1011.87	0.57			
2925	864906.177	2030628.004	1011.33							6925	1011.88	0.55			
2926	864956.1531	2030627.983	1011.32							6926	1011.87	0.55			
2927	865006.3549	2030627.979	1011.32							6927	1011.94	0.62			
2928	865056.1066	2030627.928	1011.35							6928	1011.87	0.52			
	863809.24	2031943.65					5733	997.02		6733	997.56	0.53			
	863809.25	2031893.57					5734	996.91		6734	997.48	0.58			
	863809.29	2031843.59					5735	997.06		6735	997.60	0.54			
	863809.08	2031793.45					5736	996.89		6736	997.44	0.54			
	863809.28	2031743.67					5737	996.97		6737	997.53	0.56			
	863809.30	2031693.63					5738	996.86		6738	997.46	0.60			
	863809.24	2031643.59					5739	996.99		6739	997.55	0.56			
	863809.32	2031593.60					5740	996.98		6740	997.50	0.52			
	863809.28	2031543.62					5741	996.80		6741	997.43	0.62			
	863809.24	2031493.59					5742	996.85		6742	997.47	0.63			
	863809.37	2031443.65					5743	996.90		6743	997.42	0.52			
	863809.28	2031393.60					5744	997.01		6744	997.54	0.53			
	863809.30	2031343.54					5745	996.94		6745	997.51	0.57			
	863809.28	2031293.65					5746	996.99		6746	997.52	0.53			
	863809.25	2031243.59					5747	996.84		6747	997.44	0.60			
	863809.31	2031193.56					5748	996.93		6748	997.50	0.57			
	863809.33	2031143.52					5749	996.94		6749	997.47	0.53			
	863809.26	2031093.58					5750	996.88		6750	997.46	0.59			
	863809.22	2031043.60					5751	997.03		6751	997.54	0.51			
	863809.29	2030993.51					5752	996.81		6752	997.39	0.58			
	863809.26	2030943.48					5753	996.88		6753	997.42	0.54			
	863809.22	2030893.55					5754	996.87		6754	997.44	0.57			
	863809.23	2030843.61					5755	996.82		6755	997.39	0.57			
	863806.56	2030793.59					5756	997.89		6756	998.42	0.52			
	863806.42	2030743.54					5757	1002.17		6757	1002.68	0.51			
	863806.46	2030693.54					5758	1006.24		6758	1006.80	0.56			

Random Fill Point Number	Northing	Easting	Top of Random Fill Elevation	Gravel Point Number	Top of Gravel Layer Elevation	Gravel Layer Thickness	Topsoil Point Number	Top of Topsoil Layer Elevation	Topsoil Layer Thickness
5759	863807.94	2030643.59	1010.32	6759	1010.84	0.52			
5760	863685.77	2030704.10	985.88				8760	986.41	0.52
5761	863713.92	2030704.26	985.90				8761	986.47	0.56
5762	863745.26	2030664.39	999.23				8762	999.83	0.60
5763	863772.49	2030629.80	1010.98	6763	1011.48	0.50	8763	1011.58	0.61
5764	863772.53	2030679.64	1006.74	6764	1007.26	0.52	8764	1007.31	0.57
5765	863772.33	2030729.79	1002.64	6765	1003.25	0.61	8765	1003.25	0.62
5766	863770.92	2030779.79	998.49	6766	999.07	0.58	8766	998.99	0.51
5767	863766.19	2030806.86	996.38	6767	996.88	0.50	8767	996.88	0.51
5768	863690.44	2030732.37	976.32				8768	976.92	0.61
5769	863666.53	2030762.85	966.43				8769	967.05	0.62
5770	863744.27	2031984.84	999.12				8770	999.80	0.68
5771	863761.86	2031969.57	997.79	6771	998.34	0.55			
5772	863763.14	2031954.05	996.52				8772	997.05	0.54
5773	863763.02	2031908.11	996.24				8773	996.74	0.51
5774	863762.36	2031863.84	995.98				8774	996.49	0.51
5775	863762.67	2031821.13	996.24				8775	996.77	0.53
5776	863762.95	2031778.36	996.38				8776	996.91	0.53
5777	863762.90	2031735.41	996.11				8777	996.63	0.52
5778	863780.07	2031719.16	996.82				8778	997.36	0.54
5779	863763.00	2031720.10	991.56				8779	992.12	0.56
5780	863714.29	2031717.05	975.00				8780	975.51	0.52
5781	863713.83	2031734.56	980.04				8781	980.56	0.52
5782	863713.95	2031780.98	979.87				8782	980.38	0.51
5783	863713.25	2031825.23	979.62				8783	980.17	0.56
5784	863712.16	2031872.27	979.17				8784	979.81	0.64
5785	863709.16	2031903.81	978.33				8785	978.87	0.53
5786	863690.04	2031923.82	978.50				8786	979.10	0.60
5787	863676.74	2031948.15	986.75				8787	987.41	0.66
5788	863655.66	2031887.27	966.68				8788	967.26	0.58
5789	863673.44	2031869.72	966.67				8789	967.20	0.53
5790	863676.46	2031820.55	967.03				8790	967.71	0.68
5791	863675.86	2031776.62	967.07				8791	967.67	0.60
5792	863676.63	2031733.92	967.05				8792	967.88	0.83
5793	863679.17	2031716.38	962.97				8793	963.51	0.54
5794	863658.71	2031714.10	956.82				8794	961.57	4.75
5795	863658.75	2031731.74	960.94				8795	961.57	0.62
5796	863659.30	2031775.44	961.00				8796	961.87	0.87
5797	863660.55	2031820.91	961.45				8797	962.41	0.96
5798	863653.50	2031847.57	961.15				8798	961.94	0.79
5799	863658.79	2031858.01	962.15				8799	963.16	1.01
5800	863642.64	2031873.49	962.87				8800	963.38	0.50
5801	863631.80	2031871.16	961.95				8801	962.45	0.50
5802	863653.12	2031852.09	961.74				8802	962.35	0.61
5803	863600.74	2031884.92	962.07				8803	962.66	0.59
5804	863631.02	2031911.06	974.44				8804	975.00	0.56
5805	863631.57	2031960.09	990.72				8805	991.23	0.51
5811	864854.10	2032283.64	964.71				8811	965.34	0.63
5812	864858.21	2032240.18	964.84				8812	965.36	0.52
5813	864863.74	2032199.48	965.35				8813	965.86	0.52
5814	864874.47	2032178.39	965.81				8814	966.45	0.64
5815	864883.42	2032170.23	966.01				8815	966.89	0.88
5816	864896.14	2032167.39	965.93				8816	966.63	0.70
5817	864938.28	2032168.56	965.51				8817	966.20	0.69
5818	864984.18	2032170.96	964.62				8818	965.64	1.01
5819	865026.28	2032171.91	964.37				8819	965.06	0.69
5820	865067.82	2032174.18	963.76				8820	964.30	0.54
5821	865113.54	2032176.67	962.88				8821	963.49	0.61
5822	865158.71	2032179.57	961.84				8822	962.54	0.70
5823	865202.87	2032183.19	960.80				8823	961.80	1.00
5824	865247.67	2032185.91	959.83				8824	961.06	1.23
5825	865293.11	2032187.48	959.15				8825	960.20	1.05
5826	865338.88	2032191.73	957.92				8826	959.86	1.93
5827	865380.83	2032193.94	957.28				8827	959.71	2.43
5830	865415.97	2032192.53	956.97				8830	959.97	3.00
5831	865457.37	2032182.15	957.46				8831	959.55	2.10
5832	865490.20	2032166.48	957.49				8832	959.28	1.79
5833	865525.10	2032140.59	958.63				8833	959.15	0.52
5834	865558.78	2032108.06	958.65				8834	959.16	0.51
5835	865584.55	2032074.54	957.48				8835	958.04	0.56
5836	865597.92	2032037.19	958.05				8836	958.58	0.53
5837	865604.54	2031993.65	958.64				8837	959.19	0.56
5838	865602.63	2031949.52	958.89				8838	959.60	0.70
5839	865594.53	2031897.44	959.71				8839	960.26	0.55
5840	863744.77	2032066.48	997.78				8840	998.35	0.56
5841	863779.52	2032057.60	998.12				8841	998.68	0.56
5842	863824.05	2032045.67	998.32				8842	998.83	0.51
5843	863864.92	2032035.24	998.39				8843	999.06	0.67
5844	863872.64	2032035.10	998.49				8844	999.06	0.57
5845	863922.70	2032035.16	998.55				8845	999.08	0.53
5846	863972.70	2032035.17	998.46				8846	998.99	0.53
5847	864022.76	2032035.17	998.47				8847	999.02	0.55
5848	864072.64	2032035.16	998.52				8848	999.06	0.54
5849	864122.66	2032035.03	998.50				8849	999.05	0.55
5850	864169.28	2032035.22	998.43				8850	999.05	0.62
5851	864172.71	2032036.01	998.31				8851	998.91	0.60
5852	864220.89	2032048.74	997.84				8852	998.38	0.55
5853	864269.38	2032061.51	997.63				8853	998.15	0.51
5854	864306.91	2032071.35	997.59				8854	998.24	0.65
5855	864317.97	2032071.27	997.68				8855	998.22	0.54
5856	864368.10	2032071.44	997.66				8856	998.18	0.52
5857	864418.06	2032071.38	997.61				8857	998.28	0.67
5858	864467.93	2032071.33	997.59				8858	998.25	0.66
5859	864478.35	2032071.40	997.75				8859	998.26	0.50
5860	864526.99	2032083.31	993.93				8860	994.44	0.51
5861	864575.51	2032095.35	989.85				8861	990.36	0.51
5862	864624.14	2032107.32	985.86				8862	986.41	0.54
5863	864672.69	2032119.31	981.81				8863	982.33	0.53
5864	864721.14	2032131.30	977.84				8864	978.38	0.53
5865	864760.11	2032141.06	974.41				8865	974.95	0.54
5866	864771.82	2032146.35	973.61				8866	974.28	0.67
5867	864782.38	2032154.39	973.30				8867	973.84	0.55
5868	864790.99	2032164.21	973.04				8868	973.70	0.66
5869	864799.38	2032184.16	971.99				8869	972.52	0.53
5870	864802.94	2032204.24	971.36				8870	971.89	0.53
5871	864802.97	2032284.25	967.26				8871	967.88	0.61
5872	864786.85	2032283.96	962.69				8872	963.38	0.70
5873	864782.11	2032242.66	962.81				8873	963.82	1.01
5874	864770.53	2032202.42	961.94				8874	963.00	1.06
5875	864763.47	2032189.78	961.85				8875	962.38	0.53
5876	864757.46	2032185.76	961.66				8876	962.22	0.56
5877	864766.15	2032116.81	974.65				8877	975.16	0.50
5878	864727.15	2032107.14	978.45				8878	978.98	0.53
5879	864678.59	2032095.06	982.13				8879	982.82	0.70
5880	864630.04	2032083.04	986.25				8880	986.75	0.51
5881	864581.48	2032071.02	990.25				8881	990.80	0.55
5882	864532.92	2032059.05	994.44				8882	994.98	0.54
5883	864484.39	2032047.07	998.12				8883	998.73	0.62
5884	863750.39	2032119.84	980.49				8884	981.03	0.53
5885	863788.40	2032106.92	981.50				8885	982.02	0.51
5886	863836.80	2032094.28	981.72				8886	982.38	0.65
5887	863877.70	2032083.37	982.61				8887	983.13	0.52
5888	863922.84	2032085.13	981.97				8888	982.50	0.54
5889	863972.63	2032085.22	981.95				8889	982.48	0.53
5890	864022.74	2032085.04	982.06				8890	982.59	0.52
5891	864072.70	2032085.11	981.88				8891	982.50	0.62
5892	864122.72	2032085.05	981.75				8892	982.52	0.77
5893	864169.28	2032085.07	982.50				8893	983.12	0.61
5894	864208.17	2032097.01	981.73				8894	982.26	0.53
5895	864256.51	2032109.79	981.40				8895	982.01	0.61
5896	864294.10	2032119.63	981.19				8896	981.79	0.60
5897	864317.97	2032121.34	981.36				8897	981.87	0.51
5898	864367.94	2032121.27	981.23				8898	981.84	0.62
5899	864417.98	2032121.39	981.09				8899	981.68	0.59
5900	864468.01	2032121.46	981.24				8900	981.80	0.56
5901	864478.44	2032121.37	981.30				8901	981.85	0.54
5902	864504.85	2032129.44	978.71				8902	979.22	0.52
5903	864553.48	2032141.38	974.66				8903	975.21	0.54
5904	864601.99	2032153.38	970.82				8904	971.34	0.52
5905	864650.50	2032165.38	966.72				8905	967.28	0.56
5906	864699.03	2032177.33	962.65				8906	963.18	0.53
5907	864748.21	2032189.52	960.52				8907	961.21	0.69
5908	864698.88	2032185.19	959.72				8908	960.44	0.72
5909	864650.35	2032187.45	959.18				8909	960.06	0.88
5910	864601.81	2032185.43	959.89				8910	960.48	0.59
5911	864553.43	2032183.50	960.43				8911	961.05	0.63
5912	864504.99	2032182.35	960.67				8912	961.51	0.83
5913	864467.89	2032182.29	960.96				8913	961.66	0.70
5914	864417.90	2032180.46	961.47				8914	962.22	0.76
5915	864368.00	2032178.92	962.08				8915	962.73	0.65

REV NO.	DATE	DESCRIPTION

DATE: 12/1/08
DESIGN BY: JEN
DRAWN BY: JEN
CHECKED BY: BEP
DWG FILE: FINAL COVER
FILE NO.: 08-0074.00

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Signed: BRIAN E. PRASKE

Date: 12/1/08 Reg. No. 44646

BOGART, PEDERSON & ASSOCIATES, INC.

LAND SURVEYING
CIVIL ENGINEERING
MAPPING

13076 FIRST STREET, BECKER, MN 55308-9322
TEL: 763-262-8822 FAX: 763-262-8844

SHERCO PONDS
POND 3
SEPTEMBER 2008
BECKER, MN

SHEET NO.
4
6

POND 3 NORTH CONSTRUCTION

2008 AS BUILT AND TOP SOIL CONTOURS WITH THICKNESS CHART

Top of Subgrade Number	Northing	Easting	Top of Subgrade Elevation	Random Fill Point Number	Top of Random Fill Elevation	Random Fill Thickness	Gravel Point Number	Top of Gravel Layer Elevation	Gravel Layer Thickness	Topsoil Point Number	Top of Topsoil Layer Elevation	Topsoil Layer Thickness
	864318.06	2032180.01		5916	962.00					8916	962.52	0.52
	864275.45	2032175.66		5917	962.04					8917	962.57	0.53
	864256.54	2032169.72		5918	961.96					8918	962.58	0.62
	864208.10	2032156.15		5919	962.48					8919	963.03	0.55
	864159.79	2032143.09		5920	963.79					8920	964.33	0.54
	864122.60	2032139.93		5921	964.12					8921	964.64	0.53
	864072.64	2032145.68		5922	963.16					8922	963.71	0.54
	864022.74	2032143.97		5923	963.17					8923	963.68	0.50
	863972.77	2032145.84		5924	962.42					8924	963.10	0.68
	863922.65	2032141.43		5925	963.41					8925	963.94	0.53
	863872.72	2032147.68		5926	961.75					8926	962.26	0.51
	863836.82	2032157.27		5927	961.11					8927	961.89	0.78
	863788.48	2032169.07		5928	961.62					8928	962.13	0.51
	863761.41	2032176.01		5929	961.80					8929	962.32	0.52
	865358.56	2031894.05		5930	999.41		6930	999.94	0.52			
	865402.10	2031847.55		5931	998.65		6931	999.17	0.52			
	865358.54	2031847.63		5932	999.48		6932	1000.00	0.52			
	865358.54	2031797.61		5933	999.45		6933	1000.12	0.67			
	865402.17	2031797.61		5934	998.58		6934	999.09	0.51			
	865402.11	2031747.63		5935	998.63		6935	999.14	0.51			
	865358.62	2031747.65		5936	999.41		6936	999.92	0.52			
	865358.57	2031697.58		5937	999.46		6937	1000.08	0.62			
	865385.62	2031894.01		5939	998.73		6939	999.46	0.69			
	865385.57	2031847.62		5940	998.99		6940	999.55	0.56			
	865385.55	2031797.60		5941	998.92		6941	999.42	0.50			
	865385.56	2031747.62		5942	998.97		6942	999.51	0.54			
	865385.62	2031697.67		5943	998.75		6943	999.45	0.70			
	865385.62	2031647.64		5944	998.83		6944	999.39	0.56			
	865358.63	2031647.68		5946	999.45		6946	999.95	0.50			
	865358.58	2031597.61		5947	999.44		6947	999.96	0.52			
	865383.60	2031597.58		5948	998.89		6948	999.43	0.54			
	865383.55	2031547.56		5951	998.99		6951	999.49	0.50			
	865358.67	2031547.67		5952	999.27		6952	999.79	0.52			
	865358.56	2031497.56		5953	999.41		6953	999.92	0.51			
	865383.63	2031497.67		5954	998.94		6954	999.48	0.54			
	865383.58	2031447.60		5957	998.88		6957	999.58	0.69			
	865358.59	2031447.66		5958	999.45		6958	999.99	0.54			
	865358.62	2031397.60		5959	999.38		6959	999.92	0.54			
	865383.59	2031397.55		5960	999.01		6960	999.57	0.55			
	865383.64	2031347.70		5963	998.86		6963	999.51	0.64			
	865358.61	2031347.65		5964	999.41		6964	999.94	0.53			
	865358.63	2031297.66		5965	999.45		6965	999.99	0.54			
	865383.58	2031297.57		5966	998.84		6966	999.53	0.69			
	865383.58	2031247.53		5969	998.94		6969	999.52	0.58			
	865358.64	2031247.67		5970	999.35		6970	999.99	0.64			
	865358.57	2031197.61		5971	999.41		6971	999.98	0.57			
	865383.68	2031197.51		5972	998.94		6972	999.48	0.54			
	865383.55	2031147.64		5975	998.95		6975	999.54	0.58			
	865358.66	2031147.66		5976	998.92		6976	999.43	0.51			
	865358.66	2031097.70		5977	999.23		6977	999.76	0.53			
	865383.65	2031097.56		5978	998.92		6978	999.56	0.64			
	865383.62	2031047.64		5981	998.95		6981	999.64	0.69			
	865358.56	2031047.61		5982	999.47		6982	999.98	0.52			
	865358.64	2030997.61		5983	999.24		6983	999.90	0.66			
	865383.59	2030997.64		5984	998.92		6984	999.62	0.70			
	865383.63	2030947.60		5987	999.01		6987	999.59	0.57			
	865358.58	2030947.57		5988	999.43		6988	999.95	0.52			
	865358.64	2030897.61		5989	999.35		6989	1000.15	0.80			
	865383.68	2030897.63		5990	999.38		6990	1000.02	0.64			
	865383.65	2030847.58		5993	1002.02		6993	1002.54	0.51			
	865358.61	2030847.62		5994	1001.36		6994	1002.04	0.67			
	865406.36	2030846.99		5995	997.46					8995	998.68	1.22
	865415.25	2030889.62		5996	994.00					8996	995.44	1.44
	865423.20	2030929.78		5997	991.72					8997	992.48	0.76
	865430.51	2030971.43		5998	989.13					8998	989.98	0.85
	865436.76	2031015.65		5999	987.06					8999	987.65	0.59
22115	863802.10	2031992.78	999.15									
22116	863743.89	2031996.05	999.15				62116	999.71				
22117	863634.24	2031996.04	999.11							82117	999.64	0.52
22118	863552.15	2032045.81	998.16							82118	998.67	0.51
22119	863549.88	2032047.06	998.14							82119	998.64	0.50
22120	863555.83	2032071.35	997.66							82120	998.19	0.52
22121	863727.40	2032071.32	997.62							82121	998.17	0.55
22122	863708.60	2031996.04	999.34							82122	999.85	0.51
22123	863671.17	2031995.93	999.28							82123	999.81	0.53
22124	863593.10	2032020.99	998.62							82124	999.19	0.57
22125	863605.92	2032071.40	997.67							82125	998.30	0.63
22126	863655.78	2032071.26	997.71							82126	998.40	0.69
22127	863705.85	2032071.30	997.85							82127	998.37	0.52
22130	863735.10	2032032.86	998.58							82130	999.24	0.66
22131	863685.06	2032033.78	998.44				62131	999.03	0.59			
22132	863635.05	2032034.52	998.50				62132	999.05	0.55			
22133	863632.02	2031987.84	999.17							82133	999.69	0.52
22134	863671.33	2031986.24	999.35							82134	999.95	0.60
22135	863709.25	2031986.37	999.25							82135	999.83	0.58
22136	863745.61	2031985.93	999.25							82136	999.89	0.65
22137	863077.21	2032164.12	959.36				62137	959.95	0.59			
22138	863084.77	2032188.10	959.51				62138	960.02	0.51			
22139	863133.48	2032176.03	962.94				62139	963.56	0.61			
22141	863230.46	2032152.03	971.00				62141	971.54	0.54			
22142	863278.96	2032139.94	974.98				62142	975.59	0.61			
22143	863327.43	2032127.91	979.03				62143	979.56	0.53			
22144	863375.99	2032115.96	983.15				62144	983.66	0.51			
22145	863424.52	2032103.86	986.96				62145	987.46	0.50			
22146	863473.34	2032092.76	990.83				62146	991.36	0.53			
22147	863521.57	2032079.92	995.08				62147	995.58	0.50			
22148	863514.08	2032055.91	995.26				62148	995.76	0.50			
22149	863465.49	2032067.91	991.33				62149	991.87	0.53			
22150	863416.92	2032079.92	987.31				62150	987.83	0.53			
22151	863368.40	2032092.00	983.27				62151	983.78	0.51			
22152	863319.87	2032103.99	979.32				62152	979.84	0.53			
22153	863271.27	2032116.04	975.34				62153	975.86	0.51			
22154	863222.94	2032128.07	971.27				62154	971.78	0.51			
22155	863174.21	2032140.11	967.27				62155	967.76	0.50			
22156	863125.77	2032152.05	963.42				62156	963.93	0.51			
22158	863130.04	2032187.97	959.03							82158	959.56	0.54
22159	863172.56	2032185.34	959.83							82159	960.42	0.59
22160	863218.51	2032185.09	959.93							82160	961.25	1.32
22161	863264.12	2032184.37	960.24							82161	961.46	1.22
22162	863313.40	2032183.95	960.42							82162	962.07	1.65
22163	863359.77	2032182.00	960.92							82163	961.89	0.96
22164	863405.83	2032181.67	961.16							82164	961.85	0.68
22165	863451.45	2032181.76	961.03							82165	961.85	0.82
22166	863496.26	2032181.57	961.20							82166	961.93	0.73
22167	863540.38	2032182.00	961.11							82167	961.70	0.60
22168	863583.17	2032182.50	960.73							82168	961.39	0.66
22169	863630.79	2032183.89	960.31							82169	960.90	0.59
22170	863679.79	2032185.34	959.88							82170	961.13	1.25
22171	863727.59	2032185.82	959.78							82171	960.44	0.66
22172	863753.44	2032183.86	960.38							82172	961.06	0.68
22173	863727.36	2032136.03	976.06							82173	976.71	0.65
22174	863727.20	2032128.71	978.73							82174	979.38	0.65
22175	863677.26	2032128.80	978.61							82175	979.27	0.65
22176	863627.42	2032128.86	978.73							82176	979.25	0.51
22177	863577.27	2032128.87	978.67							82177	979.20	0.53
22178	863555.85	2032128.80	978.70							82178	979.33	0.62
22179	863524.96	2032113.66	983.63							82179	984.19	0.56
22180	863476.62	2032125.67	979.73							82180	980.28	0.55
22181	863427.99	2032137.77	975.58							82181	976.21	0.62
22182	863379.42	2032149.80	971.72							82182	972.36	0.64
22183	863331.01	2032161.85	967.54							82183	968.14	0.60
22184	863282.54	2032173.90	963.50							82184	964.17	0.67
22186	863106.03	2032146.98	958.89							82186	959.44	0.55
22187	863145.09	2032127.29	959.16							82187	959.76	0.60
22188	863183.80	2032106.99	959.24							82188	959.78	0.54
22189	863223.45	2032087.58	959.67							82189	960.19	0.52
22190	863259.66	2032069.03	959.69							82190	960.21	0.52
22191	863299.74	2032048.89	959.93							82191	960.44	0.51
22192	863338.87	2032027.71	959.82							82192	960.36	0.54
22193	863361.89	2032015.76	959.95							82193	960.48	0.53
22194	863369.86	2032008.75	958.77							82194	959.33	0.56
22195	863394.60	2031975.13	952.62							82195	953.35	0.73
22196	863425.46	2031942.13	947.77							82196	948.52	0.75
22197	863458.31	2031915.52	945.10							82197	945.80	0.70
22198	863491.82	2031889.57	943.62							82198	944.31	0.69
22199	863528.61	2031863.64	943.33							82199	943.87	0.54
22201	863575.24	2031898.53	961.48							82201	962.00	0.53
22202	863532.33	2031924.50	960.80							82202	961.32	0.52
22203	863493.00	2031948.18	960.44							82203	960.96	0.53
22204	863522.73	2031997.25	979.31							82204	979.94	0.63

Top of Subgrade Number	Northing	Easting	Top of Subgrade Elevation	Random Fill Point Number	Top of Random Fill Elevation	Random Fill Thickness	Gravel Point Number	Top of Gravel Layer Elevation	Gravel Layer Thickness	Topsoil Point Number	Top of Topsoil Layer Elevation	Topsoil Layer Thickness
22205	863561.89	2031973.19	979.63							82205	980.32	0.69
22206	863604.88	2031947.44	980.28							82206	980.93	0.65
22207	863541.88	2032014.46	987.60							82207	988.15	0.55
22208	863493.31	2032026.49	983.47							82208	984.04	0.57
22209	863444.75	2032038.50	979.47							82209	979.98	0.52
22210	863396.24	2032050.40	975.24							82210	975.86	0.62
22211	863347.73	2032062.43	971.41							82211	971.95	0.54
22212	863299.17	2032074.51	967.44							82212	967.97	0.53
22213	863250.56	2032086.48	963.25							82213	963.87	0.61
22214	863387.91	2032017.80	964.37							82214	964.97	0.60
22215	863431.31	2031983.99	961.26							82215	961.84	0.57
22216	863479.81	2031971.95	965.14							82216	965.76	0.62
	864823.07	2032130.92		5000	974.62		6000	975.15	0.52			
	864871.47	2032118.73		5001	974.49		6001	975.03	0.54			
	864873.68	2032118.21		5002	974.55		6002	975.41	0.86			
	864920.03	2032106.79		5003	978.21		6003	979.06	0.85			
	864968.43	2032094.89		5004	982.19		6004	983.06	0.87			
	865017.22	2032082.81		5005	986.36		6005	987.16	0.81			
	865065.63	2032070.78		5006	990.27		6006	991.05	0.78			
	865114.12	2032058.71		5007	994.38		6007	995.10	0.72			
	865162.78	2032046.75		5008	998.26		6008	998.79	0.53			
	865164.22	2032046.44		5009	998.37		6009	998.92	0.55			
	865185.64	2032035.19		5010	998.37		6010	999.13	0.76			
	865135.79	2032035.14		5011	998.36					8011	999.03	0.67
	865085.75	2032035.08		5012	998.47					8012	999.07	0.61
	865035.65	2032035.13		5013	998.48					8013	999.05	0.58
	864985.72	2032035.15		5014	998.48					8014	999.08	0.61
	864935.70	2032035.11		5015	998.48					8015	999.02	0.54
	864885.66	2032035.15		5016	998.49					8016	999.07	0.57
	864835.60	2032035.09		5017	998.48					8017	999.13	0.64
	864785.65	2032035.13		5018	998.50					8018	999.08	0.59
	864735.70	2032035.11		5019	998.50					8019	999.14	0.64
	864685.59	2032035.10		5020	998.50					8020	999.09	0.60
	864635.73	2032035.03		5021	998.44					8021	999.17	0.73
	864585.71	2032035.08		5022	998.30					8022	999.08	0.79
	864535.75	2032035.10		5023	998.37					8023	999.07	0.70
	864485.78	2032035.18		5024	998.50					8024	999.26	0.76
	864460.28	2032035.04		5025	998.48					8025	999.15	0.67
	864485.97	2032041.28		5026	996.63					8026	997.46	0.83
	864534.37	2032053.27		5027	992.56					8027	993.37	0.81
	864582.91	2032065.37		5028	988.65					8028	989.60	0.95
	864631.43	2032077.28		5029	984.61					8029	985.59	0.98
	864680.06	2032089.26		5030	980.47					8030	981.59	1.12
	864728.56	2032101.19		5031	976.09					8031	977.32	1.23
	864767.65	2032111.00		5032	973.52					8032	974.27	0.75
	864809.45	2032118.23		5033	971.67					8033	972.29	0.62
	864822.74	2032120.73		5034	971.74					8034	972.48	0.73
	864836.76	2032117.19		5035	971.65					8035	972.71	1.05
	864872.30	2032112.41		5036	973.31					8036	973.86	0.55
	864920.74	2032100.46		5037	976.80					8037	977.59	0.80
	864969.38	2032088.41		5038	980.82					8038	981.76	0.94
	865017.79	2032076.34		5039	985.04					8039	985.83	0.79
	865066.35	2032064.41		5040	989.02					8040	989.88	0.86
	865115.03	2032052.46		5041	992.76					8041	993.60	0.84
	865162.86	2032040.59		5042	996.78					8042	997.67	0.90
	865167.57	2032071.42		5043	997.58		6043	998.36	0.78			
	865118.87	2032083.36		5044	993.77		6044	994.50	0.73			
	865070.54	2032095.39		5045	989.76		6045	990.39	0.63			
	865021.72	2032107.33		5046	985.77		6046	986.43	0.66			
	864973.30	2032119.30		5047	981.77		6047	982.40	0.63			
	864924.75	2032131.32		5048	977.76		6048	978.41	0.65			
	864885.68	2032141.04		5049	974.40		6049	975.09	0.69			
	864874.12	2032146.34		5050	974.59		6050	975.10	0.50			
	864863.47	2032154.29		5051	974.05		6051	974.57	0.52			
	864854.91	2032164.04		5052	973.55		6052	974.08	0.53			
	864842.95	2032204.28		5053	971.49		6053	972.13	0.64			
	864842.99	2032284.22		5054	967.46		6054	967.99	0.52			
	864885.69	2032085.11		5055	981.76					8055	982.48	0.71
	864835.68	2032085.19		5056	981.78					8056	982.53	0.75
	864785.76	2032085.09		5057	981.90					8057	982.41	0.51
	864735.63	2032085.11		5058	981.93					8058	982.51	0.58
	865217.57	2032071.99		5059	997.52					8059	998.31	0.79
	865267.58	2032072.76		5060	997.30					8060	998.18	0.88
	865317.50	2032073.42		5061	997.06					8061	997.73	0.67
	865367.53	2032074.12		5062	996.87					8062	997.46	0.59
	865386.48	2032074.27		5063	996.77					8063	997.53	0.76
	865434.67	2032062.58		5064	996.78					8064	997.38	0.60
	865471.87	2032029.94		5065	996.77					8065	997.27	0.50
	865489.73	2031983.71		5066	996.73					8066	997.35	0.63
	865488.72	2031949.85		5067	996.71					8067	997.22	0.52
	865478.12	2031900.90		5068	996.92					8068	997.44	0.52
	865467.76	2031851.97		5069	997.14					8069	997.95	0.81
	865457.35	2031802.98		5070	997.23					8070	998.00	0.77
	865446.98	2031754.04		5071	997.57					8071	998.12	0.56
	865438.66	2031714.34		5072	997.72		6072	998.286035	0.57			
	865438.54	2031705.27		5073	997.72		6073	998.314343	0.59			
	864994.90	2032165.65		5074	966.51					8074	967.05	0.54
	865043.44	2032153.54		5075	970.36					8075	971.11	0.75
	865091.99	2032141.60		5103	974.34					8103	975.13	0.80
	865140.52	2032129.50		5104	978.49					8104	979.10	0.61
	865179.50	2032119.95		5105	981.83					8105	982.37	0.54
	865196.43	2032131.73		5106	977.83					8106	978.45	0.62
	865226.47	2032132.09		5107	977.66					8107	978.33	0.67
	865276.36	2032132.85		5108	977.48					8108	978.02	0.55
	865326.43	2032133.46		5109	977.19					8109	977.72	0.54
	865376.44	2032134.14		5110	977.13					8110	977.72	0.58
	865385.68	2032134.29		5111	976.94					8111	977.65	0.71
	865433.19	2032127.48		5112	977.03					8112	977.56	0.52
	865475.83	2032107.87		5113	977.02					8113	977.51	0.49
	865511.43	2032076.83		5114	976.82					8114	977.56	0.73
	865536.50	2032036.91		5115	976.92					8115	977.59	0.67
	865549.24	2031991.58		5116	976.91					8116	977.42	0.51
	865548.59	2031944.46		5117	976.70					8117	977.43	0.72
	865547.40	2031937.82		5118	976.78					8118	977.45	0.67
	865533.85	2031888.90		5119	978.20					8119	978.73	0.53
	865523.42	2031840.13		5120	978.29					8120	978.82	0.53
	865513.22	2031791.02		5121	978.55					8121	979.06	0.51
	865502.74	2031742.23		5122	978.66					8122	979.33	0.66
	865494.19	2031702.49		5123	979.15		6123	997.05	0.55	8123	980.04	0.89
	865499.07	2031668.80		5124	977.57		6124	997.02	0.56	8124	978.10	0.53
	865511.10	2031620.20		5125	973.55		6125	997.22	0.50	8125	974.25	0.70
	865523.02	2031571.69		5126	969.64		6126	997.06	0.52	8126	970.15	0.52
	865535.14	2031523.11		5127	965.55		6127	997.01	0.50	8127	966.06	0.51
	865541.23	2031704.21		5128	963.48		6128	997.03	0.51	8128	964.59	1.10
	865590.39	2031878.21		5129	960.35		6129	996.95	0.52	8129	960.87	0.53
	865576.81	2031830.19		5130	961.58		6130	997.04	0.55	8130	962.50	0.93
	865563.18	2031782.19		5131	962.61		6131	997.06	0.56	8131	963.59	0.97
	865549.56	2031733.98		5132	963.79		6132	997.06	0.50	8132	964.29	0.51
	865540.57	2031685.39		5133	963.58		6133	997.10	0.54	8133	964.51	0.93
	865539.69	2031635.29		5134	963.89		6134	997.14	0.53	8134	964.65	0.76
	865538.39	2031585.25		5135	964.37		6135	997.07	0.52	8135	965.05	0.68
	865537.41	2031535.14		5136	964.83		6136	997.16	0.50	8136	965.57	0.75
	865535.93	2031485.18		5137	965.17		6137	997.15	0.50	8137	965.86	0.69

REV NO.	DATE	DESCRIPTION

DATE: 12/1/08
DESIGN BY: JEN
DRAWN BY: JEN
CHECKED BY: BEP
DWG FILE: FINAL_COVER
FILE NO.: 08-0074.00

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Signed: BRIAN E. PRASKE

Date: 12/10/08 Reg. No. 44646

BOGART, PEDERSON & ASSOCIATES, INC.
LAND SURVEYING
CIVIL ENGINEERING
MAPPING
13076 FIRST STREET, BECKER, MN 55308-9322
TEL: 763-262-8822 FAX: 763-262-8844

SHERCO PONDS
POND 3
SEPTEMBER 2008
BECKER, MN

SHEET NO. 5

6

POND 3 NORTH CONSTRUCTION

2008 AS BUILT AND TOP SOIL CONTOURS WITH THICKNESS CHART

Random Fill Point Number	Northing	Easting	Top of Random Fill Elevation	Gravel Point Number	Top of Gravel Layer Elevation	Gravel Layer Thickness	Topsoil Point Number	Top of Topsoil Layer Elevation	Topsoil Layer Thickness
5138	865534.69	2031435.22	965.63	6138	997.13	0.50	8138	966.24	0.62
5139	865533.57	2031385.42	966.03	6139	997.10	0.52	8139	966.75	0.73
5140	865534.21	2031335.50	966.40	6140	997.05	0.56	8140	966.92	0.52
5162	865520.17	2031374.95	970.47	6162	971.11	0.64			
5163	865508.19	2031423.42	974.44	6163	975.00	0.56			
5164	865496.22	2031471.93	978.47	6164	979.11	0.64			
5165	865484.17	2031520.41	982.49	6165	983.06	0.57			
5166	865472.27	2031568.95	986.44	6166	986.97	0.53			
5167	865460.10	2031617.45	990.48	6167	991.01	0.53			
5168	865448.22	2031666.08	994.48	6168	995.03	0.55			
5169	865426.35	2031894.79	997.99				8169	998.55	0.56
5170	865439.04	2031946.78	997.82				8170	998.35	0.53
5171	865392.23	2031952.64	998.46				8171	998.99	0.53
5172	865344.70	2031970.29	998.83				8172	999.33	0.50
5173	865384.60	2032000.66	998.07				8173	998.63	0.57
5174	865425.46	2032019.26	997.69				8174	998.19	0.50
5175	865378.69	2032023.73	997.77				8175	998.33	0.56
5176	865330.47	2032015.62	998.28				8176	998.82	0.54
5177	865283.50	2032020.98	998.72				8177	999.22	0.50
5178	865260.95	2031991.35	999.43	6178	999.97	0.54			
5179	865248.33	2031991.57	999.46	6179	1000.19	0.73			
5180	865248.20	2031991.35	999.44	6180	1000.17	0.73			
5181	865198.09	2031992.98	999.37	6181	999.88	0.51			
5182	865148.22	2031993.18	999.37	6182	999.88	0.50			
5183	865097.67	2031993.18	999.38	6183	1000.16	0.78			
5184	865048.29	2031993.28	999.39	6184	1000.00	0.61			
5185	864998.27	2031993.65	999.34	6185	1000.00	0.66			
5186	864948.10	2031993.19	999.34	6186	999.96	0.62			
5187	864898.18	2031993.69	999.37	6187	1000.01	0.64			
5188	864848.14	2031992.92	999.37	6188	1000.02	0.65			
5189	864798.16	2031993.71	999.32	6189	999.99	0.68			
5190	864748.08	2031991.89	999.39	6190	1000.00	0.61			
5191	864698.08	2031992.24	999.41	6191	999.92	0.51			
5192	864648.07	2031993.03	999.40	6192	999.97	0.57			
5193	864598.14	2031993.39	999.29	6193	1000.13	0.84			
5194	864548.13	2031993.32	999.35	6194	999.87	0.51			
5195	864498.05	2031992.41	999.42	6195	1000.03	0.61			
5196	864448.17	2031993.41	999.24	6196	999.83	0.58			
5197	864397.93	2031993.78	999.32	6197	999.90	0.57			
5198	864348.08	2031993.03	999.37	6198	999.88	0.51			
5199	864298.23	2031992.86	999.38	6199	999.98	0.60			
5200	864248.04	2031993.07	999.31	6200	999.81	0.50			
5201	864198.21	2031993.44	999.35	6201	999.87	0.52			
5202	864148.17	2031992.95	999.39	6202	999.91	0.52			
5203	864098.24	2031993.05	999.38	6203	999.97	0.59			
5204	864048.13	2031993.37	999.40	6204	999.99	0.60			
5205	863998.20	2031992.95	999.37	6205	999.90	0.52			
5206	863948.13	2031992.49	999.28	6206	999.84	0.56			
5207	863898.17	2031993.35	999.42	6207	999.93	0.51			
5208	863848.16	2031993.95	999.41	6208	999.92	0.51			
5209	863802.48	2031993.31	999.21	6209	999.85	0.65			
5210	865452.02	2031497.53	981.90				8210	982.47	0.57
5211	865452.04	2031447.56	981.89				8211	982.42	0.53
5212	865452.05	2031397.72	981.88				8212	982.47	0.59
5213	865452.08	2031347.67	981.88				8213	982.49	0.61
5214	865452.19	2031297.54	981.93				8214	982.43	0.50
5215	865452.14	2031247.64	981.81				8215	982.35	0.54
5216	865452.13	2031197.55	981.92				8216	982.43	0.51
5217	865452.20	2031147.65	981.98				8217	982.49	0.51
5218	865452.21	2031097.71	981.90				8218	982.48	0.58
5219	865452.16	2031047.58	981.89				8219	982.74	0.85
5220	865404.35	2031719.92	998.50	6220	999.06	0.55			
5221	865402.11	2031718.54	998.00				8221	998.61	0.61
5222	865407.35	2031701.05	996.69				8222	997.28	0.59
5223	865413.43	2031702.51	998.37	6223	998.89	0.52			
5224	865425.47	2031653.97	994.48	6224	995.07	0.60			
5225	865419.62	2031652.44	992.89				8225	993.77	0.89
5226	865431.71	2031604.07	988.77				8226	989.90	1.13
5227	865437.41	2031605.52	990.52	6227	991.09	0.57			
5228	865449.32	2031556.91	986.56	6228	987.14	0.58			
5229	865443.72	2031555.57	984.72				8229	985.84	1.12
5230	865455.06	2031506.77	980.79				8230	981.56	0.77
5231	865461.35	2031508.44	982.57	6231	983.12	0.55			
5232	865473.37	2031459.90	978.57	6232	979.16	0.59			
5233	865467.06	2031458.38	976.72				8233	977.47	0.75
5234	865479.47	2031409.80	972.83				8234	973.49	0.66
5235	865485.38	2031411.22	974.52	6235	975.03	0.51			
5236	865497.51	2031362.72	970.53	6236	971.06	0.53			
5237	865491.09	2031361.23	968.47				8237	969.33	0.86
5238	865503.98	2031312.86	964.93				8238	965.54	0.60
5239	865509.29	2031314.35	966.42	6239	966.94	0.51			
5240	865502.12	2031297.62	965.13				8240	965.66	0.52
5241	865502.07	2031247.66	965.14				8241	965.65	0.50
5242	865502.20	2031197.62	965.28				8242	965.84	0.56
5243	865502.00	2031147.67	965.18				8243	965.70	0.52
5244	865501.98	2031097.72	965.18				8244	965.80	0.62
5245	865502.18	2031047.58	965.22				8245	965.75	0.53
5246	865452.17	2031024.52	981.91				8246	982.69	0.78
5247	865502.17	2030997.63	965.23				8247	965.77	0.53
5248	865502.15	2030947.63	965.97				8248	966.50	0.52
5249	865510.70	2030954.58	962.19				8249	962.77	0.58
5250	865510.45	2030997.49	962.12				8250	962.70	0.58
5251	865510.71	2031047.63	962.19				8251	962.72	0.53
5252	865511.07	2031097.76	962.17				8252	962.76	0.59
5253	865511.58	2031147.86	962.06				8253	962.57	0.51
5254	865511.55	2031197.58	961.95				8254	962.46	0.51
5255	865511.59	2031247.69	962.01				8255	962.53	0.52
5256	865510.45	2031273.17	962.75				8256	963.37	0.62
5257	865521.73	2031219.07	962.05				8257	962.67	0.62
5258	865532.17	2031174.29	961.94				8258	962.45	0.51
5259	865544.97	2031124.75	962.07				8259	962.62	0.55
5260	865548.80	2031079.49	962.10				8260	962.63	0.53
5261	865548.80	2031030.92	961.90				8261	962.41	0.50
5262	865549.13	2030984.42	962.16				8262	962.68	0.52
5263	865548.28	2030955.01	961.98				8263	962.48	0.50
5264	865499.51	2030940.44	967.26				8264	967.83	0.56
5265	865558.74	2030944.65	965.56				8265	966.10	0.53
5266	865559.64	2031045.76	965.67				8266	966.23	0.55
5267	865559.50	2031094.83	965.59				8267	966.12	0.52
5268	865554.14	2031129.82	965.64				8268	966.17	0.53
5269	865542.08	2031179.50	965.49				8269	966.01	0.52
5270	865529.55	2031230.09	965.43				8270	965.95	0.52

Top of Existing Clay Number	Northing	Easting	Top of Existing Clay Elevation	Top of Clay Point Number	Top of Clay Elevation	Clay Thickness
3764	865360.61	2030847.64	995.49	33764	998.31	2.81
3765	865369.64	2030847.58	995.03	33765	998.19	3.16
3766	865376.13	2030897.62	990.40	33766	995.59	5.19
3767	865368.15	2030897.62	990.78	33767	995.59	4.81
3768	865373.11	2030947.66	986.64	33768	995.43	8.79
3769	865381.28	2030947.59	986.65	33769	995.26	8.61
3770	865379.11	2030997.65	982.76	33770	995.54	12.78
3771	865387.23	2030997.59	982.70	33771	995.34	12.64
3772	865394.17	2031047.33	978.92	33772	995.42	16.50
3773	865386.09	2031047.66	979.02	33773	995.36	16.34
3774	865387.00	2031070.67	976.98	33774	995.68	18.70
3775	865395.16	2031070.60	976.96	33775	995.61	18.65
3878	864848.13	2032028.10	972.18	33878	995.68	23.51
3879	864848.25	2032036.12	972.03	33879	995.30	23.27
3880	864898.34	2032036.08	972.02	33880	995.35	23.33
3881	864898.29	2032028.05	972.09	33881	995.38	23.29
3882	864948.22	2032027.94	972.04	33882	995.34	23.31
3883	864948.18	2032036.02	972.20	33883	995.28	23.08
3884	865402.95	2031133.11	972.99	33884	995.49	22.50
3885	865395.26	2031132.98	972.96	33885	995.60	22.63
3886	865395.18	2031147.49	972.78	33886	995.57	22.79
3887	865403.21	2031147.44	972.91	33887	995.42	22.51
3889	865403.14	2031197.61	972.86	33889	995.68	22.82
3890	865395.09	2031197.46	972.90	33890	995.76	22.86
3891	865395.23	2031247.52	972.37	33891	995.63	23.26
3892	865403.17	2031247.73	972.21	33892	995.52	23.31
3893	865403.18	2031297.48	972.24	33893	995.62	23.38
3894	865395.11	2031297.67	972.32	33894	995.76	23.43
3895	865395.12	2031347.60	972.30	33895	995.51	23.21
3896	865403.15	2031347.69	972.46	33896	995.37	22.91
3897	865403.16	2031397.50	972.43	33897	995.53	23.10
3898	865395.19	2031397.63	972.52	33898	995.46	22.93
3899	865395.07	2031447.57	972.17	33899	995.52	23.36
3900	865403.03	2031447.46	972.51	33900	995.49	22.97
3901	865403.09	2031497.55	972.06	33901	995.34	23.28
3902	865395.08	2031497.59	972.53	33902	995.38	22.85
3903	865395.05	2031547.52	972.59	33903	995.38	22.79
3904	865403.13	2031547.63	972.17	33904	995.42	23.25
3905	865403.07	2031597.59	972.21	33905	995.36	23.15
3906	865395.16	2031597.59	972.63	33906	995.38	22.75
3907	865395.16	2031647.41	972.90	33907	995.42	22.53
3908	865403.09	2031647.64	972.49	33908	995.08	22.58
3909	865403.17	2031697.61	972.37	33909	995.37	23.00
3910	865395.08	2031697.58	972.54	33910	995.51	22.97
3911	865395.08	2031747.45	972.02	33911	995.59	23.56
3912	865403.02	2031747.79	972.14	33912	995.39	23.26
3913	865403.19	2031797.44	972.33	33913	995.49	23.15
3914	865395.12	2031797.69	972.23	33914	995.83	23.60
3915	865395.08	2031847.56	972.58	33915	995.78	23.20
3916	865403.14	2031847.52	972.02	33916	995.58	23.56
3917	865403.03	2031893.98	972.18	33917	995.07	22.89
3918	865395.15	2031893.94	972.18	33918	995.90	23.72
3919	865382.45	2031921.11	972.14	33919	995.82	23.67
3920	865388.18	2031926.70	972.28	33920	995.65	23.37
3921	865352.78	2031962.11	972.10	33921	995.09	22.99
3922	865347.27	2031956.21	972.18	33922	995.42	23.25
3923	865311.74	2031991.77	972.02	33923	995.25	23.23
3924	865317.30	2031997.16	972.03	33924	995.16	23.13
3925	865291.06	2032023.72	972.05	33925	995.27	23.22
3926	865285.43	2032017.95	972.02	33926	995.50	23.48
3927	865261.06	2032028.07	972.00	33927	995.45	23.45
3928	865261.14	2032036.10	972.13	33928	995.05	22.91
3929	865248.29	2032036.10	972.30	33929	995.14	22.84
3930	865248.25	2032028.00	972.03	33930	995.15	23.12
3931	865198.28	2032028.11	972.01	33931	995.09	23.08
3932	865198.07	2032036.06	972.05	33932	995.00	22.95
3933	865148.31	2032036.13	972.23	33933	995.00	22.78
3934	865148.33	2032028.13	972.28	33934	995.11	22.84
3935	865098.27	2032028.13	972.01	33935	995.26	23.25
3936	865098.22	2032036.04	972.02	33936	995.34	23.33
3937	865048.18	2032036.15	972.31	33937	995.44	23.12
3938	865048.37	2032028.15	972.59	33938	995.63	23.04
3939	864998.47	2032028.11	972.48	33939	995.32	22.84
3940	864998.33	2032036.03	972.05	33940	995.45	23.41
3941	864798.51	2032036.10	972.65	33941	995.39	22.74
3942	864798.28	2032028.02	972.38	33942	995.61	23.24
3943	864748.32	2032028.13	972.11	33943	995.45	23.34
3944	864748.37	2032036.09	972.42	33944	995.37	22.94
3945	864698.33	2032036.12	972.80	33945	995.39	22.60
3946	864698.17	2032028.18	972.13	33946	995.53	23.40
3947	864648.34	2032028.11	972.98	33947	995.66	22.68
3948	864648.21	2032036.64	972.73	33948	995.43	22.69
3949	864598.41	2032036.26	972.94	33949	995.35	22.42
3950	864598.33	2032028.07	972.88	33950	995.75	22.87
3951	864048.27	2032027.93	972.28	33951	995.32	23.04
3952	864048.11	2032036.02	972.30	33952	995.31	23.01
3953	864098.26	2032036.00	972.16	33953	995.48	23.32
3954	864098.27	2032028.06	972.41	33954	995.53	23.12
3955	864148.22	2032028.01	972.40	33955	995.36	22.95
3956	864148.22	2032036.18	972.25	33956	995.39	23.15
3957	864198.29	2032036.20	972.16	33957	995.64	23.48
3958	864198.46	2032028.11	972.24	33958	995.38	23.15
3959	864248.19	2032028.04	972.03	33959	995.33	23.30
3960	864248.33	2032036.10	972.09	33960	995.41	23.32
3961	864298.40	2032036.07	972.11	33961	995.33	23.22
3962	864298.10	2032028.12	972.50	33962	995.34	22.84
3963	864348.34	2032028.08	972.11	33963	995.48	23.37
3964	864348.14	2032036.02	971.92	33964	995.35	23.43
3965	864398.22	2032036.08	972.25	33965	995.44	23.19
3966	864398.22	2032028.10	972.29	33966	995.50	23.22
3967	864448.16	2032028.12	972.11	33967	995.70	23.59
3968	864448.25	2032036.05	972.09	33968	995.66	23.57
3969	864498.35	2032036.16	972.39	33969	995.66	23.27
3970	864498.43	2032027.91	972.04	33970	995.79	23.75
3971	864548.32	2032028.01	972.18	33971	995.70	23.53
3972	864548.30	2032036.15	972.44	33972	995.37	22.93
3973	863998.21	2032036.00	972.07	33973	995.32	23.25
3974	863998.22	2032028.04	972.44	33974	995.36	22.93
3975	863948.29	2032028.25	972.85	33975	995.40	22.55
3976	863948.25	2032036.09	972.36	33976	995.43	23.07
3977	863898.30	2032036.06	972.32	33977	995.42	23.10
3978	863898.31	2032028.16	972.64	33978	995.52	22.88
3979	863873.24	2032028.12	972.56	33979	995.32	22.76
3980	863873.25	2032036.07	972.94	33980	995.20	22.26

Misc Pipe Ect				
7000	864193.07	2030667.04	992.97	dip e end 6in
7001	863707.31	2030665.76	993.67	dip e end 6in
7002	864707.18	2030667.65	992.93	dip e end 6in
7003	864656.31	2030664.92	993.31	sg
7004	865207.17	2030666.01	993.72	dip e end 6in
7005	865163.98	2030633.40	1003.23	pipe 18 e inv
7006	865163.98	2030632.78	1004.71	pipe top e 18in
7007	864197.22	2030722.00	977.32	pvc 8 topwend
7008	864666.09	2030718.82	979.15	pvc 8 topwend
7009	865059.41	2030721.15	978.20	pvc 8 topwend
7010	865162.01	2030658.91	1000.60	chk 97
7011	864038.34	2030718.08	978.08	pvc 18 top
7012	864087.58	2030714.70	979.07	pvc 18 top
7013	864126.05	2030713.28	979.70	pvc 18 top
7014	864167.35	2030710.82	980.39	pvc 18 top
7015	864186.66	2030709.26	980.71	pvc 18 top
7016	864234.34	2030706.60	981.78	pvc 18 top
7017	864281.78	2030703.23	983.01	pvc 18 top
7018	864327.29	2030700.88	983.99	pvc 18 top
7019	864351.21	2030698.98	984.36	pvc 18 top
7020	864399.28	2030695.94	985.53	pvc 18 top
7021	864458.26	2030692.07	986.64	pvc 18 top
7022	864509.36	2030689.32	987.52	pvc 18 top
7023	864562.39	2030686.55	988.52	pvc 18 top
7024	864620.63	2030682.59	989.64	pvc 18 top
7025	864667.89	2030680.81	990.49	pvc 18 top
7026	864725.05	2030677.79	991.48	pvc 18 top
7027	864780.85	2030672.83	992.94	pvc 18 top
7028	864850.91	2030667.94	994.18	pvc 18 top
7029	864916.04	2030663.69	995.63	pvc 18 top
7030	864973.49	2030660.48	996.67	pvc 18 top
7031	865034.82	2030656.86	998.01	pvc 18 top
7032	865067.65	2030655.01	999.04	pvc 18 top
7033	865115.87	2030652.47	1000.49	pvc 18 top
7034	865156.47	2030648.97	1002.18	pvc 18 top
7035	865162.68	2030648.38	1002.90	pvc 18 top bend
7036	865164.01	2030630.78	1004.70	pvc 18 top joint
7037	864702.22	2030679.81	990.96	pvc 18 top
7038	864717.59	2030678.62	991.34	pvc 18 top
7039	864012.12	2030720.56	977.64	pvc 18 top
7040	863984.24	2030722.17	976.96	pvc 18 top
7041	863984.13	2030739.01	975.23	pvc 18 top
7042	863983.55	2030757.11	967.74	cmp flume
7043	865135.42	2031987.52	997.65	pvc 18 top dayli
7044	864762.63	2032185.65	962.16	cmp 24 se inv
7045	864822.85	2032116.57	972.21	cb top struc
7046	864821.71	2032116.46	972.16	cb top inv 9.15
7047	864673.46	2031987.54	997.44	pvc8 top daylite
7048	864186.64	2031989.98	997.99	pvc8 top daylite
7049	865533.50	2030831.06	960.87	dip top flange
7050	865534.97	2030821.16	955.96	dip top flange
7051	865541.42	2031158.22	962.54	cmp 24 s inv
7052	865579.81	2031170.52	962.23	cmp 24 n inv

REV NO.	DATE	DESCRIPTION

DATE: 12/1/08
DESIGN BY: JEN
DRAWN BY: JEN
CHECKED BY: BEP
DWG FILE: FINAL COVER
FILE NO.: 08-0074.00

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Signed: BRIAN E. PRASKE
Date: 12/01/08 Reg. No. 44646

BOGART, PEDERSON & ASSOCIATES, INC.
LAND SURVEYING
CIVIL ENGINEERING
MAPPING
13076 FIRST STREET, BECKER, MN 55308-9322
TEL: 763-262-8822 FAX: 763-262-8844

SHERCO PONDS
POND 3
SEPTEMBER 2008
BECKER, MN

SHEET NO.
6

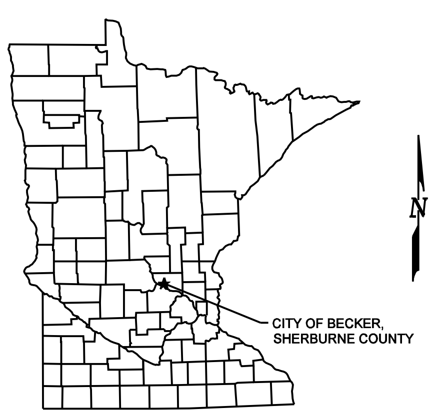
6

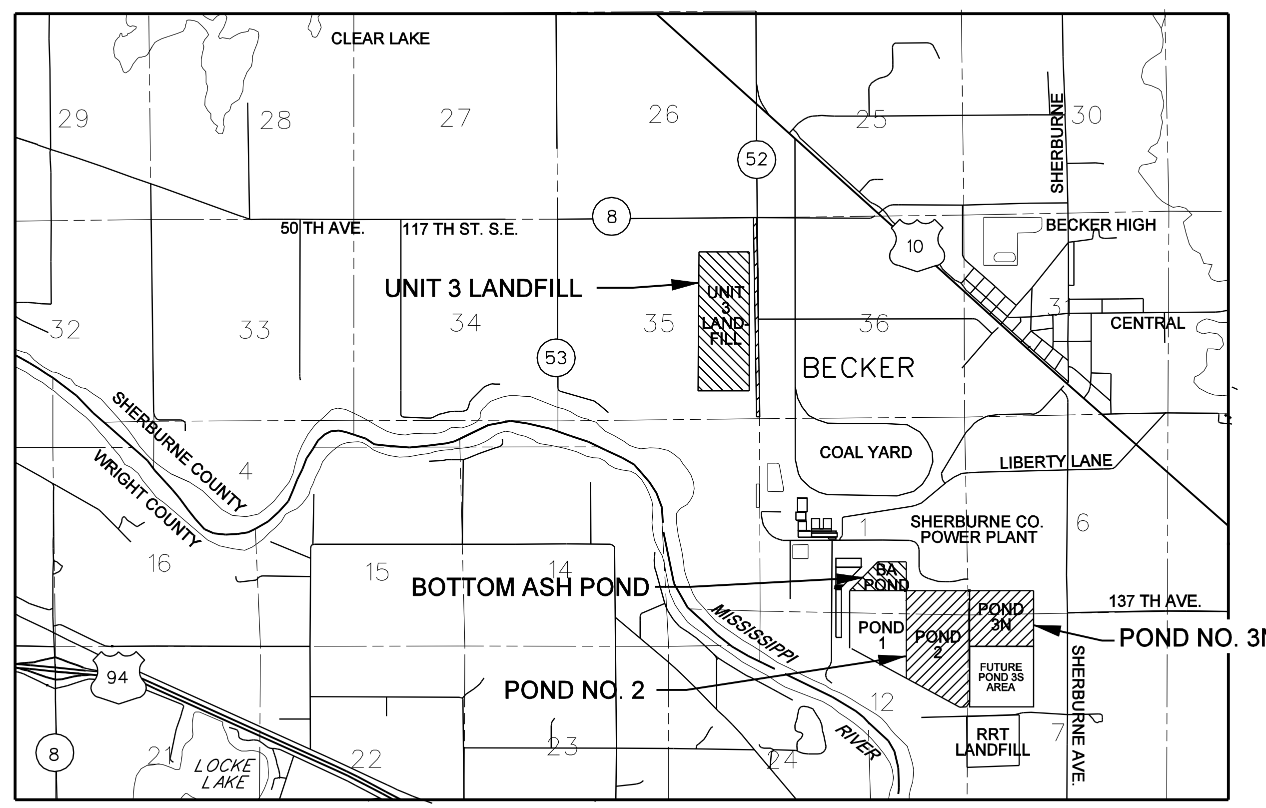
Appendix H

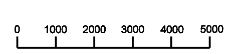
Record Drawings

RECORD DRAWINGS
SHERBURNE COUNTY (SHERCO) GENERATING PLANT
2008 ASH CONSTRUCTION PROJECTS

NPDES PERMIT No. 0002186 (PONDS)
MPCA PERMIT No. SW-293 (LANDFILL)
BECKER, MINNESOTA
NORTHERN STATES POWER COMPANY
dba XCEL ENERGY, INC.







SITE LOCATION MAP

SHEET	DRAWING TITLE	XCEL DRAWING NO.
	GENERAL	
G1	INDEX SHEET	
G2	GENERAL LEGEND	
G3	PLANT LAYOUT AND PROJECT AREAS	
G4	POND PROJECTS LAYOUT	
	BOTTOM ASH POND EXCAVATION AND DREDGING AND POND 2 DIKING	
BA1	EXISTING CONDITIONS	
BA2	EXCAVATION LIMITS	
BA3	POND 2 BOTTOM ASH DIKING PLAN	
BA4	POND 2 SECTIONS & DETAILS	
	POND 3 NORTH CONSTRUCTION	
P1	EXISTING CONDITIONS	NH-194808-101
P2	CLAY ANCHOR AND LINER GRADING PLAN	NH-194808-102
P3	CLAY ANCHOR AND LINER SURVEY DATA	NH-194808-103
P4	WEIR BASE LINER PLAN	NH-194808-104
P5	WEIR FLAP LINER PLANS	NH-194808-105
P6	CLAY BARRIER/BOTTOM ASH GRADING PLAN	
▲ P6A	CLAY BARRIER/BOTTOM ASH GRADING PLAN ASBUILT GRADES	NH-194808-106
P7	CLAY BARRIER/BOTTOM ASH SURVEY DATA	NH-194808-107
P8	FINISHED GRADING PLAN AND ROAD LAYOUT	
▲ P8A	FINISHED GRADING PLAN AND ROAD LAYOUT AS-BUILT GRADES	NH-194808-108
P9	FINISHED GRADING SURVEY DATA AND EROSION CONTROL PLAN	NH-194808-109
P10	EAST RAMP PLAN	NH-194808-110
P11	SOUTHWEST RAMP PLAN	NH-194808-111
P12	WEIR SECTIONS	NH-194808-112
P13	WEIR SECTIONS	NH-194808-113
P14	CLAY ANCHOR AND WEIR SECTIONS	NH-194808-114
P15	LINER SECTIONS	NH-194808-115
P16	LINER SECTIONS	NH-194808-116
P17	CLAY BARRIER AND BOTTOM ASH SECTIONS	NH-194808-117
P18	CLAY BARRIER AND BOTTOM ASH SECTIONS	NH-194808-118
P19	FINISHED GRADE SECTIONS	NH-194808-119
P20	FINISHED GRADE SECTIONS	NH-194808-120
P21	FINISHED GRADE SECTIONS	NH-194808-121
P22	DECANT PIPE SECTIONS AND DETAILS	NH-194808-122
P23	DEWATERING WELLS AND CLEANOUT DETAILS	NH-194808-123
P24	LINER DETAILS	NH-194808-124
P25	DEWATERING MANHOLE DETAILS	NH-194808-125
	UNIT 3 LANDFILL FINAL COVER CONSTRUCTION	
~~LF1~~	~~EXISTING CONDITIONS~~	
~~LF2~~	~~FINAL GRADING PLAN~~	
~~LF3~~	~~SECTIONS AND DETAILS~~	
~~LF4~~	~~SECTIONS AND DETAILS~~	
~~LF5~~	~~SECTIONS AND DETAILS~~	
~~LF6~~	~~NORTH ROAD PLAN AND SECTIONS~~	

▲ NOT INCLUDED

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS

INDEX SHEET

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO.

Sheet No. G1

REV ▲

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GENERAL LEGEND

BL — BL	BASELINE
E — E — E	BURIED ELECTRIC
C-BDY — C-BDY — C-BDY	CELL BOUNDARY
••• → ••• →	DITCH
DT — DT — DT	DRAIN TILE
D ▶ D ▶ D	DREDGE DISCHARGE PIPE
960	PROPOSED CONTOURS INDEX
	PROPOSED CONTOURS INTERMEDIATE
960	EXISITNG CONTOURS BACKGROUND INDEX
	EXISITNG CONTOURS BACKGROUND INTERMEDIATE
X — X — X	FENCE / SECURITY FENCE
F-COV — F-COV	FINAL COVER LIMIT
SL ▶ SL ▶ SL	SLUDGE LINE
	ROADS
FM — FM — FM	FORCE MAIN
	GEOMEMBRANE/COMPOSITE LINER
	GEOSYNTHETIC CLAY LINER (GCL)
	GRADE BREAK
LC — LC — LC	LEACHATE COLLECTION
• • • • •	LINER CONNECTION
OHE — OHE — OHE	OVERHEAD ELECTRIC
P — P — P — P	UNDERGROUND PIPE
R ▶ R ▶ R	DREDGE RETURN PIPE
SW→ SW→ SW→	STORM WATER PIPE
C — T — C — T	BURIED TELEPHONE CABLE
//// //// ////	FINISHED GRADE/TURF
→	ASH HAUL ROUTE
3" PE — 3" PE	POLYETHYLENE PIPE

	CLAY (SECTION)
	CONCRETE
	GRANULAR DRAINAGE MATERIAL (GDM)
	CLASS 5/GRAVEL
	RIP RAP
	EXIST. CLAY (PLAN)
	PROPOSED CLAY (PLAN)
	ROOTING SOIL
	RANDOM FILL/EXIST. GROUND

	DEWATERING WELLS/SOIL BORINGS
	MONITORING WELLS
MH	MANHOLE
CB	CATCH BASIN
SSP2-W04	INCLINED DEWATERING WELLS
	SURVEY MONUMENT
	WATER LEVEL
CO	CLEAN-OUT

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS

GENERAL LEGEND

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO.

Sheet No. G2

REV ▲

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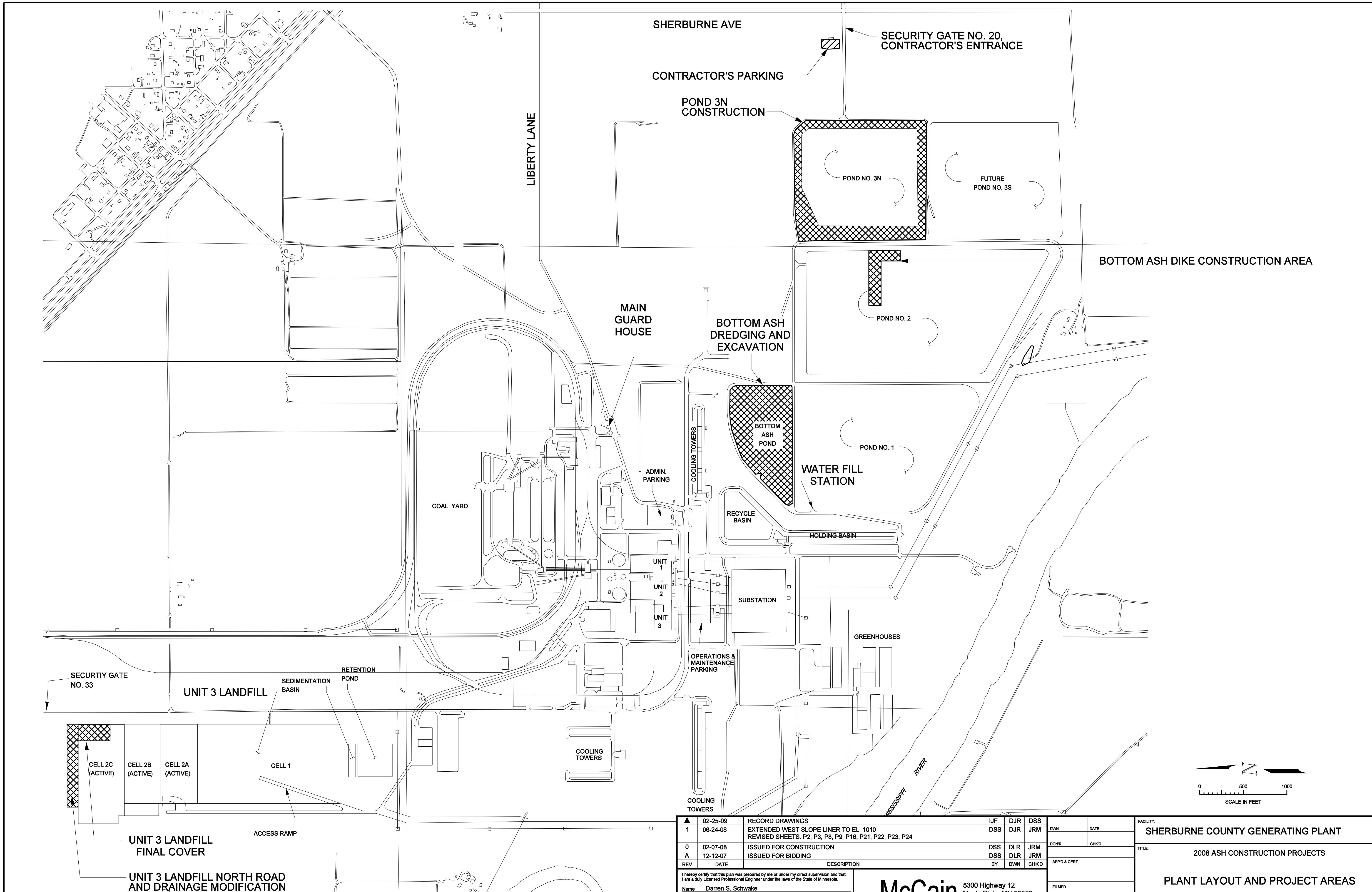

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

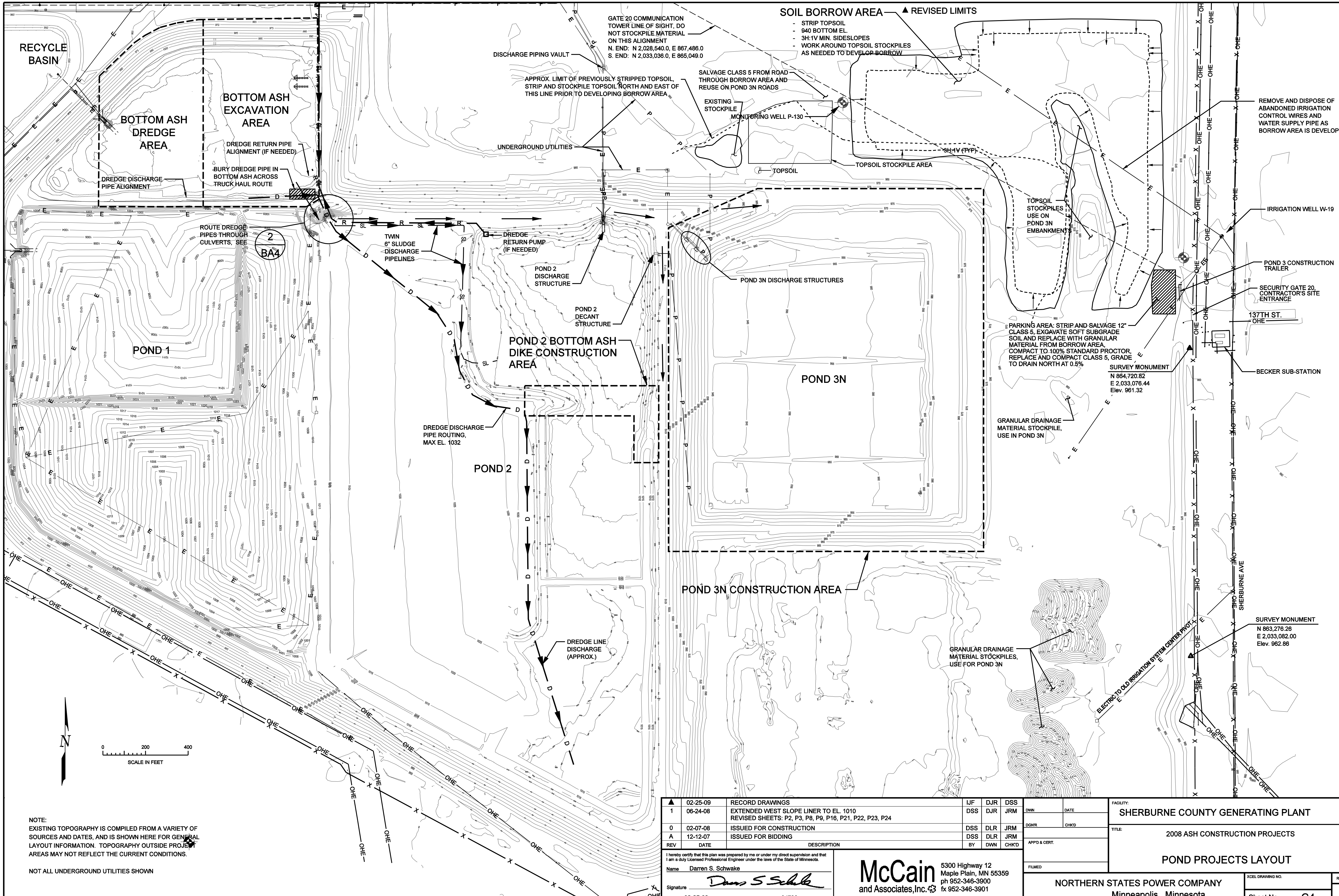
FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS

PLANT LAYOUT AND PROJECT AREAS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO.
Sheet No. G3
REV ▲



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NOTE:
EXISTING TOPOGRAPHY IS COMPILED FROM A VARIETY OF SOURCES AND DATES, AND IS SHOWN HERE FOR GENERAL LAYOUT INFORMATION. TOPOGRAPHY OUTSIDE PROJECT AREAS MAY NOT REFLECT THE CURRENT CONDITIONS.

NOT ALL UNDERGROUND UTILITIES SHOWN

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

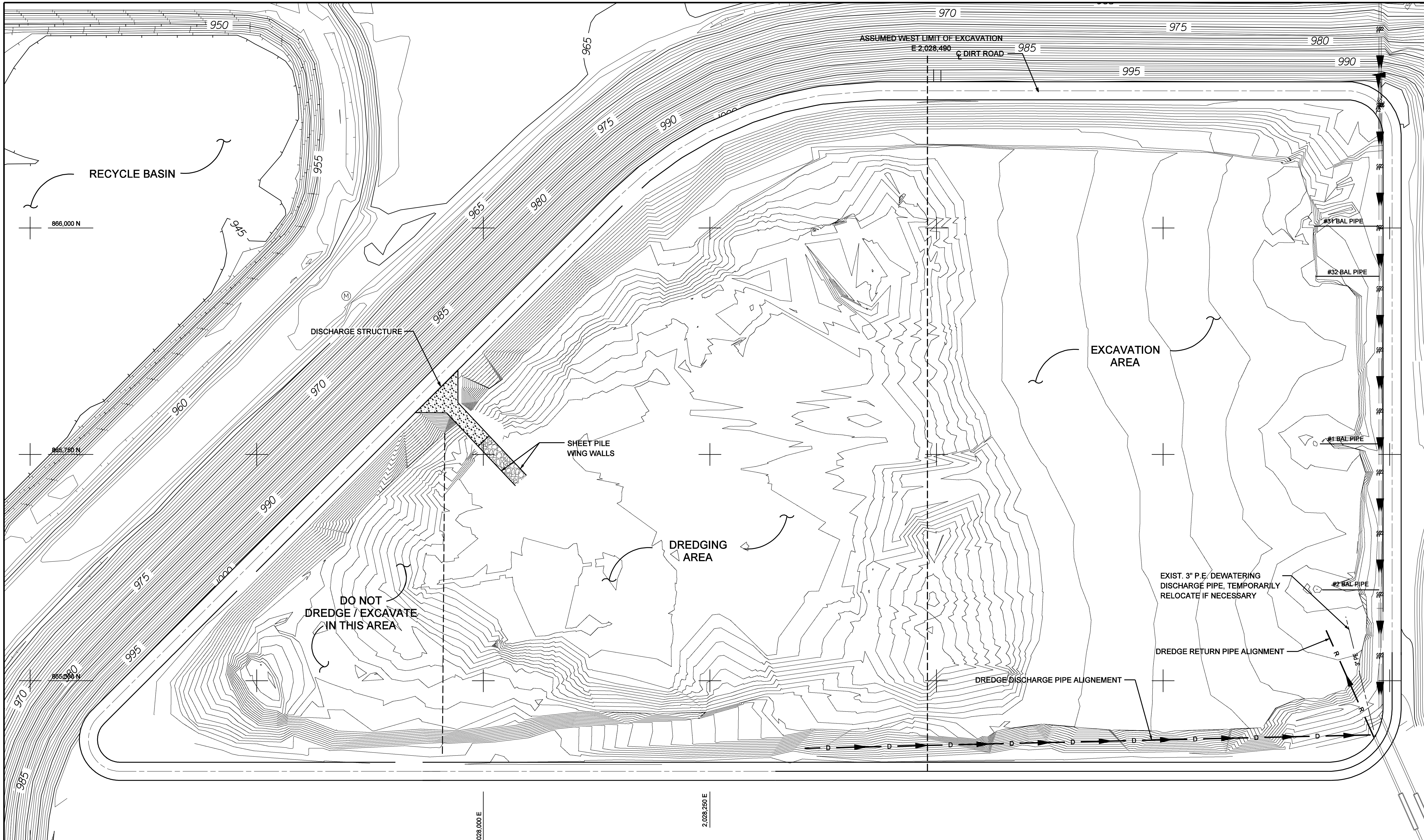
FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS

POND PROJECTS LAYOUT

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO.
Sheet No. G4
REV ▲



NOTES:

1. THE "WEST LIMIT OF EXCAVATION" LINE IS APPROXIMATE AND IS BASED ON PREVIOUS EXCAVATION PROJECTS.

2. EASTERN LIMIT OF EXCAVATION MUST LEAVE ADEQUATE ASH ADJACENT TO PIPE SUPPORTS FOR STABILITY OF PIPE.

3. EXISTING TOPOGRAPHY IS COMPILED FROM PREVIOUS SURVEYS TO APPROXIMATE THE EXISTING CONDITIONS AT THE TIME OF CONSTRUCTION, AND ARE SHOWN HERE FOR GENERAL LAYOUT INFORMATION, BUT SHOULD NOT BE USED FOR QUANTITY TAKE-OFF.

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Signature Darren S Schwake

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McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY:
SHERBURNE COUNTY GENERATING PLANT

TITLE:
2008 ASH CONSTRUCTION PROJECTS
BOTTOM ASH POND EXCAVATION AND DREDGING
EXISTING CONDITIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO.
Sheet No. BA1
REV ▲

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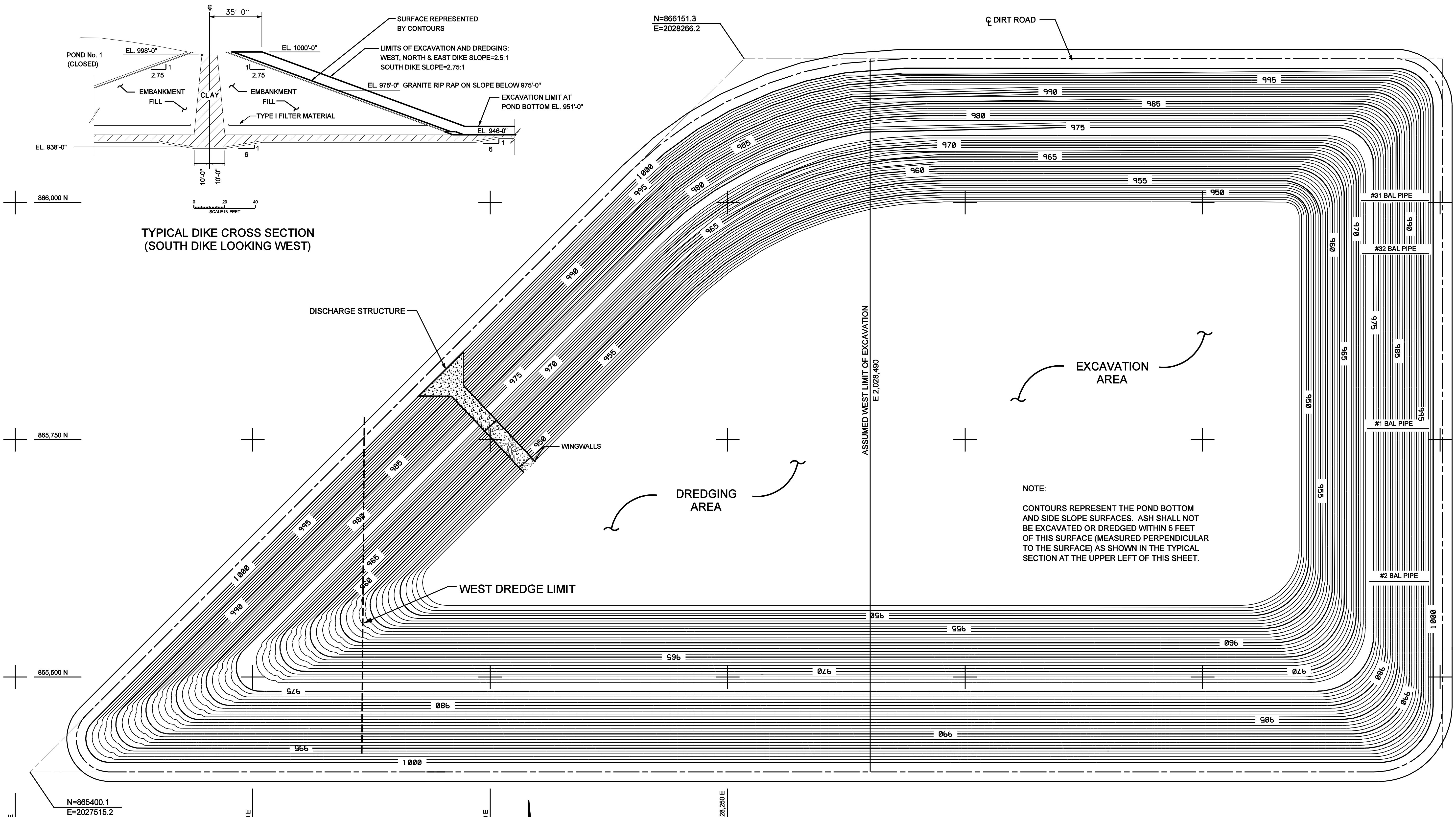

NOTES:

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2. EASTERN LIMIT OF EXCAVATION MUST LEAVE ADEQUATE ASH ADJACENT TO PIPE SUPPORTS FOR STABILITY OF PIPE.

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fx 952-346-3901

DWN | DATE | DGN'R | CHK'D | APP'D & CERT. | FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
BOTTOM ASH POND EXCAVATION AND DREDGING
EXCAVATION LIMITS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO.

Sheet No. BA2

REV ▲

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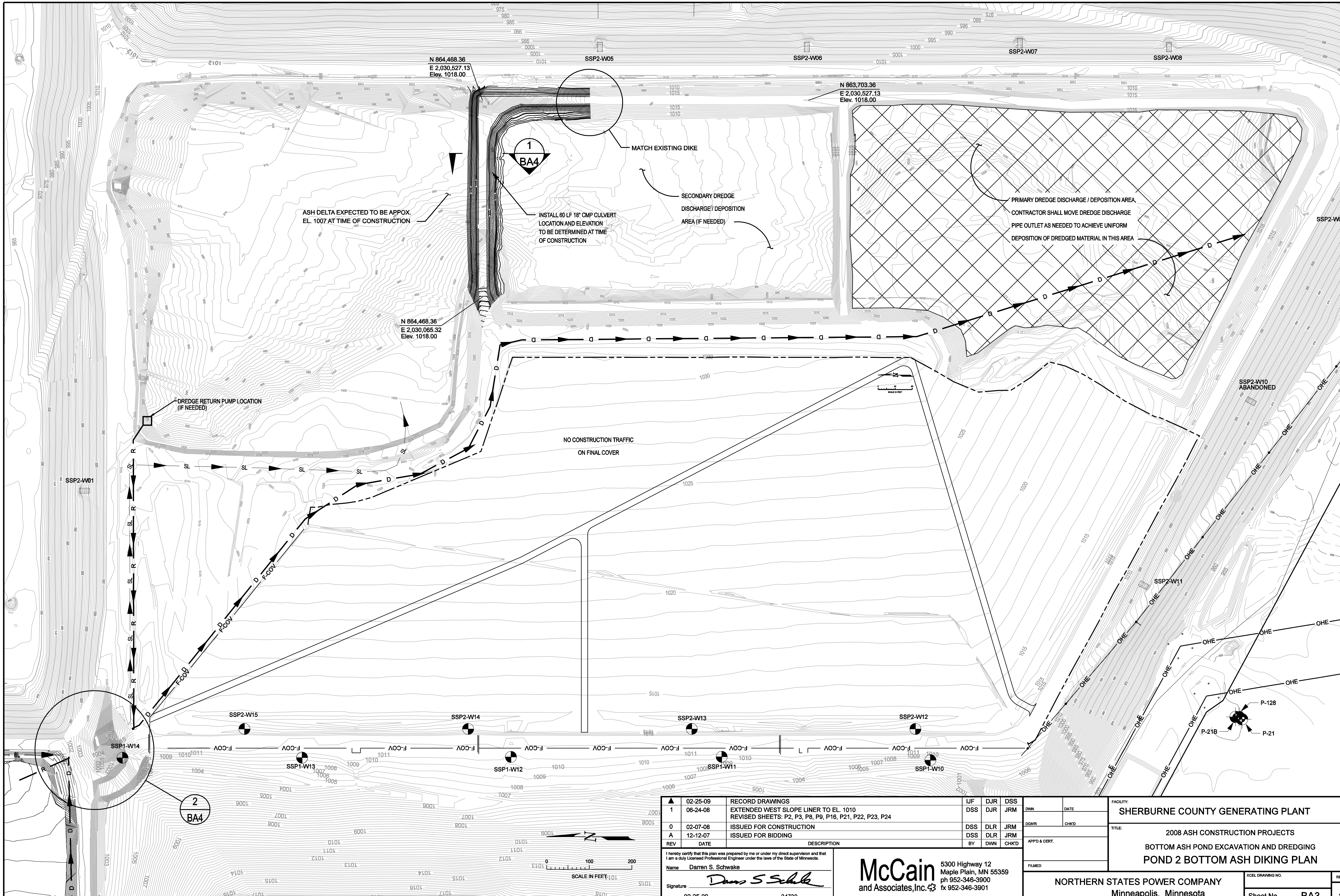

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
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1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
BOTTOM ASH POND EXCAVATION AND DREDGING
POND 2 BOTTOM ASH DIKING PLAN

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO.
Sheet No. BA3
REV ▲

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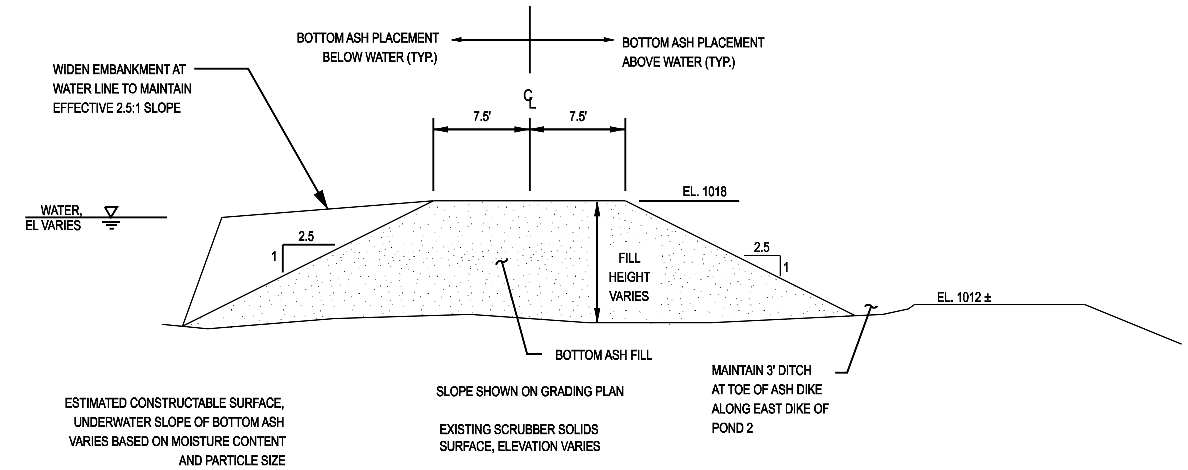
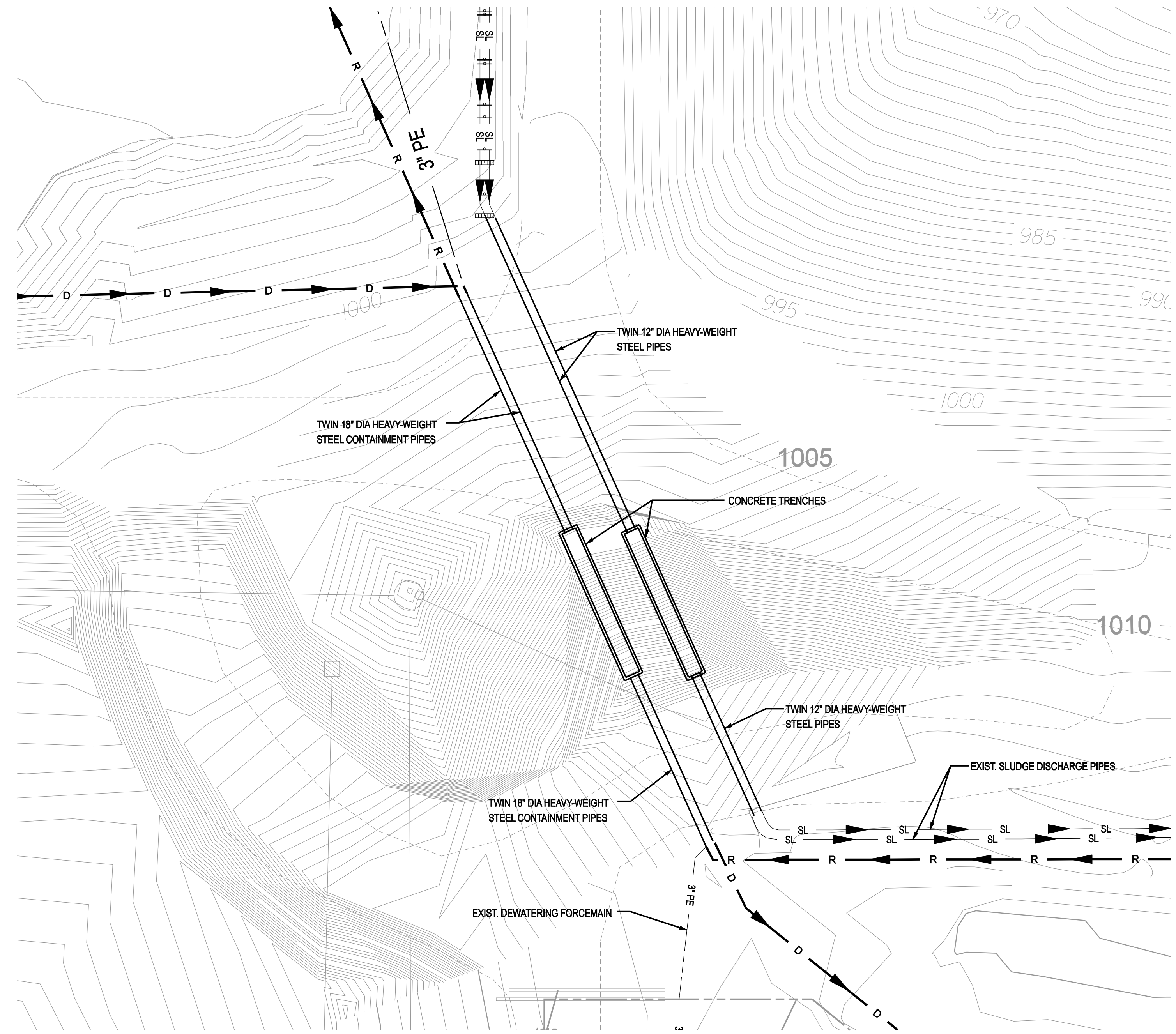


SECTION: BOTTOM ASH DIKES (1 / BA3)
N.T.S.

NOTE:
CONTRACTOR SHALL MONITOR CONDITION OF BOTTOM ASH AS DIKE CONSTRUCTION PROGRESSES, AND KEEP EQUIPMENT A SAFE DISTANCE FROM THE ACTIVE FILL SLOPE



N

DREDGE PIPE ROUTING (2 / G4, BA3)
0 10 20
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

DWN / DATE / DGN'R / CHK'D / APP'D & CERT. / FILMED

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.
Name Darren S. Schwake
Signature Darren S Schwake
Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
BOTTOM ASH POND EXCAVATION AND DREDGING
POND 2 SECTIONS & DETAILS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO.
Sheet No. BA4
REV ▲

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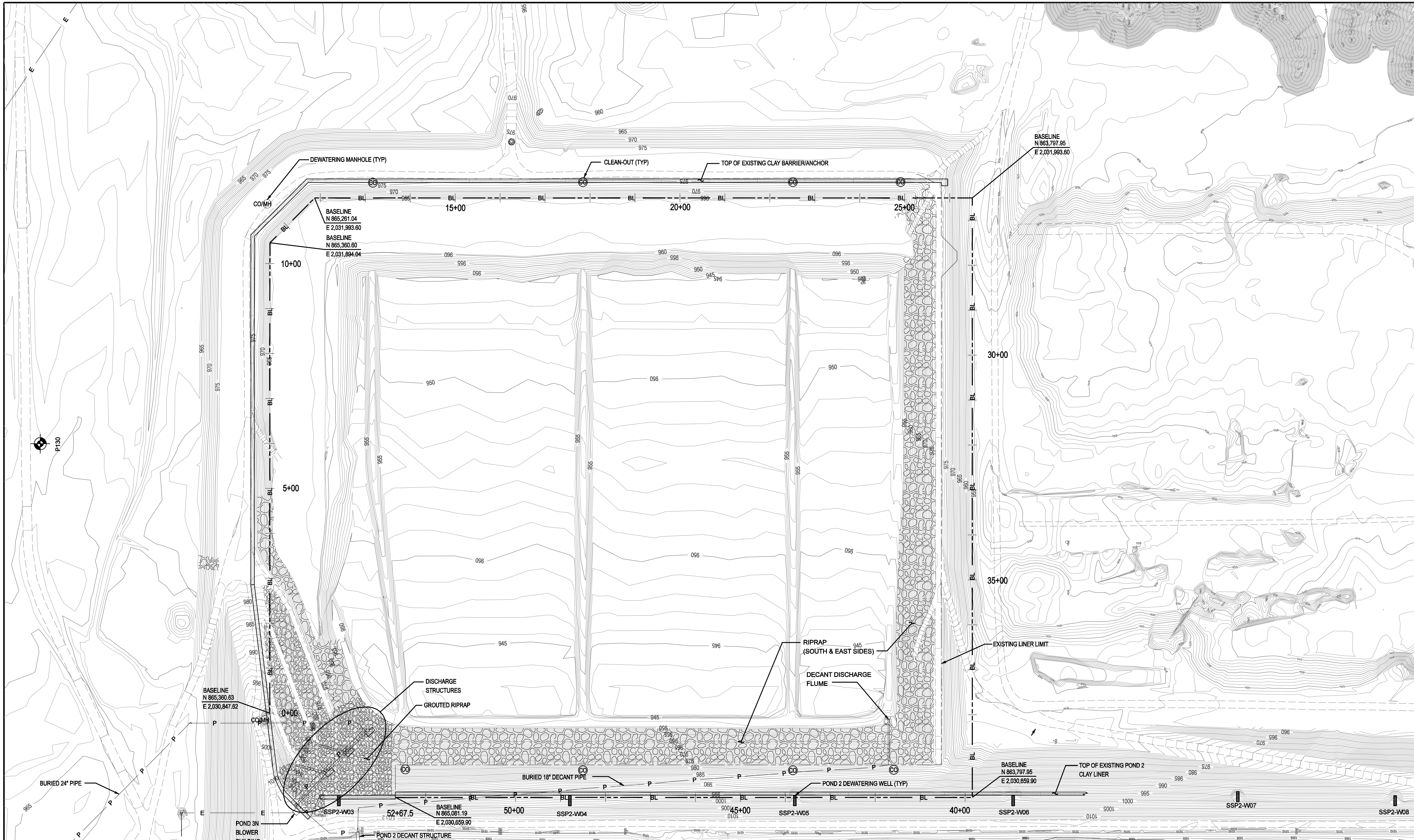

NOTE:
EXISTING TOPOGRAPHY COMPILED FROM A VARIETY OF SOURCES AND DATES, CONTOURS OUTSIDE OF THE PROJECT AREAS MAY NOT REFLECT THE CURRENT CONDITIONS.

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Signature

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McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

FACILITY:
SHERBURNE COUNTY GENERATING PLANT

TITLE:
2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
EXISTING CONDITIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-101
REV ▲
Sheet No. P1

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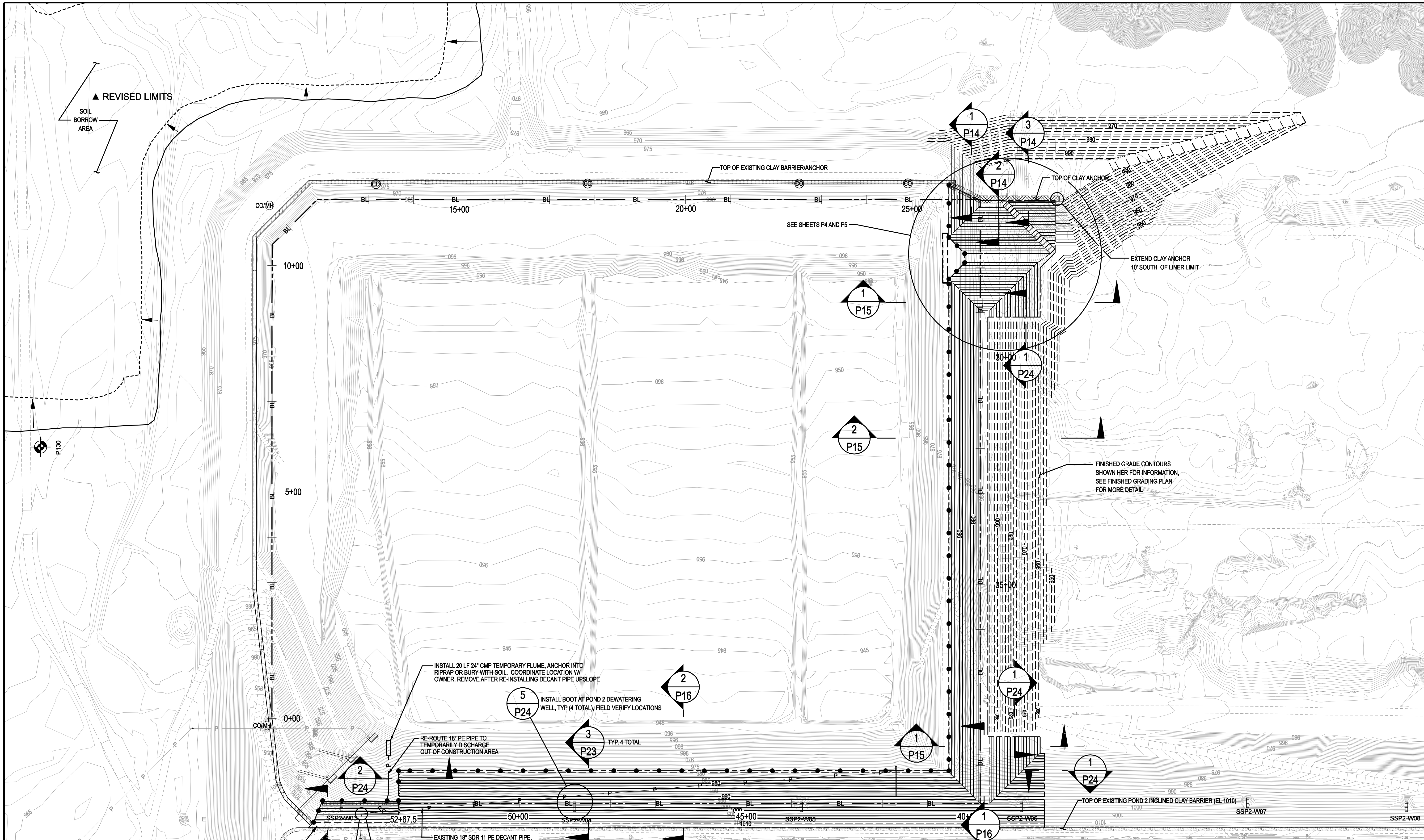

NOTE: EXISTING TOPOGRAPHY COMPILED FROM A VARIETY OF SOURCES AND DATES, CONTOURS OUTSIDE OF THE PROJECT AREAS MAY NOT REFLECT THE CURRENT CONDITIONS.

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
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0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates,Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
CLAY ANCHOR AND LINER GRADING PLAN

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-102
Sheet No. P2
REV ▲

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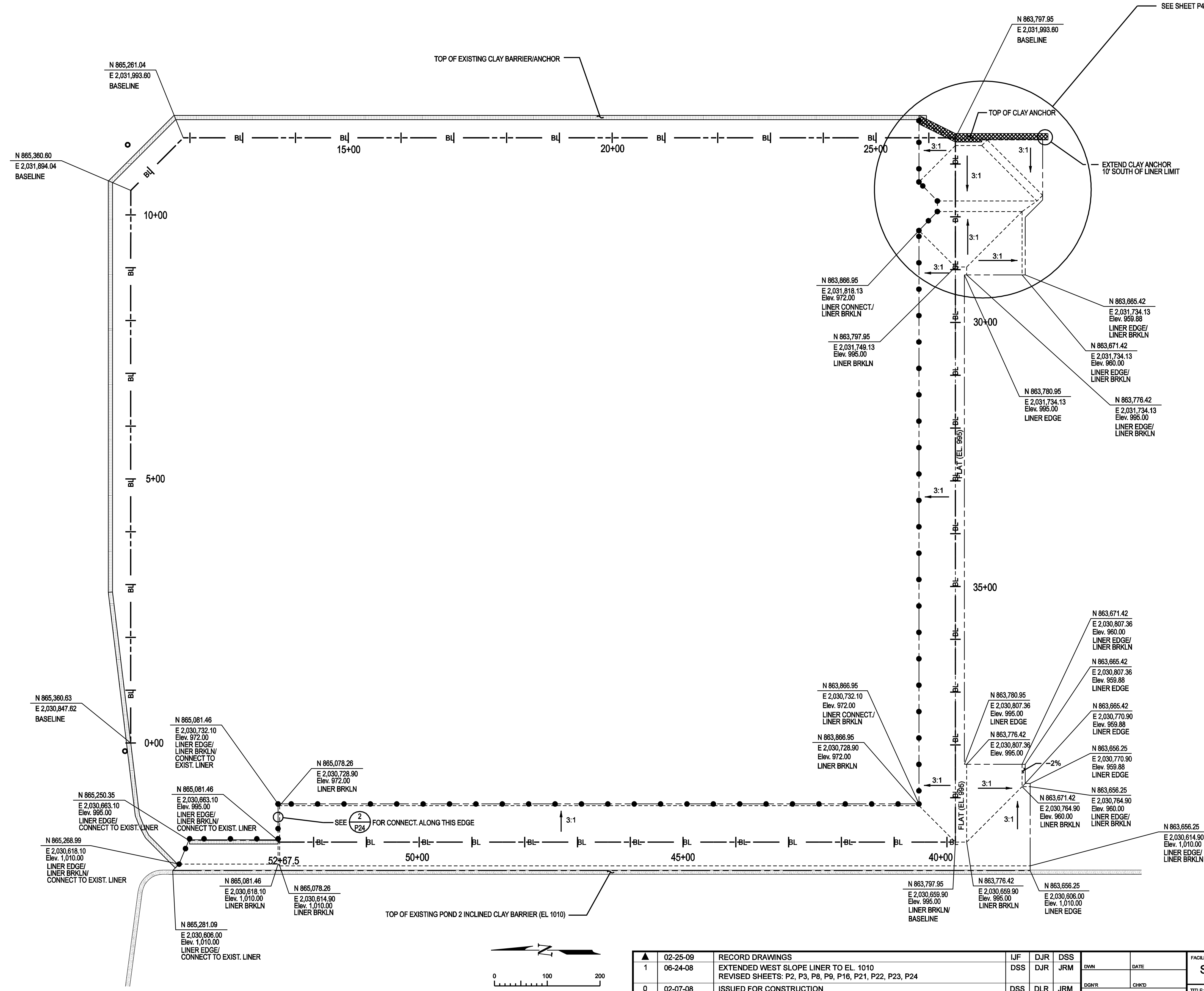

▲ THIS SHEET REPRESENTS SURVEY DATA USED DURING CONSTRUCTION STAKING, REFER TO APPENDIX G IN CERTIFICATION REPORT FOR AS-BUILT SURVEY DATA

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Name: Darren S. Schwake
Signature: Darren S Schwake
Date: 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

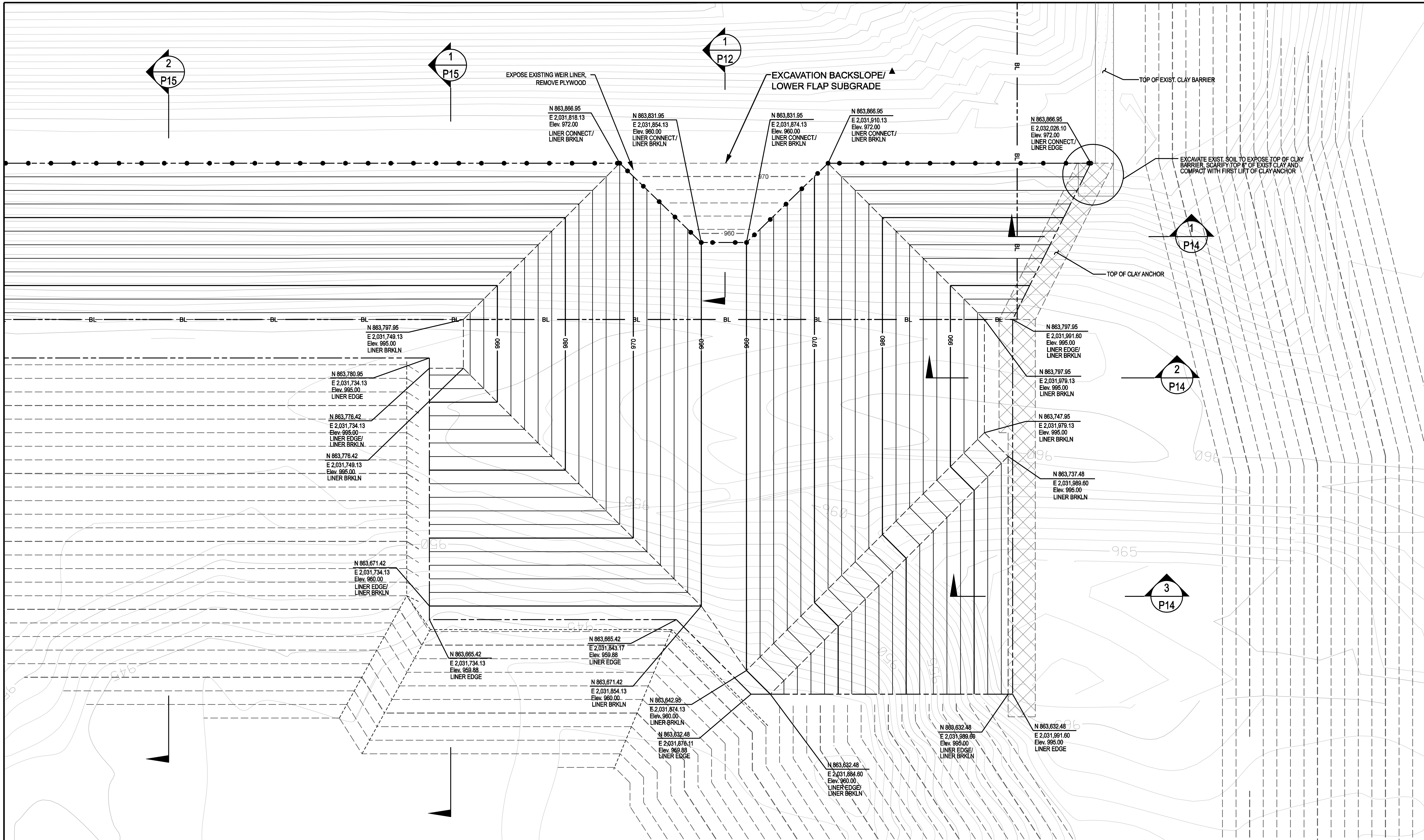
DWN | DATE | DGN'R | CHK'D | APP'D & CERT. | FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
CLAY ANCHOR AND LINER SURVEY DATA

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-103
Sheet No. P3
REV ▲



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▲ THIS SHEET REPRESENTS SURVEY DATA USED DURING CONSTRUCTION STAKING, REFER TO APPENDIX G IN CERTIFICATION REPORT FOR AS-BUILT SURVEY DATA

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

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Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

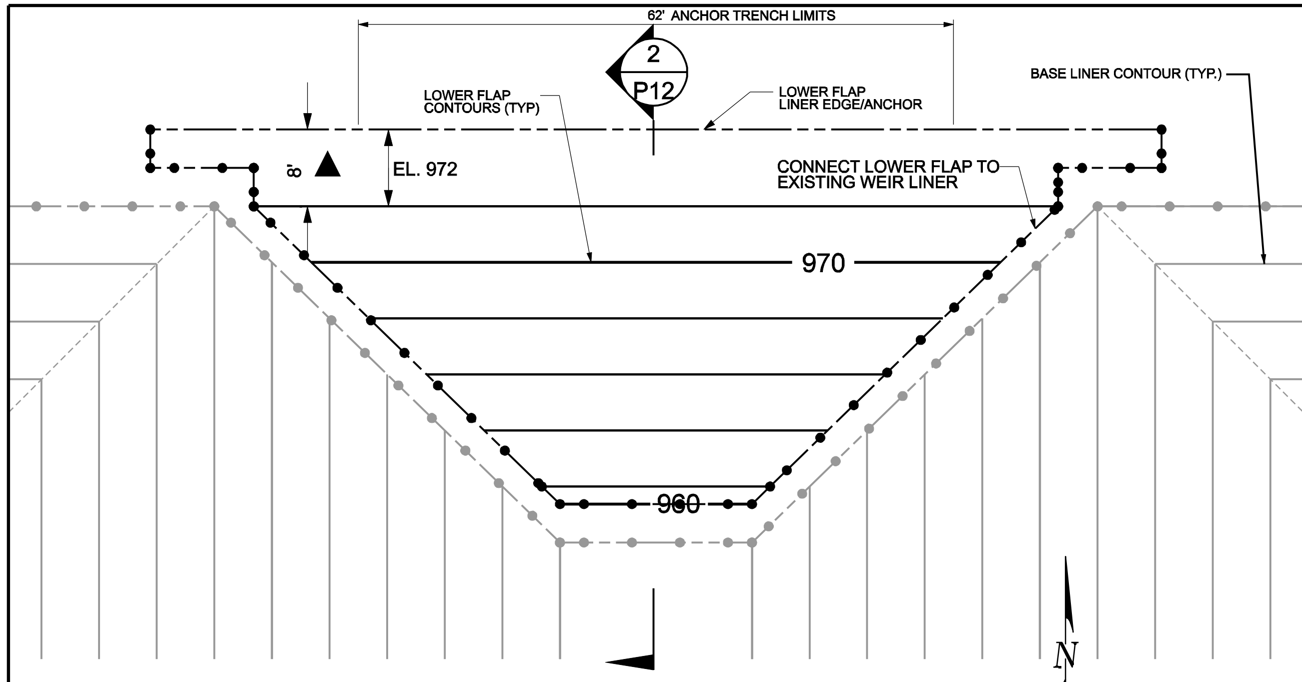
McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
WEIR BASE LINER PLAN

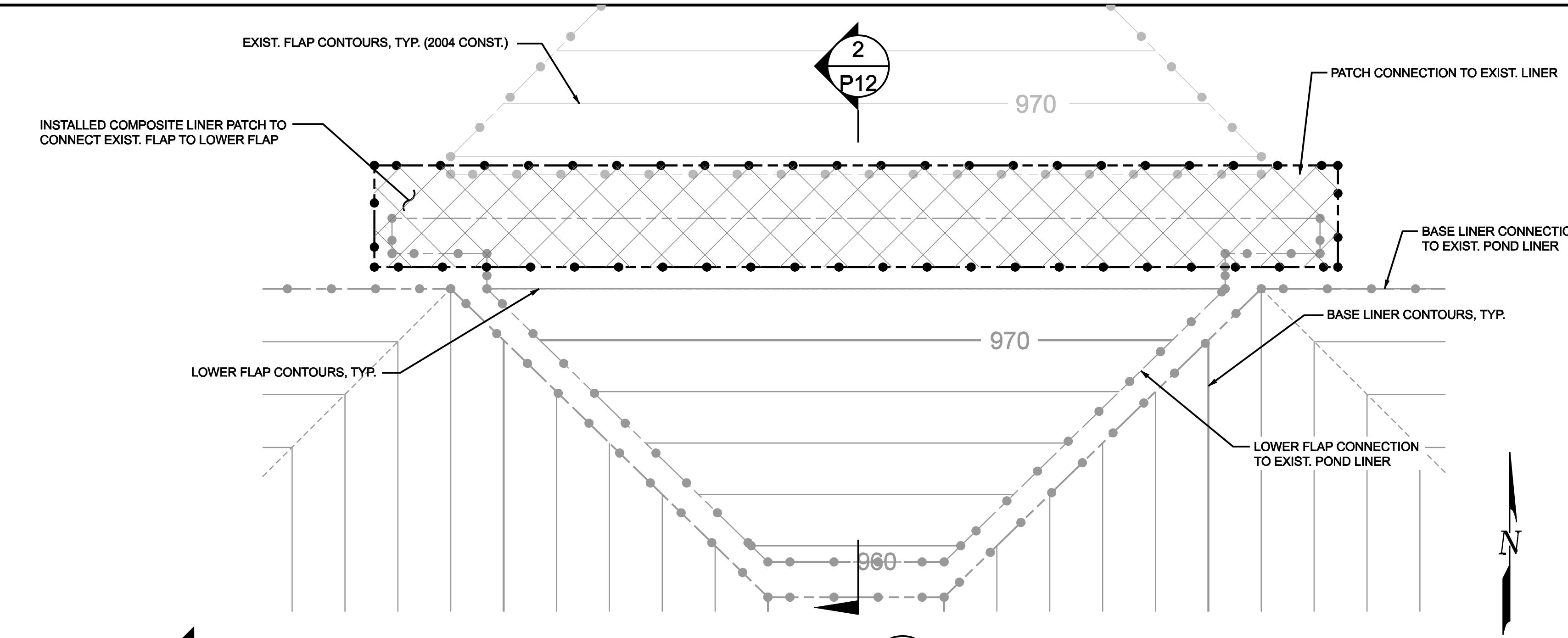
NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-104
Sheet No. P4
REV ▲



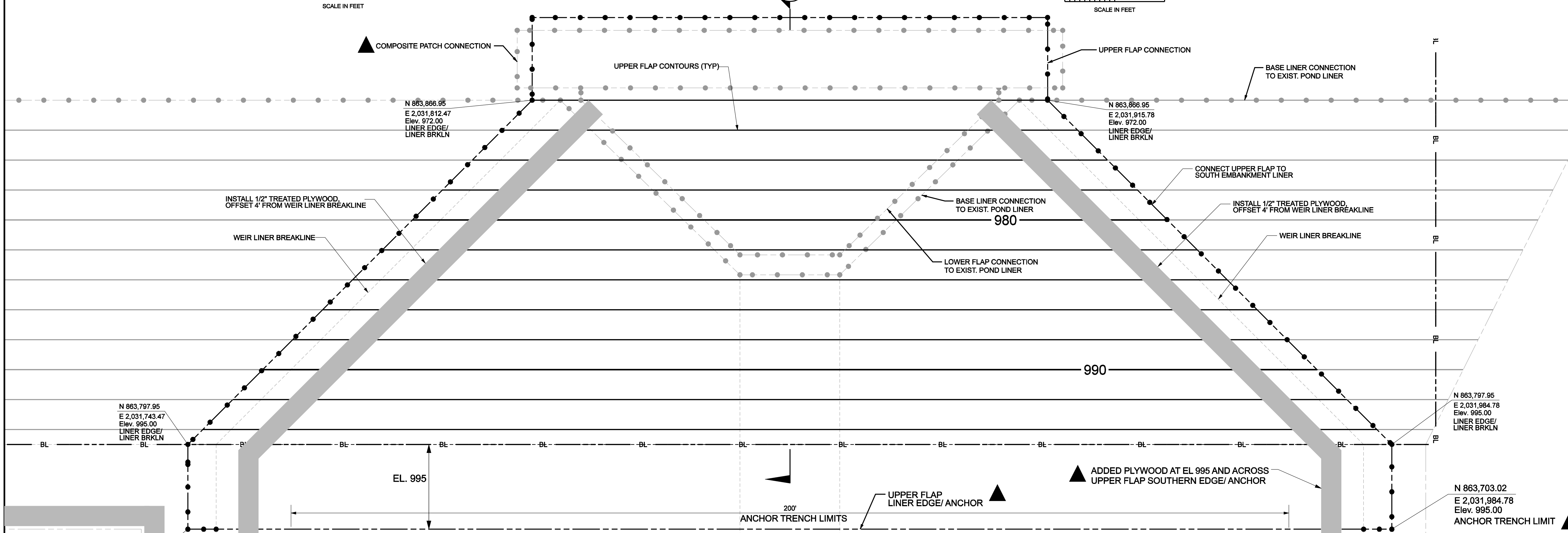
PLAN: LOWER FLAP IN WEIR AT SE CORNER 1 P5

0 10 20
SCALE IN FEET



PLAN: PATCH 3 P5 ADDED THIS SECTION

0 10 20
SCALE IN FEET



PLAN: UPPER FLAP IN WEIR AT SE CORNER 2 P5

0 10 20
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Signature

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
WEIR FLAP LINER PLANS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-105
Sheet No. P5
REV ▲

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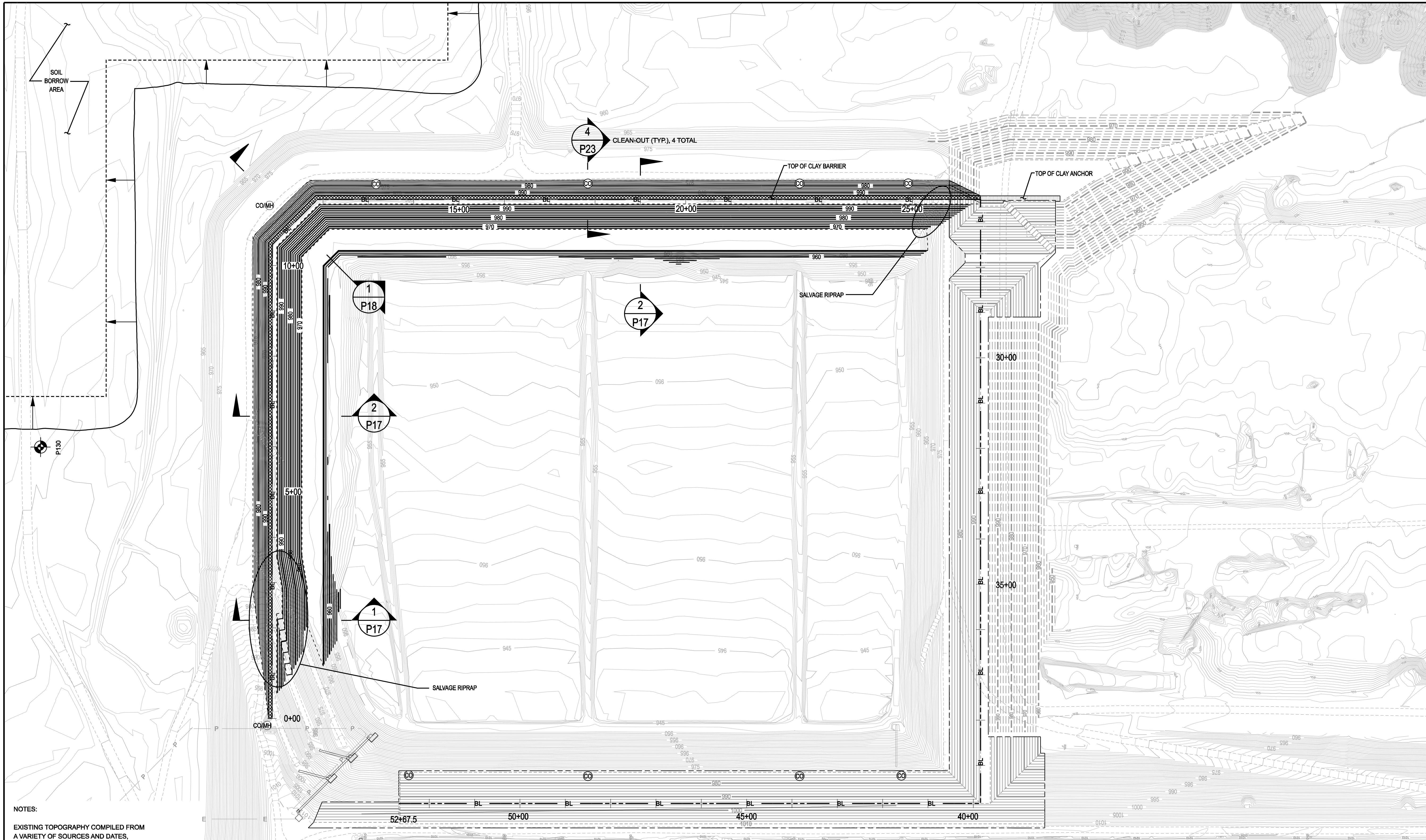

NOTES:

EXISTING TOPOGRAPHY COMPILED FROM A VARIETY OF SOURCES AND DATES, CONTOURS OUTSIDE OF THE PROJECT AREAS MAY NOT REFLECT THE CURRENT CONDITIONS.

PROPOSED BOTTOM ASH CONTOURS SHOW EMBANKMENT CONFIGURATION BASED ON ESTIMATED BOTTOM ASH EXCAVATION QUANTITY, ADJUST EMBANKMENT AS SHOWN ON SECTIONS TO ACCOUNT FOR CHANGES IN BOTTOM ASH QUANTITY.

COORDINATE LOCATION OF BOTTOM ASH ACCESS RAMPS IN POND 3N WITH OWNER PRIOR TO CONSTRUCTION.

▲ THIS SHEET SHOWS DESIGN CONTOURS AND ORIGINAL BORROW AREA LIMITS, REFER TO SHEET P6A FOR AS-BUILT CONTOURS OF NORTH & EAST EMBANKMENTS, ACTUAL BORROW AREA LIMITS, AND CLEAN-OUT LOCATIONS.

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN / DATE / DGN'R / CHK'D / APP'D & CERT. / FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
CLAY BARRIER/BOTTOM ASH GRADING PLAN

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO.
Sheet No. P6
REV ▲

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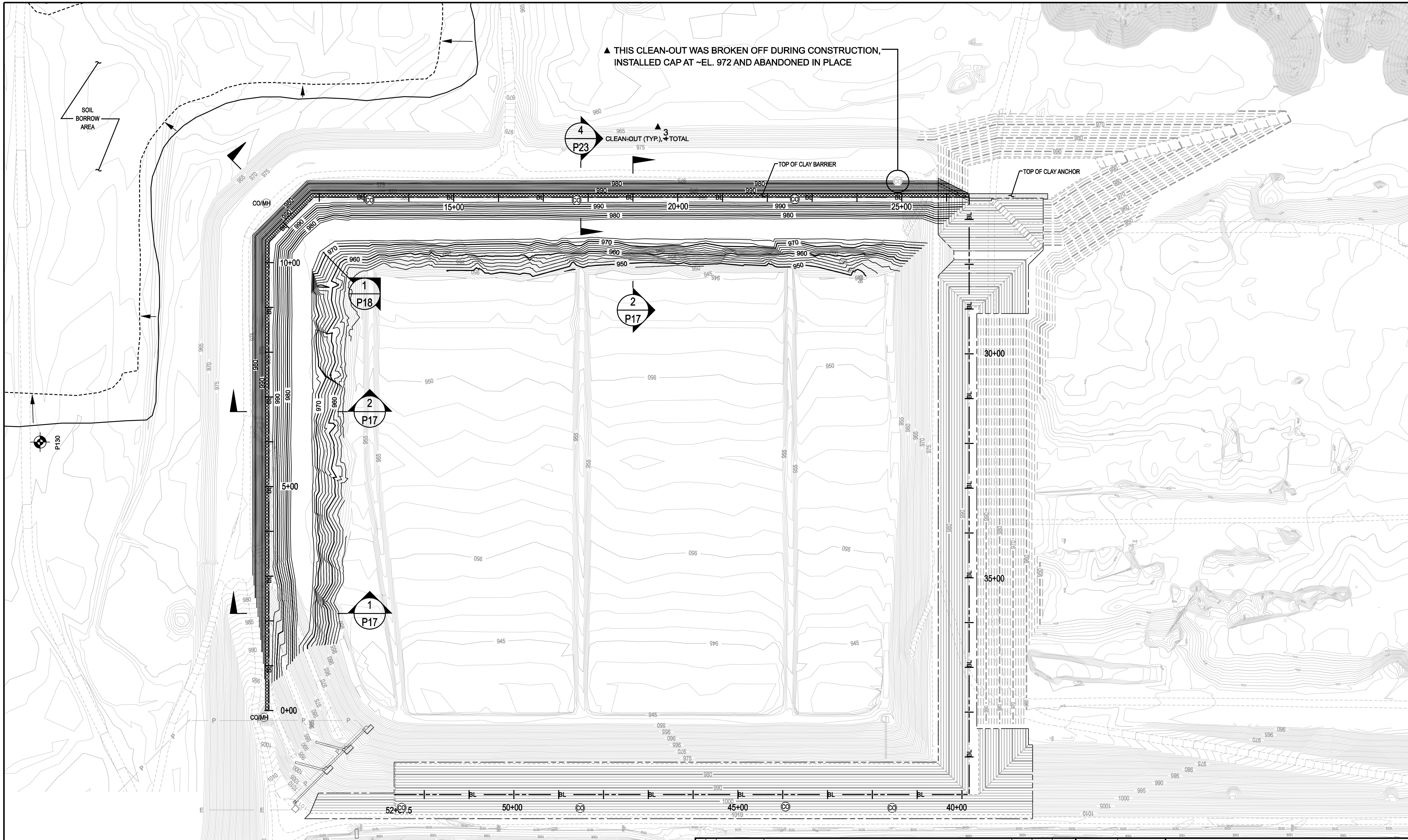

▲ THIS SHEET WAS NOT PART OF THE CONSTRUCTION DRAWINGS, BUT WAS ADDED TO THE RECORD DRAWINGS TO SHOW THE AS-BUILT CONTOURS FOR THE NORTH & EAST UPSTREAM DIKES, REVISED BORROW AREA LIMITS, AND RE-LOCATED CLEAN-OUT LOCATIONS.

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

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5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE | DGN'R | CHK'D | APP'D & CERT. | FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
CLAY BARRIER/BOTTOM ASH GRADING PLAN
AS-BUILT GRADES

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-106
Sheet No. P6A
REV ▲

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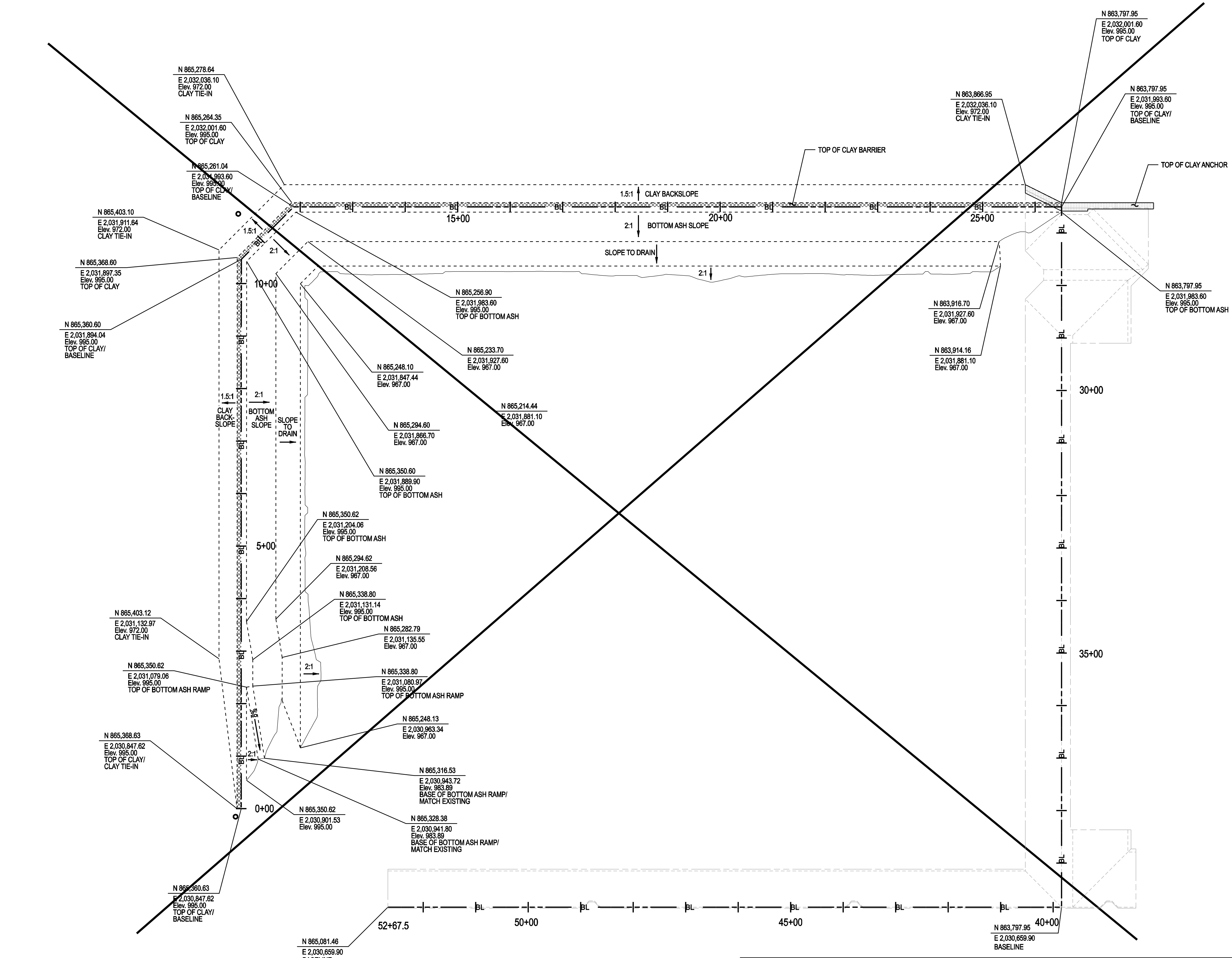

▲ SURVEY DATA INSIDE BASELINE DOES NOT REFLECT AS-BUILT CONDITIONS, REFER TO SHEET P6A FOR AS-BUILT CONTOURS FOR UPSTREAM DIKES.

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
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Date 02-25-09 Reg. No. 24730

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5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE | DGN'R | CHK'D | APP'D & CERT. | FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
CLAY BARRIER/BOTTOM ASH SURVEY DATA

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-107
REV ▲
Sheet No. P7

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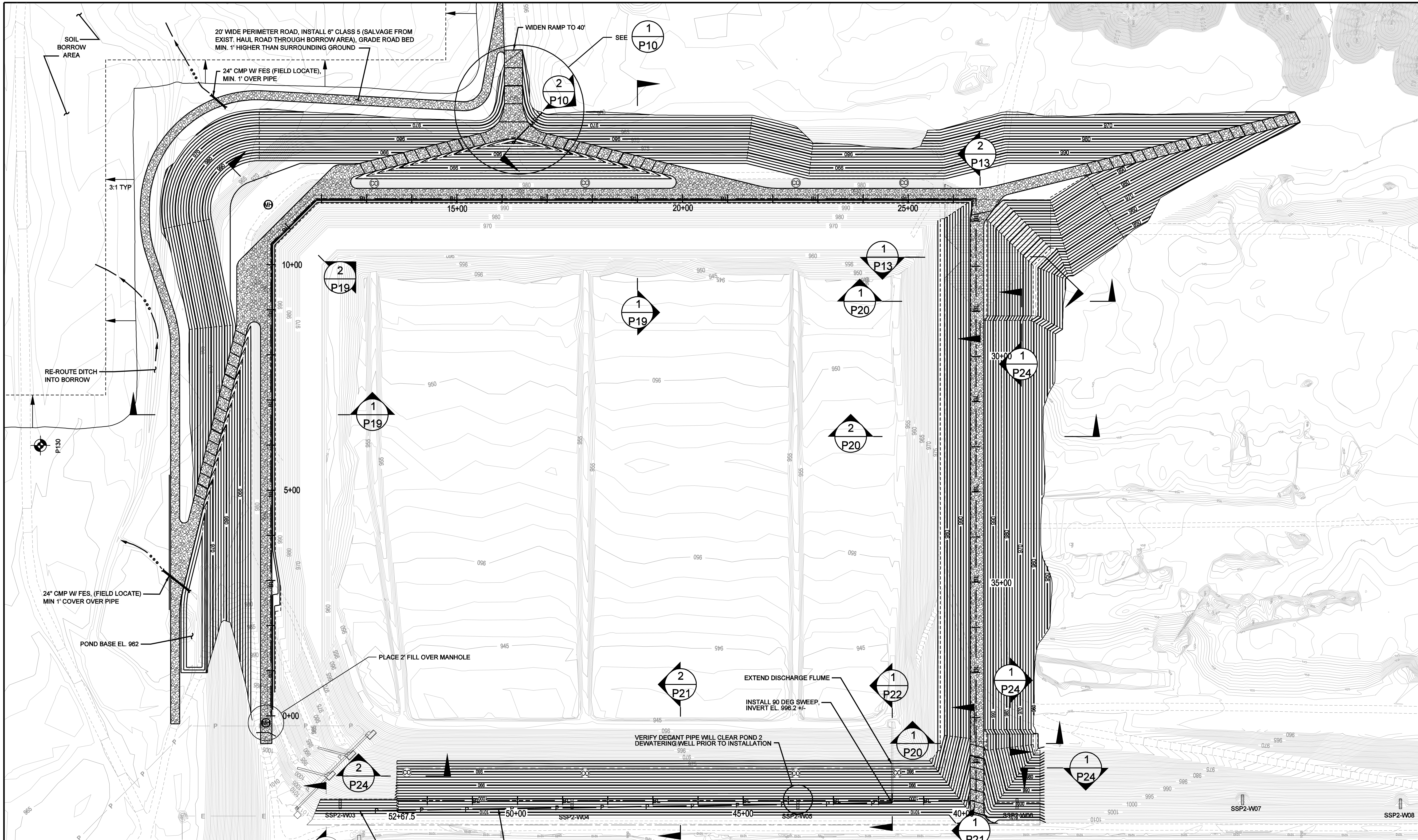

NOTE: EXISTING TOPOGRAPHY COMPILED FROM A VARIETY OF SOURCES AND DATES, CONTOURS OUTSIDE OF THE PROJECT AREAS MAY NOT REFLECT THE CURRENT CONDITIONS.

▲ THIS SHEET SHOWS DESIGN CONTOURS AND ORIGINAL BORROW AREA LIMITS, REFER TO SHEET P8A FOR AS-BUILT FINISHED GRADES.

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
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Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc. 5300 Highway 12 Maple Plain, MN 55359 ph 952-346-3900 fx 952-346-3901

DWN | DATE | DGN'R | CHK'D | APP'D & CERT. | FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
FINISHED GRADING PLAN AND ROAD LAYOUT

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. | Sheet No. P8 | REV ▲

Plotted: 2/25/2009, 4:41:50 PM
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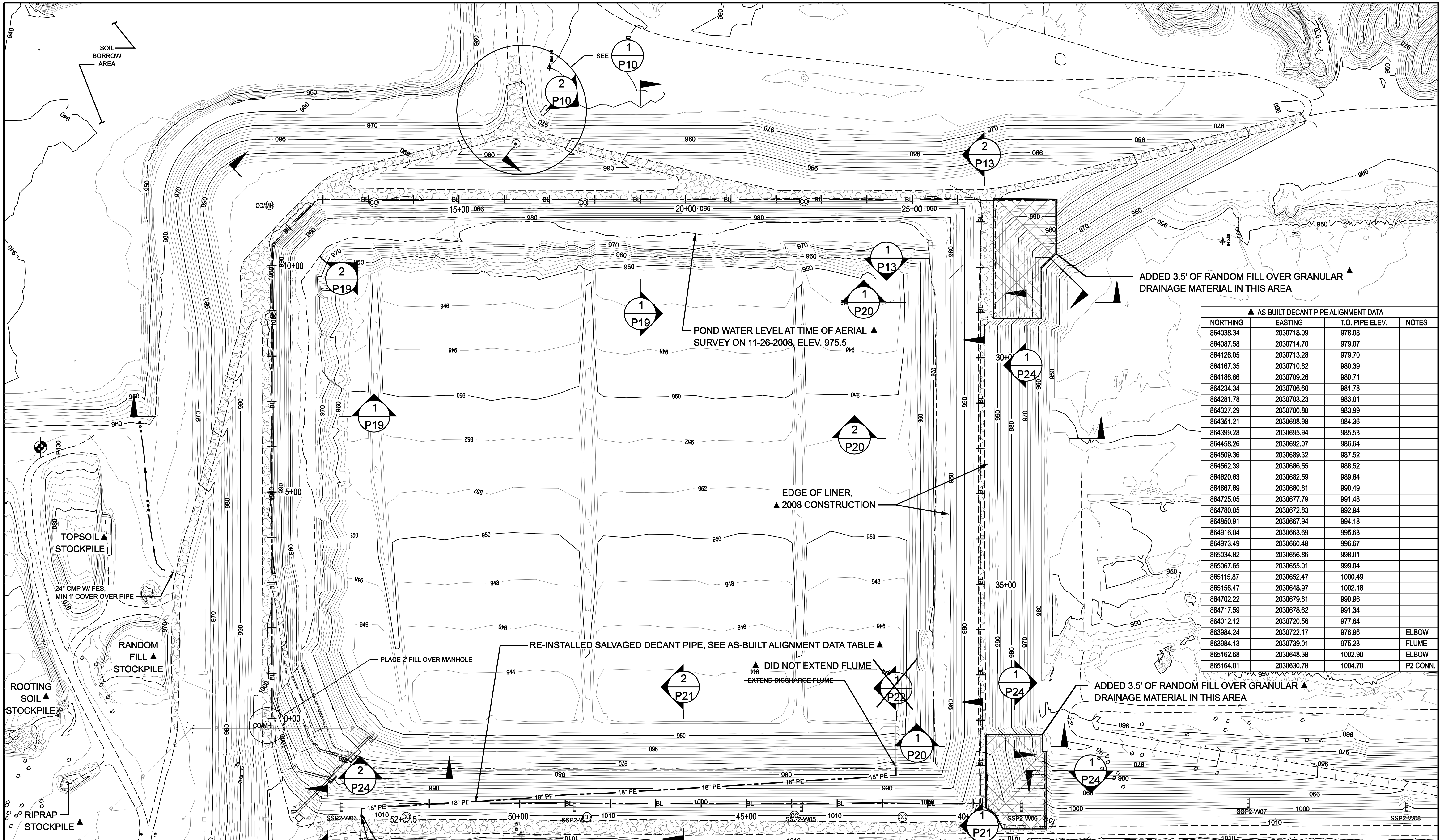

▲ AS-BUILT DECANT PIPE ALIGNMENT DATA			
NORTHING	EASTING	T.O. PIPE ELEV.	NOTES
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864087.58	2030714.70	979.07	
864126.05	2030713.28	979.70	
864167.35	2030710.82	980.39	
864186.66	2030709.26	980.71	
864234.34	2030706.60	981.78	
864281.78	2030703.23	983.01	
864327.29	2030700.88	983.99	
864351.21	2030698.98	984.36	
864399.28	2030695.94	985.53	
864458.26	2030692.07	986.64	
864509.36	2030689.32	987.52	
864562.39	2030686.55	988.52	
864620.63	2030682.59	989.64	
864667.89	2030680.81	990.49	
864725.05	2030677.79	991.48	
864780.85	2030672.83	992.94	
864850.91	2030667.94	994.18	
864916.04	2030663.69	995.63	
864973.49	2030660.48	996.67	
865034.82	2030656.86	998.01	
865067.65	2030655.01	999.04	
865115.87	2030652.47	1000.49	
865156.47	2030648.97	1002.18	
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864717.59	2030678.62	991.34	
864012.12	2030720.56	977.64	
863984.24	2030722.17	976.96	ELBOW
863984.13	2030739.01	975.23	FLUME
865162.68	2030648.38	1002.90	ELBOW
865164.01	2030630.78	1004.70	P2 CONN.

GROUND CONTOURS FROM NOV. 26, 2008 ▲ AERIAL SURVEY BY AERO-METRIC

UNDERWATER CONTOURS OF NORTH & ▲ EAST EMBANKMENTS FROM NOV. 5, 2008 POST-CONSTRUCTION SURVEY BY ULTEIG

UNDERWATER CONTOURS OF POND BASE ▲ FROM 2004 CONSTRUCTION SURVEYS

▲ THIS SHEET WAS NOT PART OF THE CONSTRUCTION DRAWINGS, BUT WAS ADDED TO THE RECORD DRAWINGS TO SHOW THE FINSHED AS-BUILT CONTOURS.

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Signature

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Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
FINISHED GRADING PLAN AND ROAD LAYOUT
AS-BUILT GRADES

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-108 | REV ▲
Sheet No. P8A

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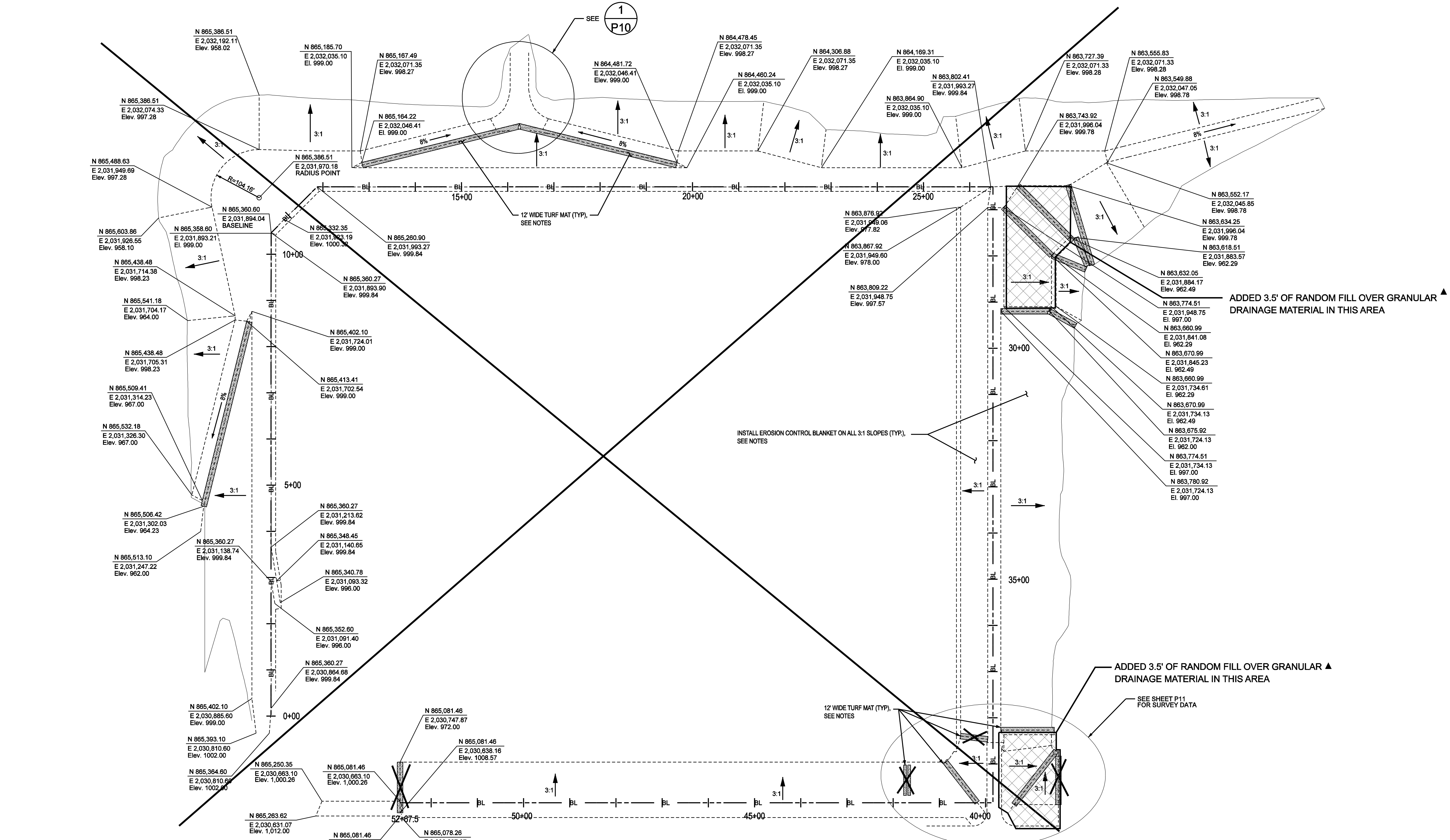

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▲ SURVEY DATA MAY NOT REFLECT AS-BUILT CONDITIONS, REFER TO SHEET P8A FOR AS-BUILT CONTOURS OF FINISHED GRADES.

NOTES:

INSTALL TURF MAT IN DITCHES AND DRAWS WHERE SHOWN ON THIS SHEET, 12 ' WIDE (TYP.)

INSTALL EROSION CONTROL BLANKET ON ALL 3:1 INTERIOR AND EXTERIOR FINISHED GRADE EMBANKMENT SLOPES AND DISTURBED AREAS

0 100 200
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

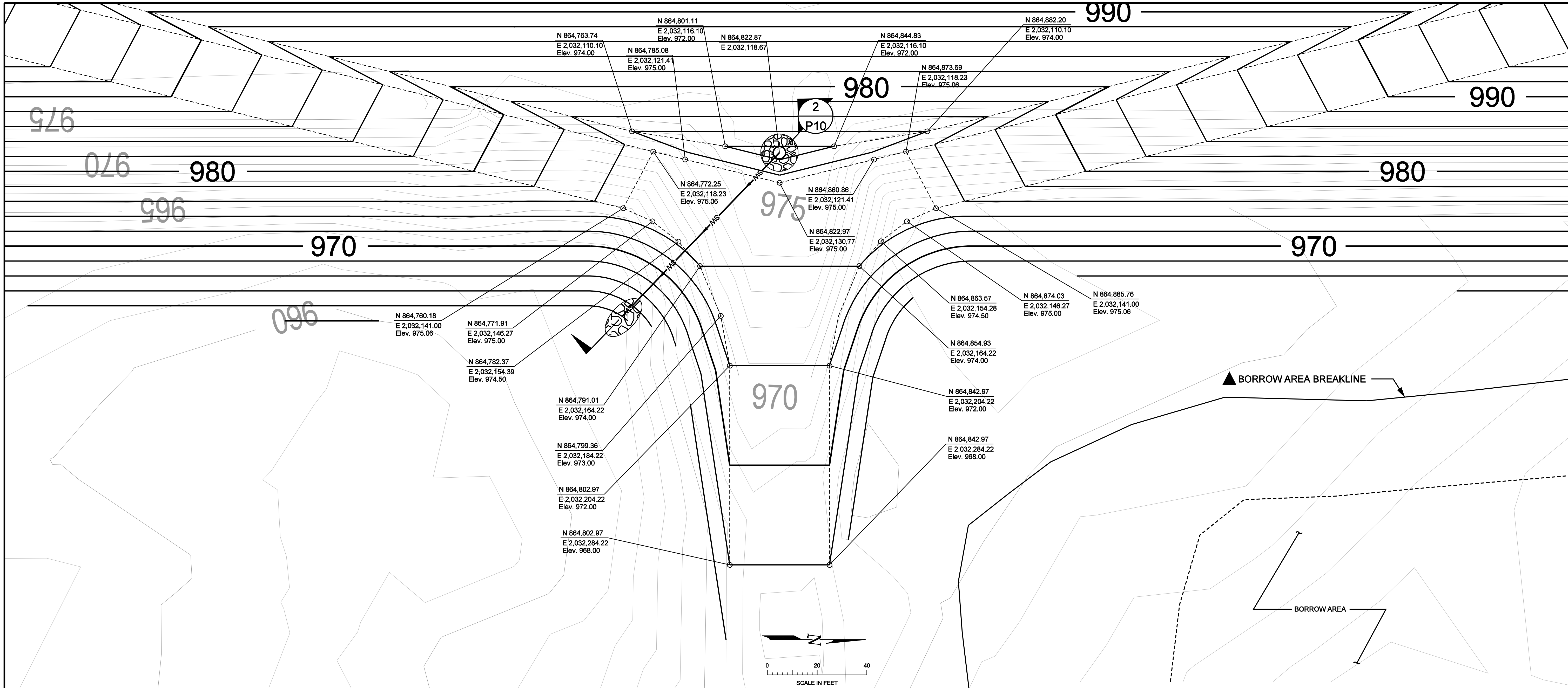
FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS

POND 3 NORTH
FINISHED GRADES SURVEY DATA AND EROSION CONTROL PLAN

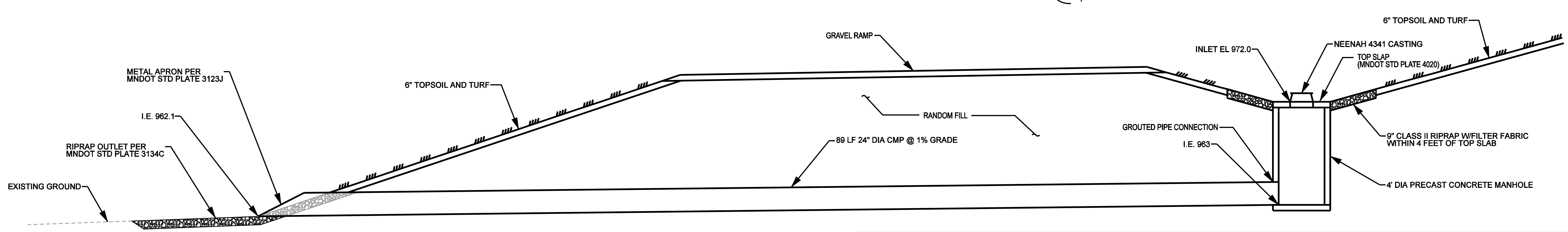
NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-109
Sheet No. P9
REV ▲



PLAN: EAST RAMP GRADING DETAILS AND STORM SEWER 1 / P8, P9

▲ THIS SECTION SHOWS DESIGN CONTOURS, REFER TO SHEET P8A FOR AS-BUILT FINISHED GRADES.



SECTION: CATCH BASIN AND CULVERT 2 / P8, P10

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
EAST RAMP PLAN

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-110
Sheet No. P10
REV ▲

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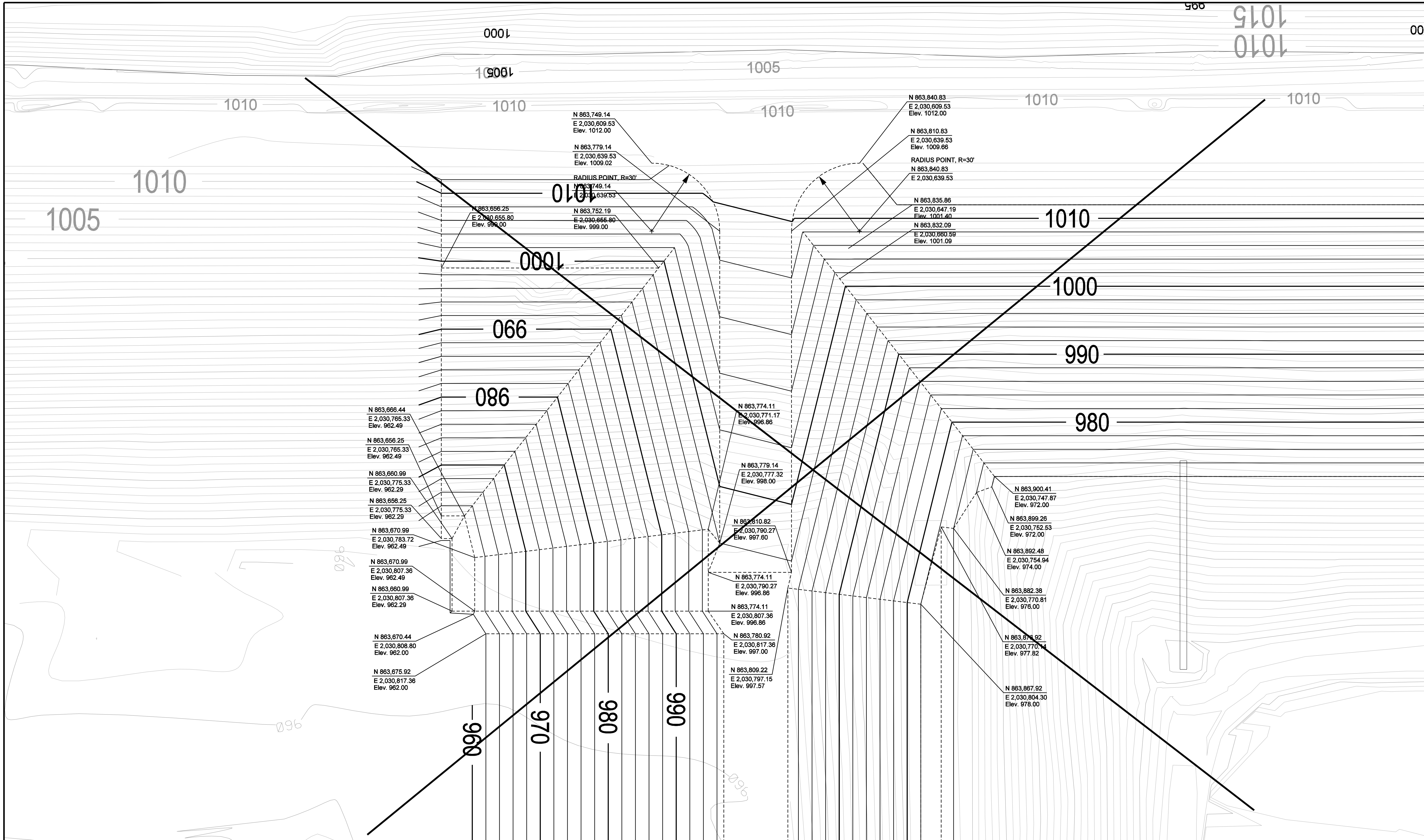

▲ SURVEY DATA AND CONTOURS DO NOT REFLECT AS-BUILT CONDITIONS, REFER TO SHEET P6A FOR AS-BUILT CONTOURS.

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0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
SOUTHWEST RAMP PLAN

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-111 | REV ▲
Sheet No. P11

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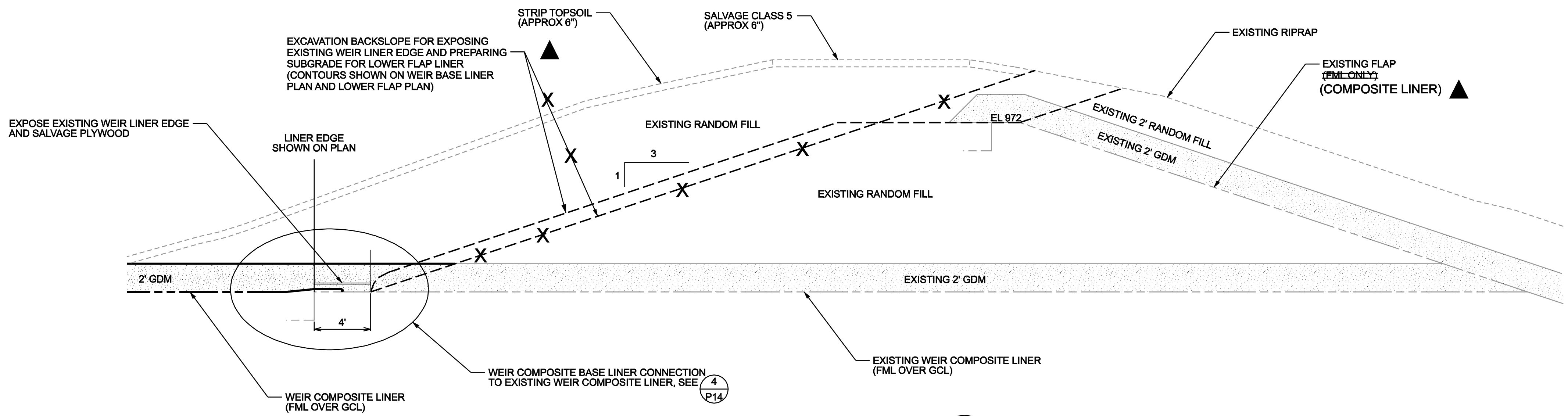

SECTION: WEIR BASE LINER AT EL 960 (1 / P4)

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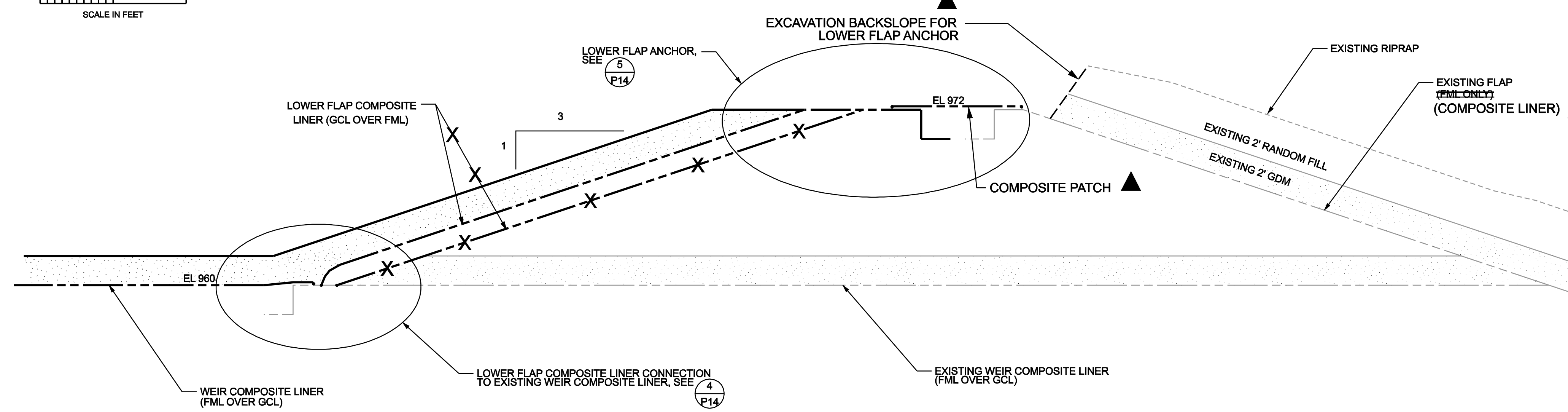
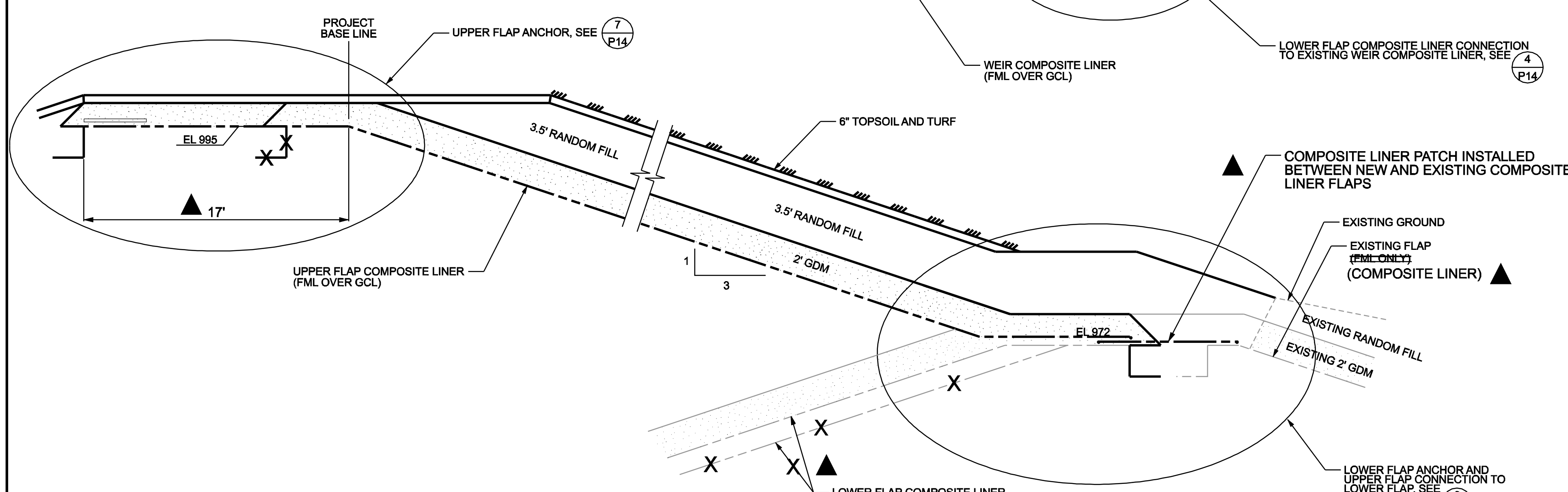


SECTION: LOWER FLAP IN WEIR (2 / P5)

0 5 10
SCALE IN FEET



SECTION: UPPER FLAP IN WEIR (3 / P5)

0 5 10
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
WEIR SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-112
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REV ▲

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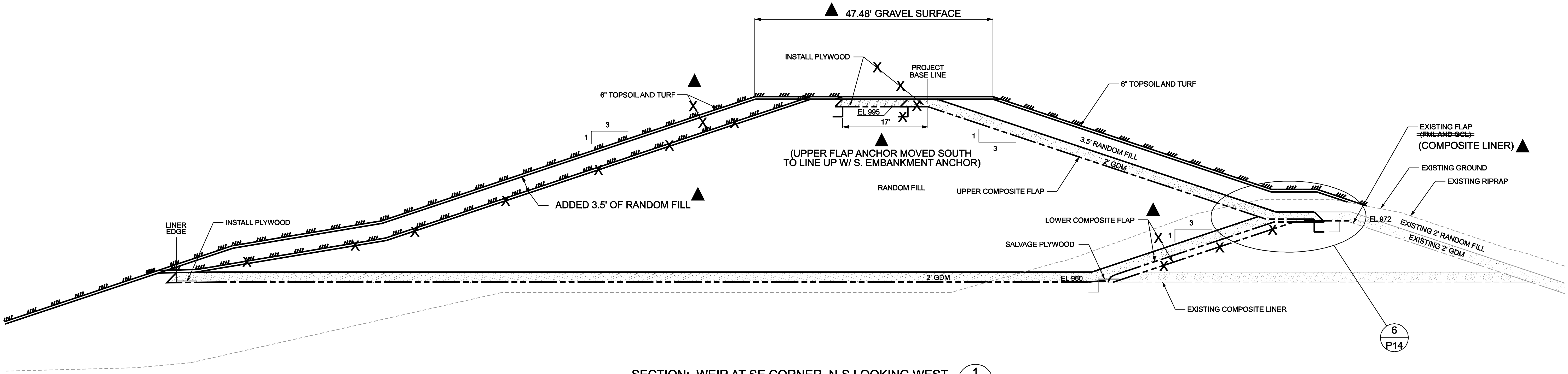

SECTION: WEIR AT SE CORNER, N-S LOOKING WEST 1 P8

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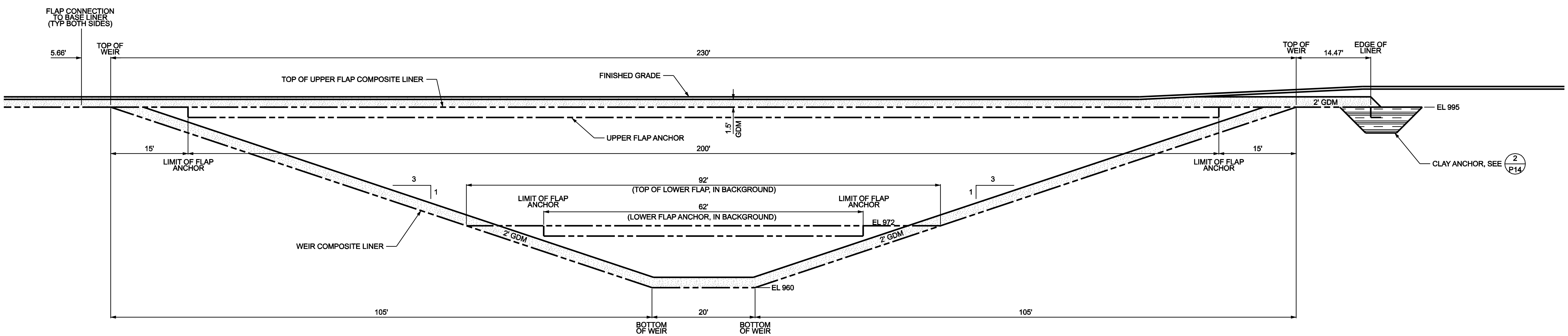
SCALE IN FEET



SECTION: WEIR AT SE CORNER, E-W LOOKING NORTH 2 P8

0 10 20
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

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Date 02-25-09 Reg. No. 24730

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5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
WEIR SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-113
Sheet No. P13
REV ▲

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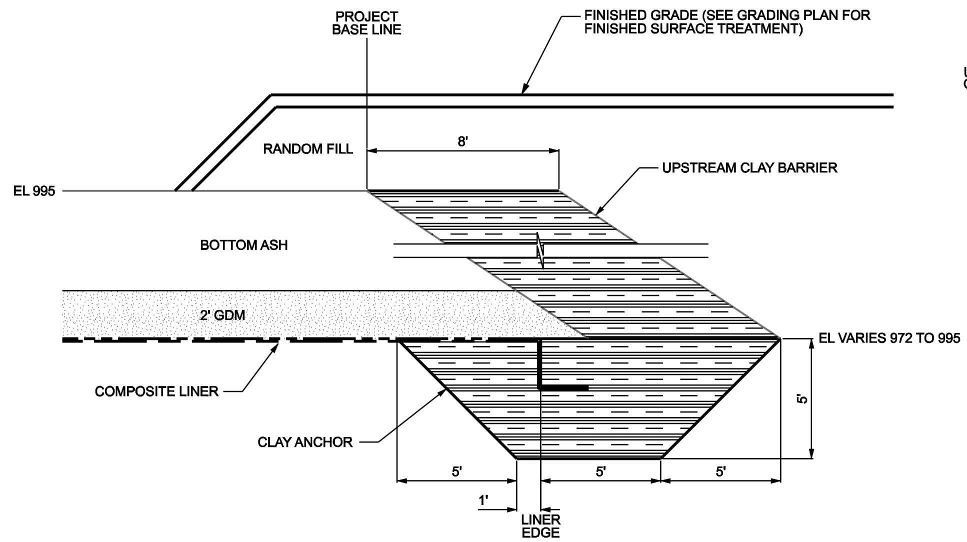
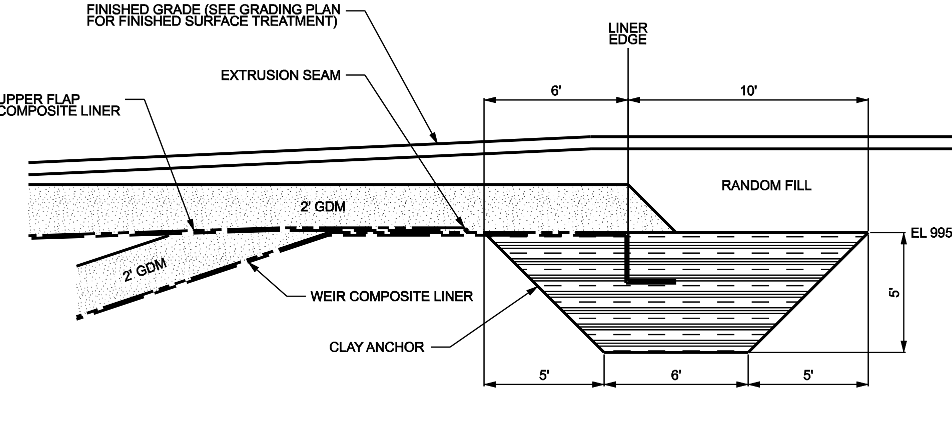


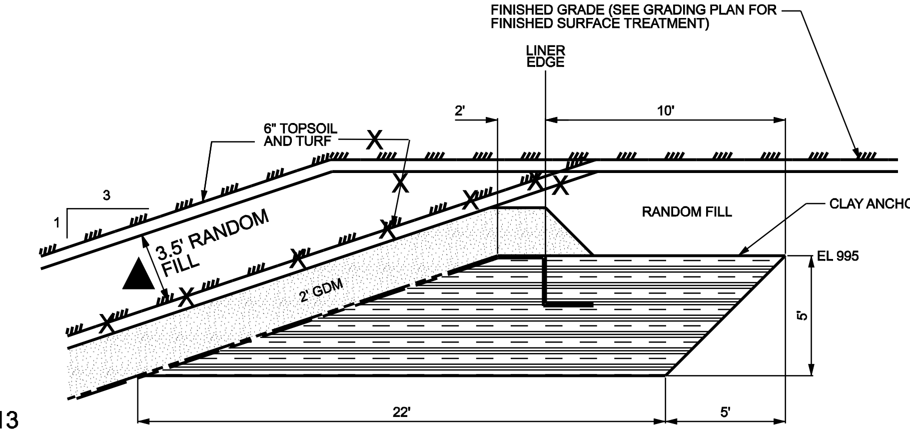
SECTION: CLAY ANCHOR AT SE CORNER TRANSITION FROM EL 972 TO 995 (1 / P2, P4)

0 4 8 SCALE IN FEET



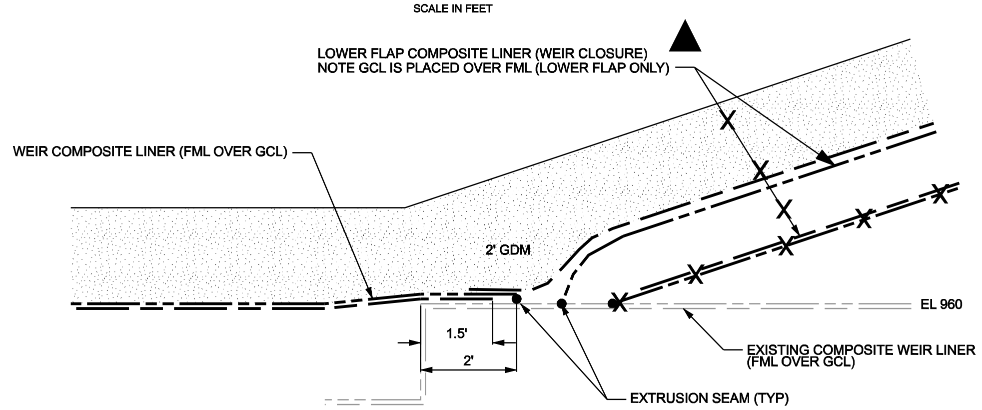
SECTION: CLAY ANCHOR AT SE CORNER, TOP OF SLOPE ALONG WEIR (2 / P2, P4, P13)

0 4 8 SCALE IN FEET



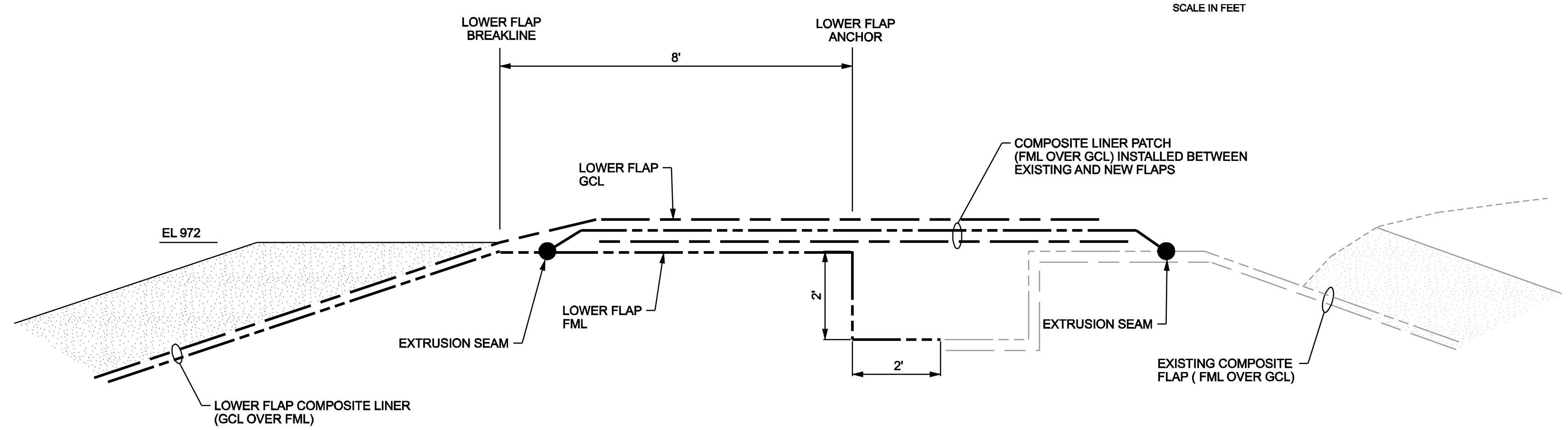
SECTION: CLAY ANCHOR AT SE CORNER, TOP OF SLOPE SOUTH OF WEIR (3 / P2, P4)

0 4 8 SCALE IN FEET



SECTION: WEIR LINER AND LOWER FLAP CONNECTION TO EXISTING WEIR LINER (4 / P12)

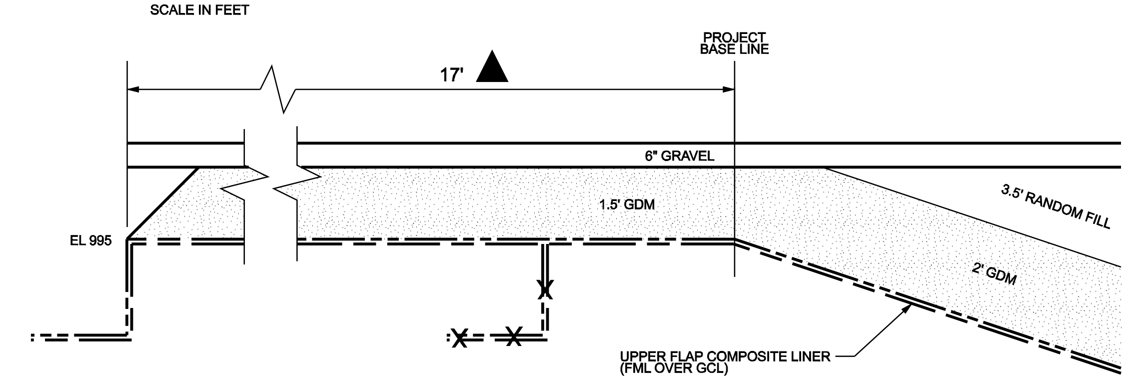
0 2 4 SCALE IN FEET



SECTION: LOWER FLAP ANCHOR AT EL 972 (5 / P12)

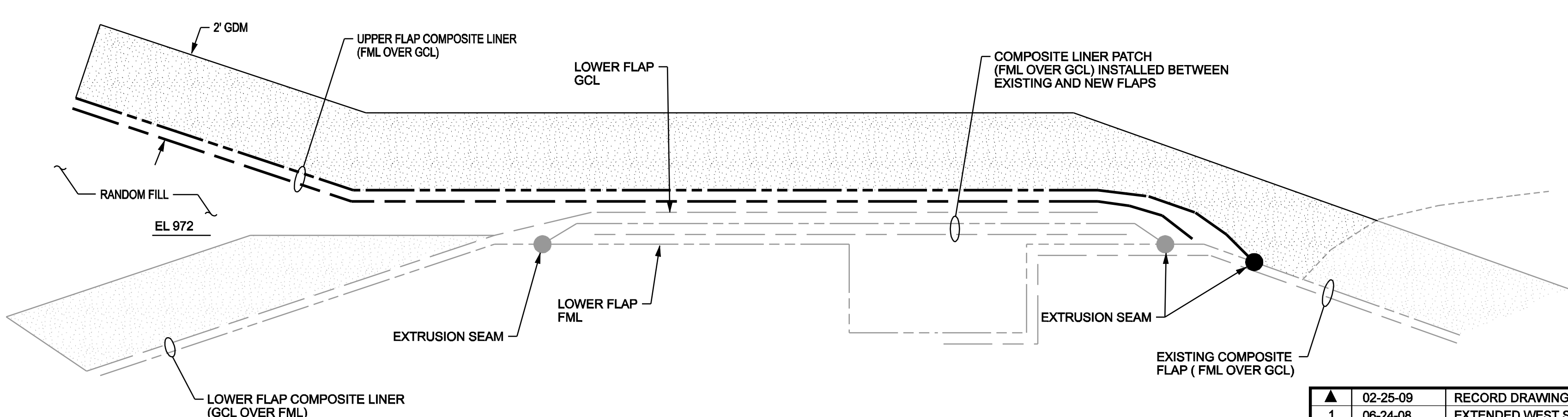
REDRAWN TO REPRESENT AS-BUILT CONDITIONS

0 2 4 SCALE IN FEET



SECTION: UPPER FLAP ANCHOR (7 / P12)

0 2 4 SCALE IN FEET



SECTION: UPPER FLAP CONNECTION TO LOWER FLAP AT EL 972 (6 / P12)

REDRAWN TO REPRESENT AS-BUILT CONDITIONS

0 2 4 SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE | DGN'R | CHK'D | APP'D & CERT. | FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
CLAY ANCHOR AND WEIR SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-114 REV ▲
Sheet No. P14

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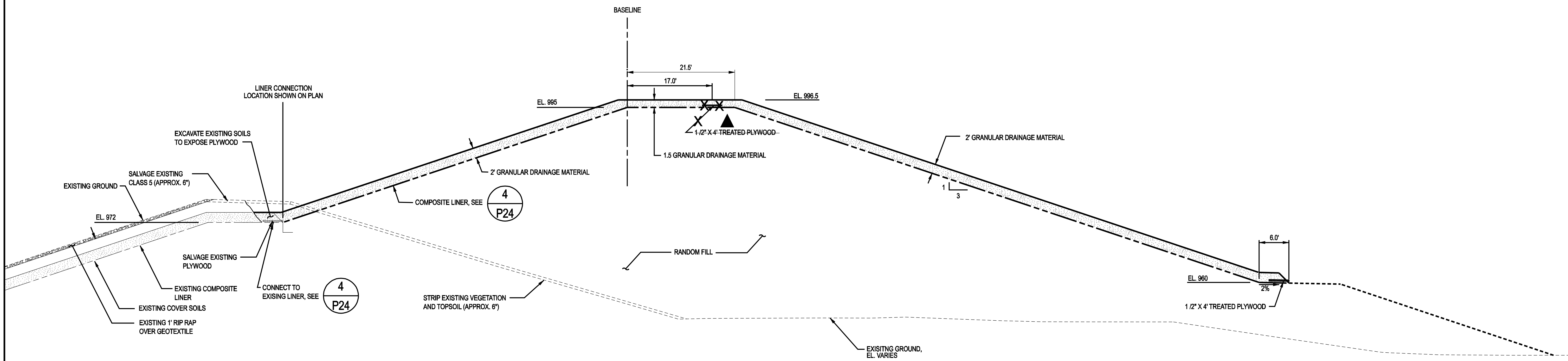

SECTION: SOUTH EMBANKMENT, STA 28+90 TO 29+05 AND 38+35 TO 38+70 (1 / P2,P4)

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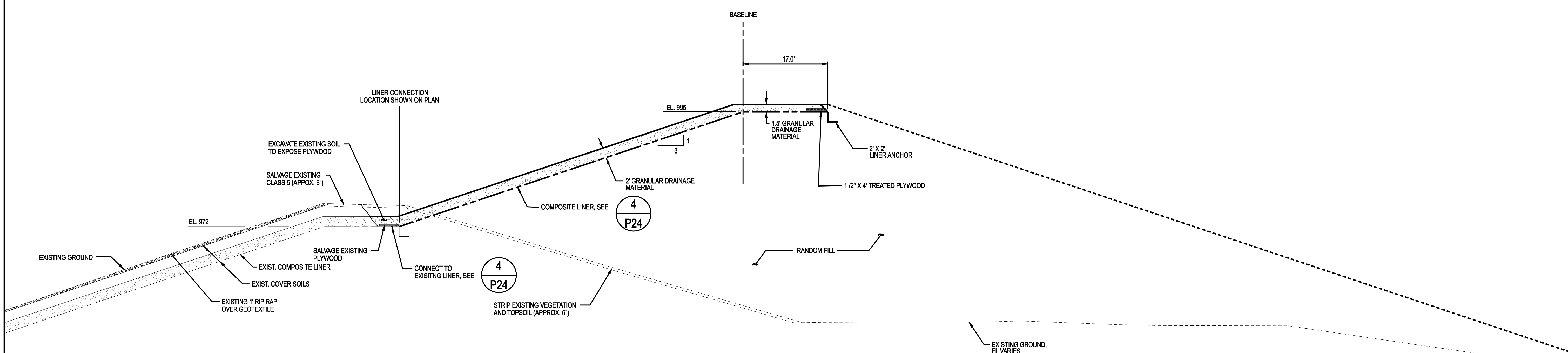

SECTION: SOUTH EMBANKMENT, STA 29+05 TO 38+35 (2 / P2,P4)

0 10 20
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
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1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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fx 952-346-3901

DWN | DATE | DGN'R | CHK'D | APP'D & CERT. | FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
LINER SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-115
Sheet No. P15
REV ▲

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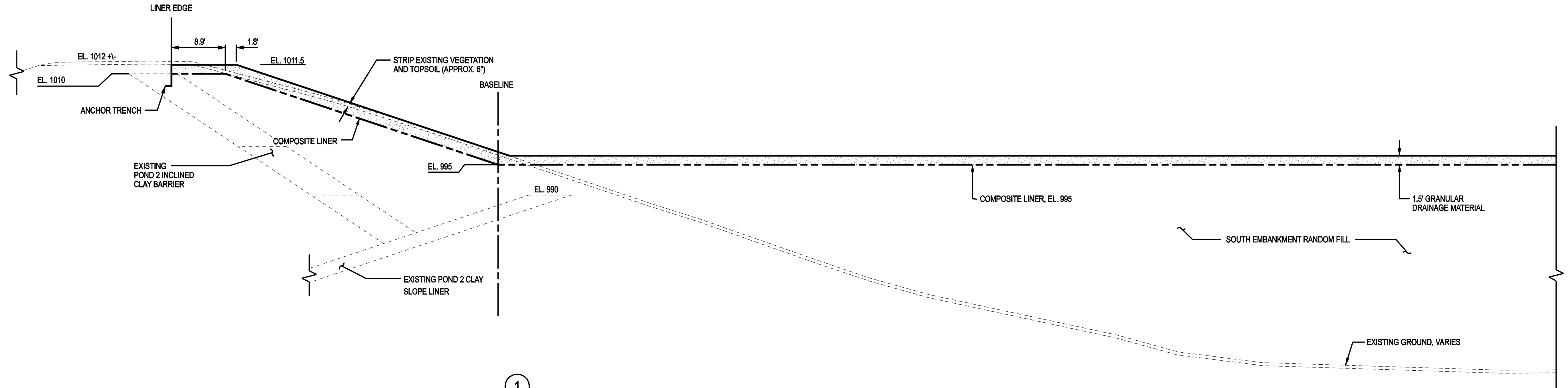

1 SECTION: SOUTH EMBANKMENT CONNECTION TO POND 2 1/P2

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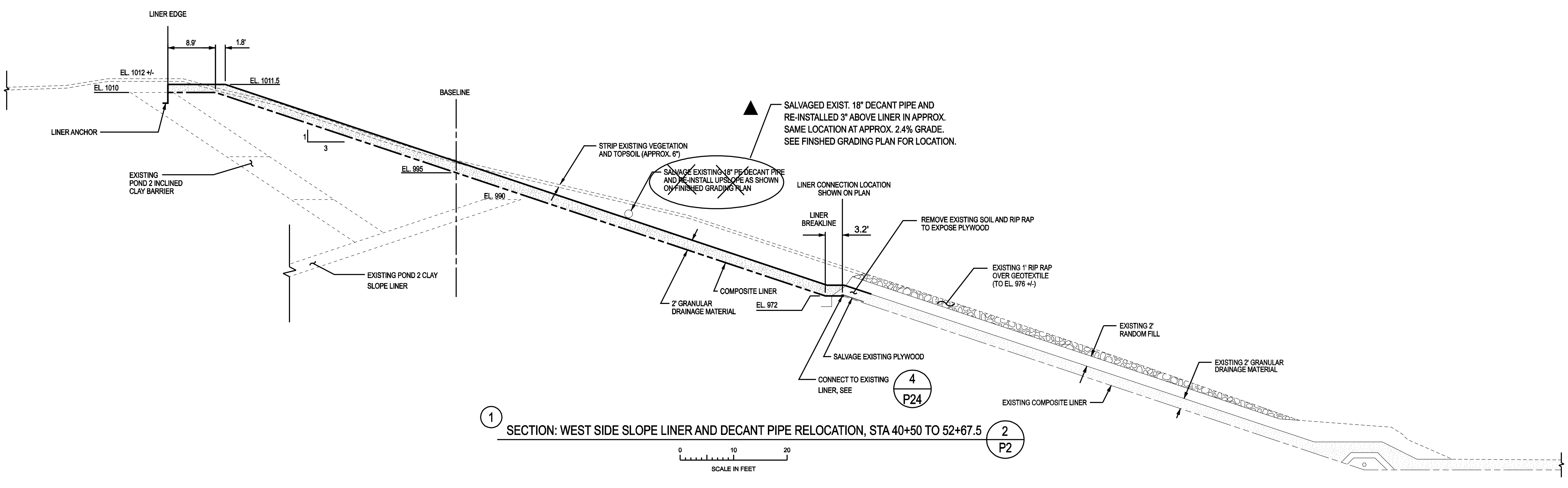

1 SECTION: WEST SIDE SLOPE LINER AND DECANT PIPE RELOCATION, STA 40+50 TO 52+67.5 2/P2

0 10 20
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
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DWN DATE
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APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
LINER SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-116
Sheet No. P16
REV ▲

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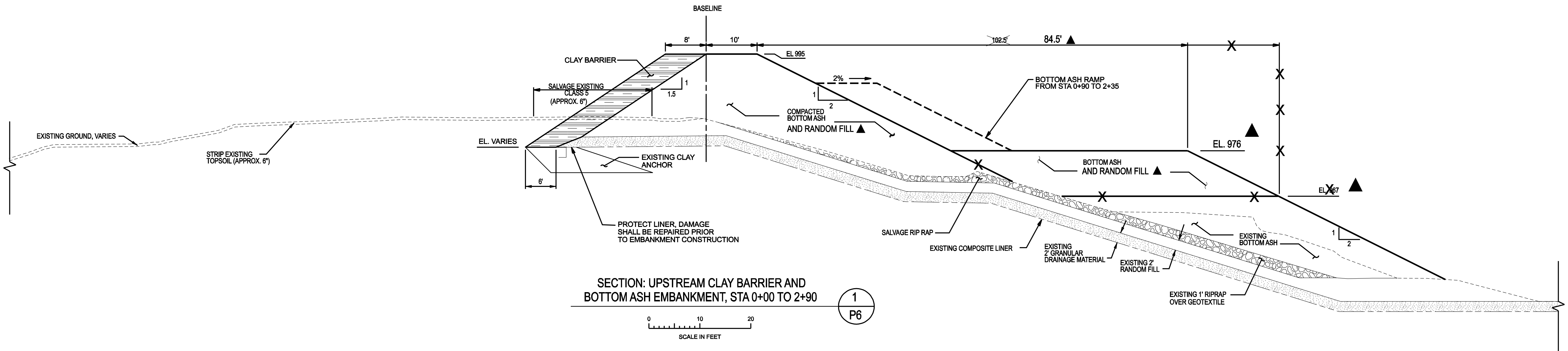

SECTION: UPSTREAM CLAY BARRIER AND BOTTOM ASH EMBANKMENT, STA 0+00 TO 2+90 — 1 / P6

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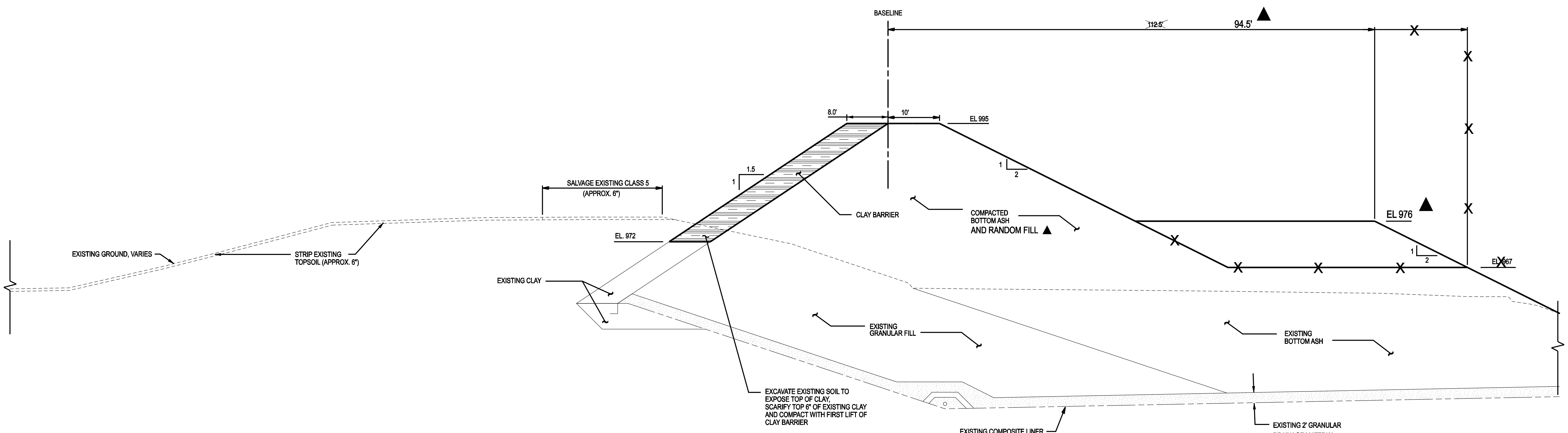

SECTION: UPSTREAM CLAY BARRIER AND BOTTOM ASH EMBANKMENT, STA 2+90 TO 26+50 — 2 / P6

0 10 20
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REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
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fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
CLAY BARRIER AND BOTTOM ASH SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-117
Sheet No. P17
REV ▲

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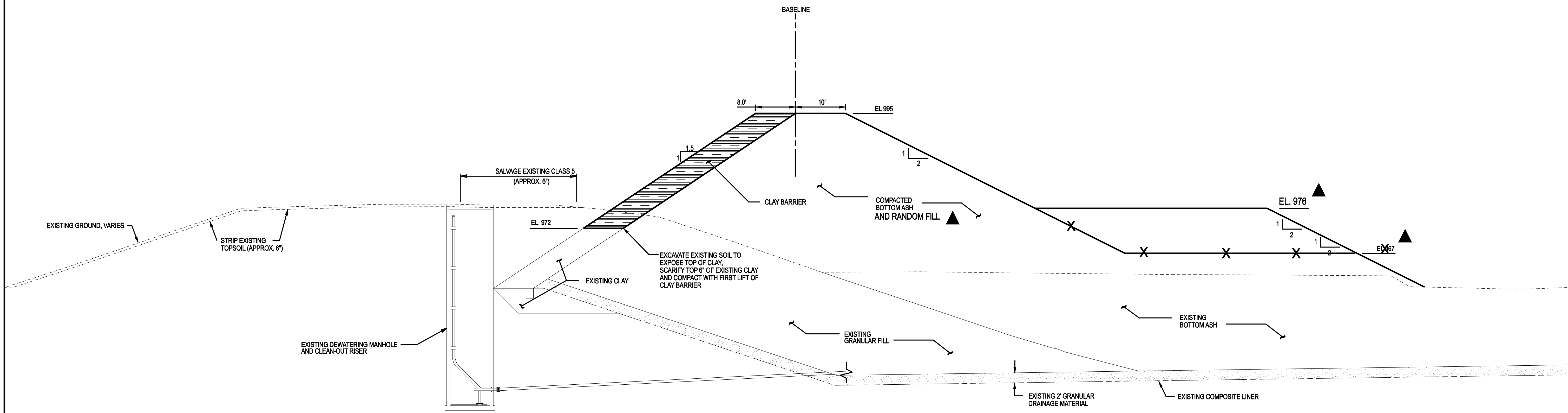


SECTION: UPSTREAM CLAY BARRIER,
AND BOTTOM ASH EMBANKMENT AT DEWATERING MANHOLE 1 / P6

0 10 20
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name Darren S. Schwake

Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

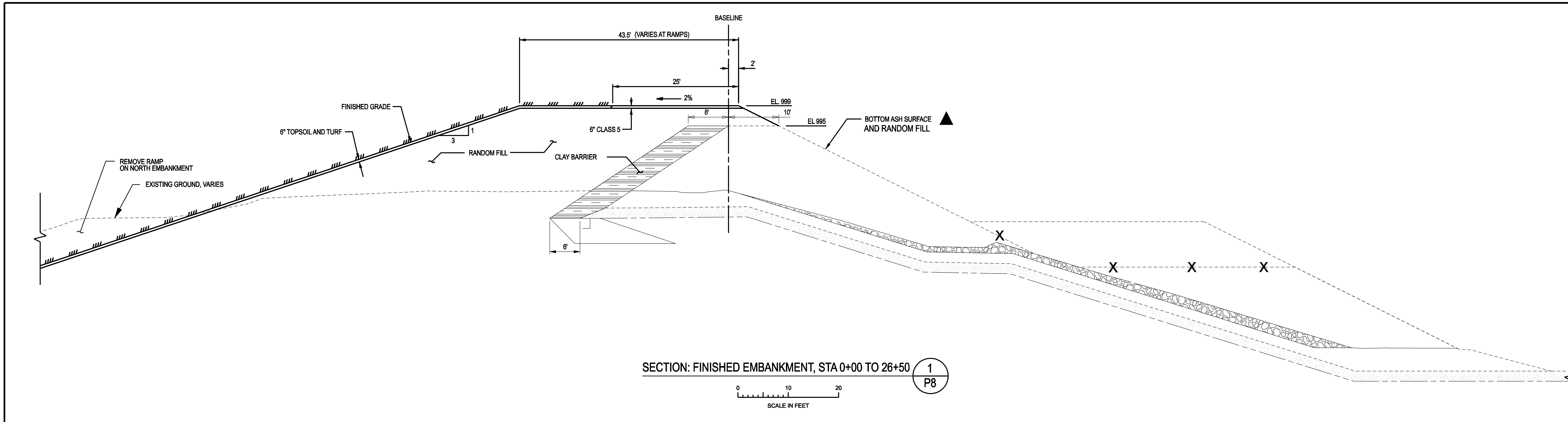
DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
CLAY BARRIER AND BOTTOM ASH SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-118
Sheet No. P18
REV ▲



SECTION: FINISHED EMBANKMENT, STA 0+00 TO 26+50 1 P8

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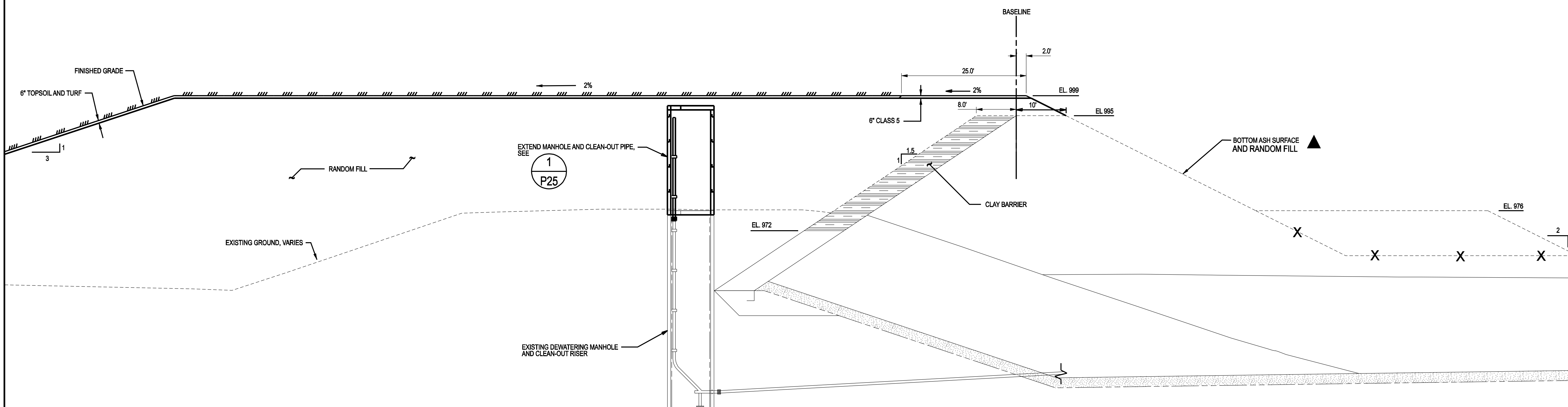

SECTION: FINISHED EMBANKMENT AND DEWATERING MANHOLE EXTENSION 2 P8

0 10 20
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
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1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
FINISHED GRADE SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-119
REV ▲
Sheet No. P19

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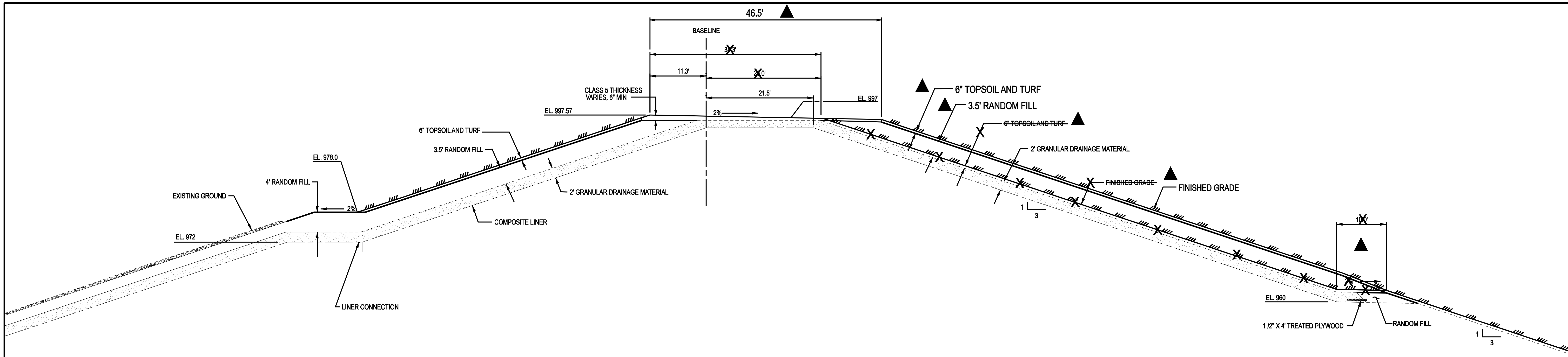
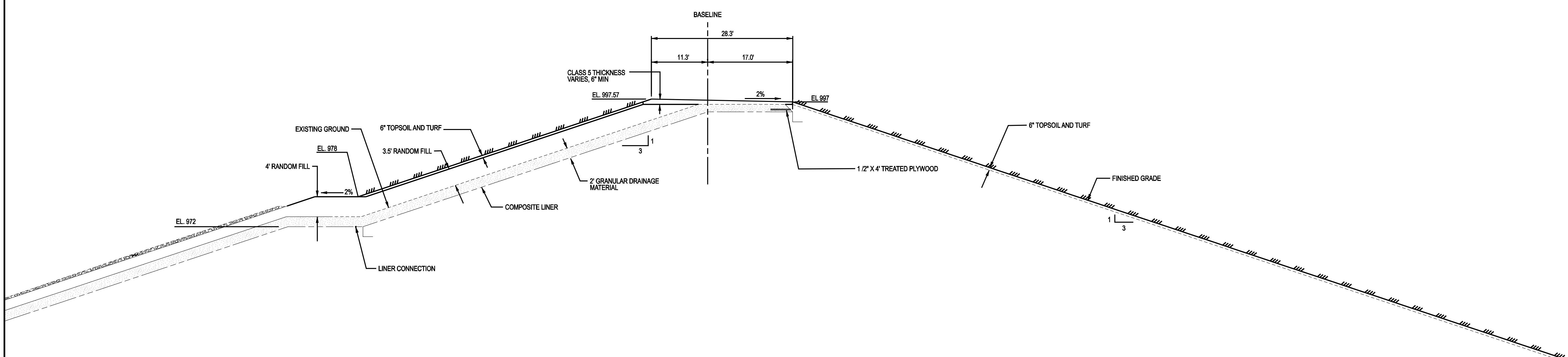


SECTION: FINISHED SOUTH EMBANKMENT, STA 28+9O TO 29+05 AND 38+35 TO 38+70

1
P8

0 10 20
SCALE IN FEET



SECTION: FINISHED SOUTH EMBANKMENT, STA 29+05 TO 38+35

2
P8

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SCALE IN FEET

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▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

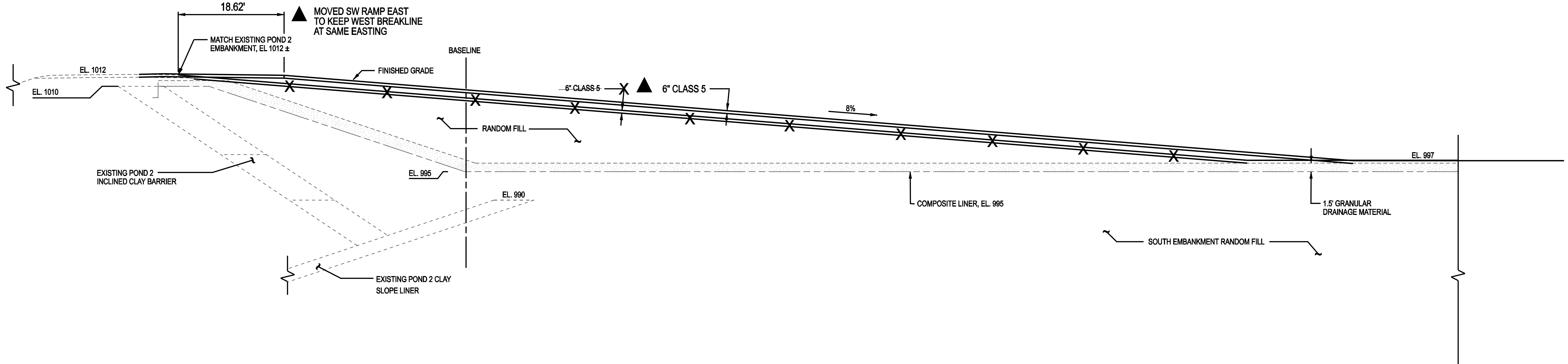
DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
FINISHED GRADES SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-120
REV ▲
Sheet No. P20



1 SECTION: SOUTHWEST RAMP 1/P8

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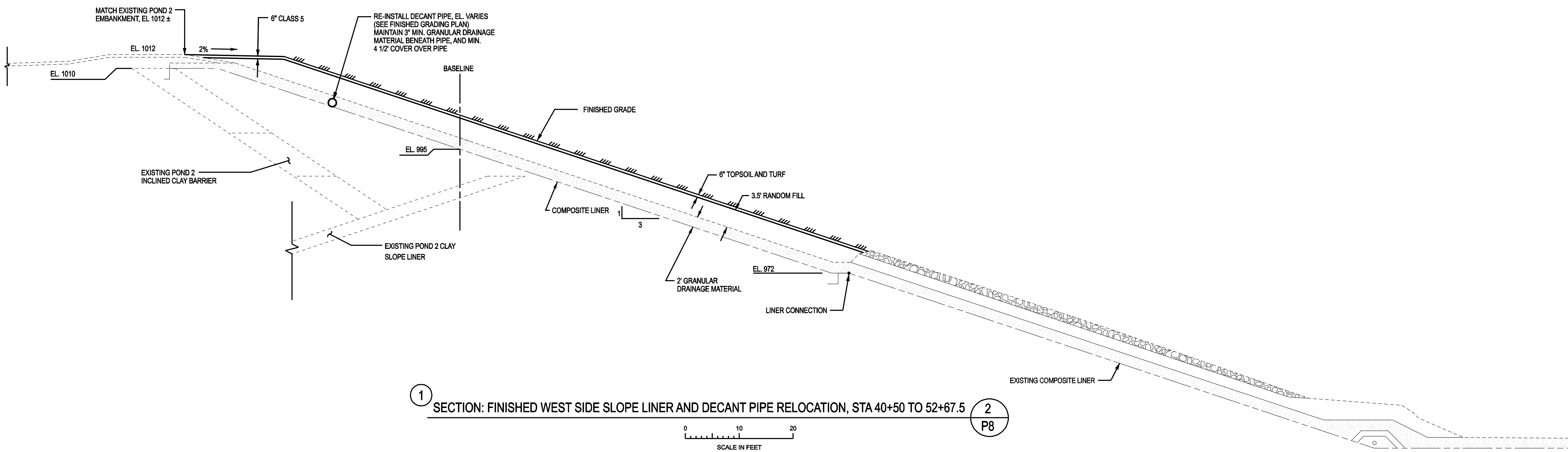
SCALE IN FEET



1 SECTION: FINISHED WEST SIDE SLOPE LINER AND DECANT PIPE RELOCATION, STA 40+50 TO 52+67.5 2/P8

0 10 20
SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Signature Darren S Schwake

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McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY:
SHERBURNE COUNTY GENERATING PLANT

TITLE:
2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
FINISHED GRADE SECTIONS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-121
Sheet No. P21
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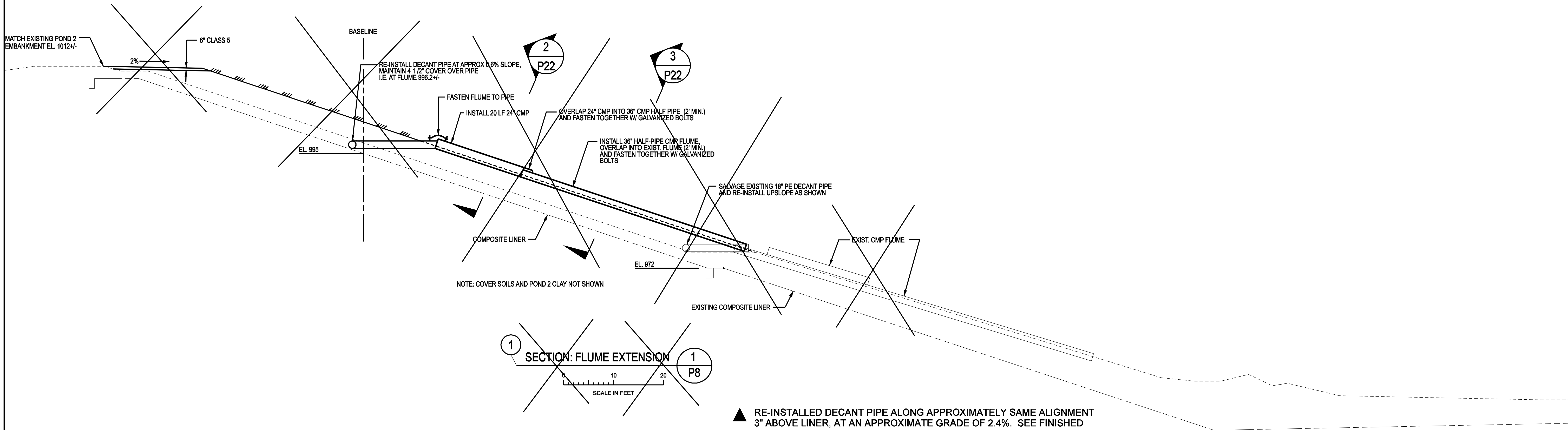
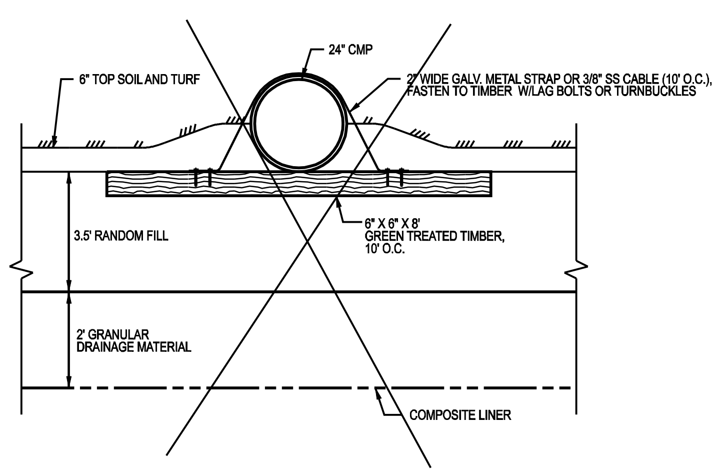


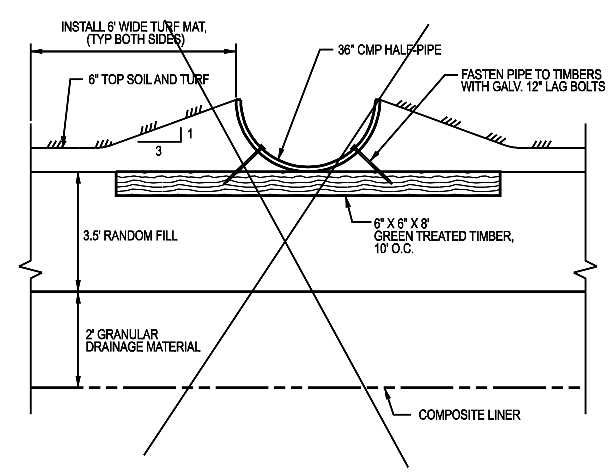
1 SECTION: FLUME EXTENSION 1 P8

▲ RE-INSTALLED DECANT PIPE ALONG APPROXIMATELY SAME ALIGNMENT 3" ABOVE LINER, AT AN APPROXIMATE GRADE OF 2.4%. SEE FINISHED GRADING PLAN AND SURVEY DATA FOR LOCATION. DID NOT EXTEND FLUME



SECTION: 24" CMP FLUME 2 P22
N.T.S.

▲ DID NOT EXTEND FLUME



SECTION: 36" CMP HALP-PIPE FLUME 3 P22
N.T.S.

▲ DID NOT EXTEND FLUME

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
DECANT PIPIE SECTIONS AND DETAILS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-122 REV ▲

Sheet No. P22

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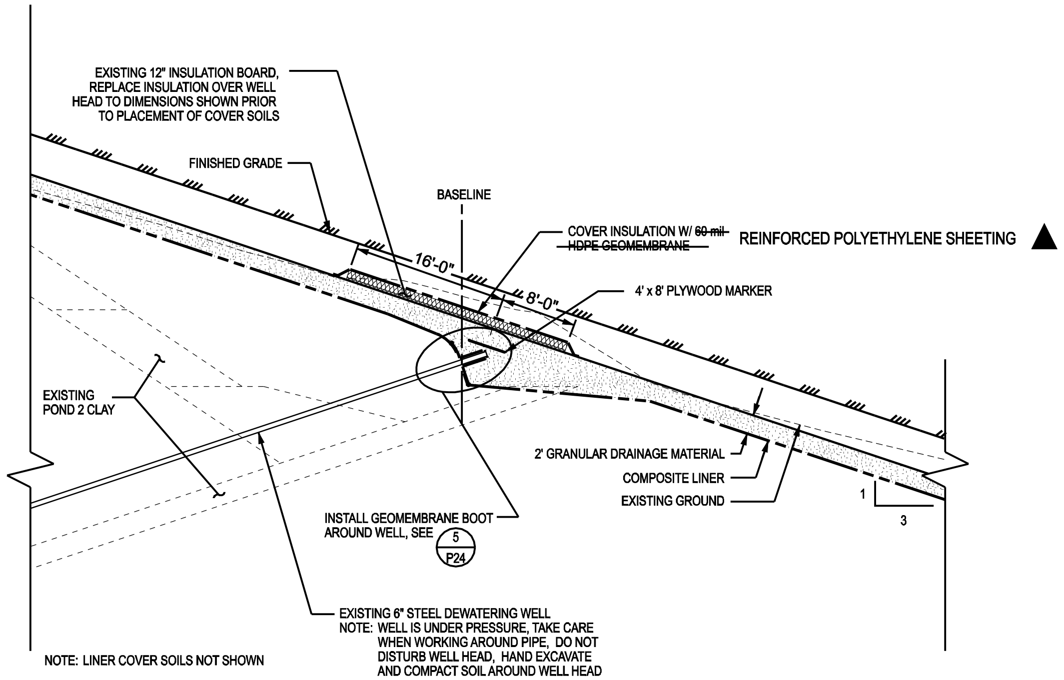

1 SECTION: POND 2 CONNECTION AT DEWATERING WELL 2 P23

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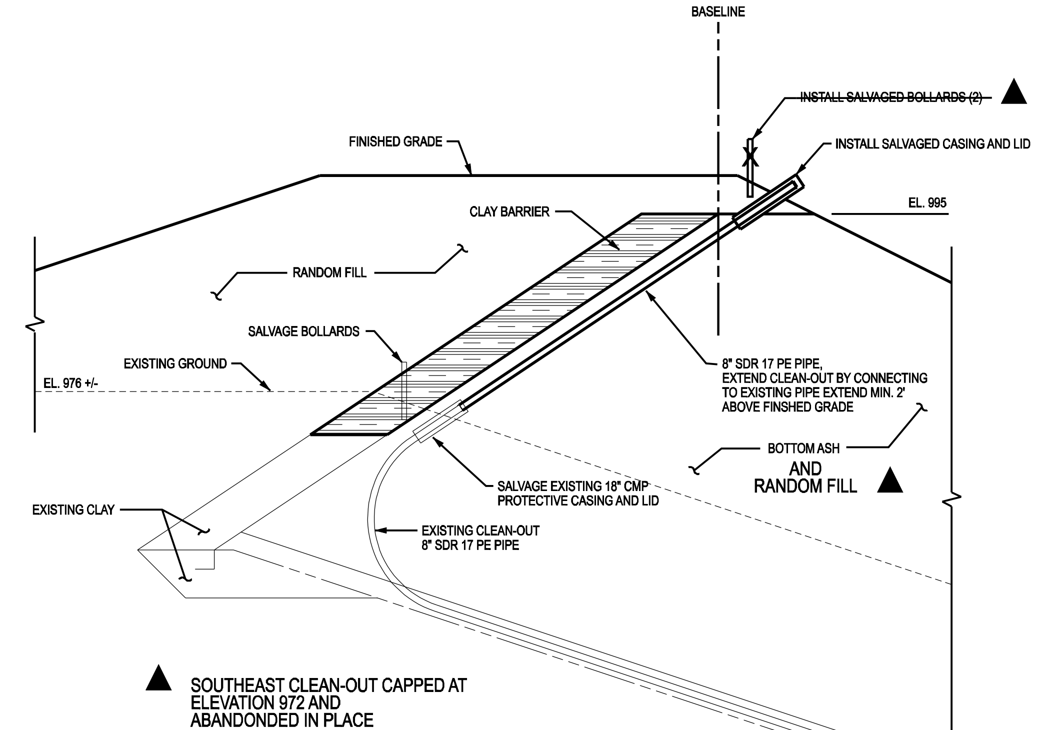
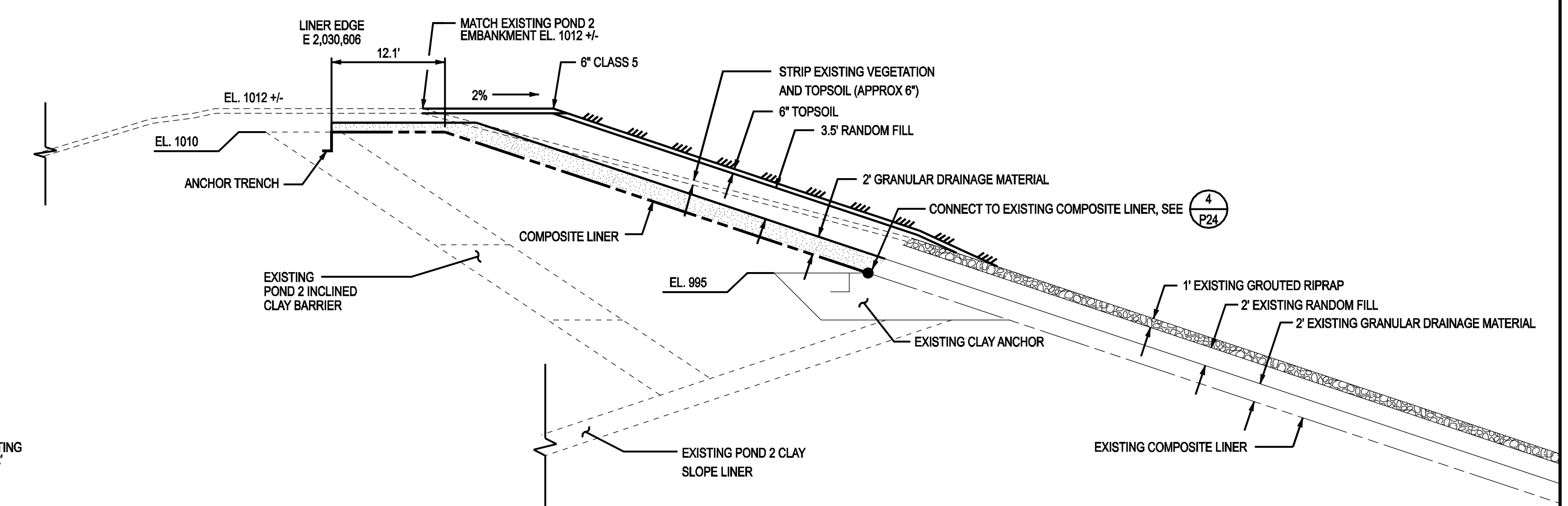


SOUTHEAST CLEAN-OUT CAPPED AT ELEVATION 972 AND ABANDONDED IN PLACE

SECTION: EAST SIDE CLEAN-OUT EXTENTION (~~4~~ 3 TOTAL) 4 P6

0 10 20 SCALE IN FEET



1 SECTION: WEST SIDESLOPE LINER EXTENSION BEYOND STA 52+67.5 (TYP) 5 P2

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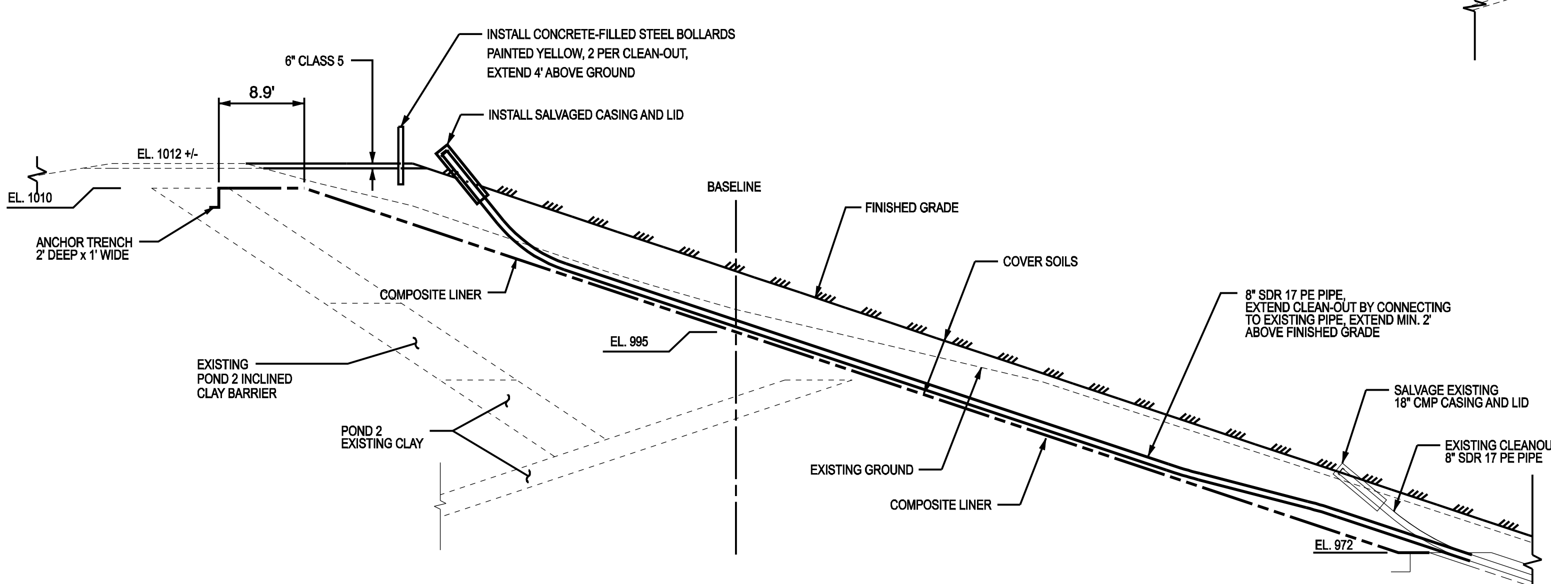

1 SECTION: WEST SIDE CLEANOUT EXTENTION (4 TOTAL) 3 P2

0 10 20 SCALE IN FEET

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Name Darren S. Schwake
Signature Darren S Schwake
Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc. 5300 Highway 12 Maple Plain, MN 55359 ph 952-346-3900 fx 952-346-3901

DWN | DATE
DGN'R | CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
DEWATERING WELLS AND CLEANOUT DETAILS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-123 | REV ▲
Sheet No. P23

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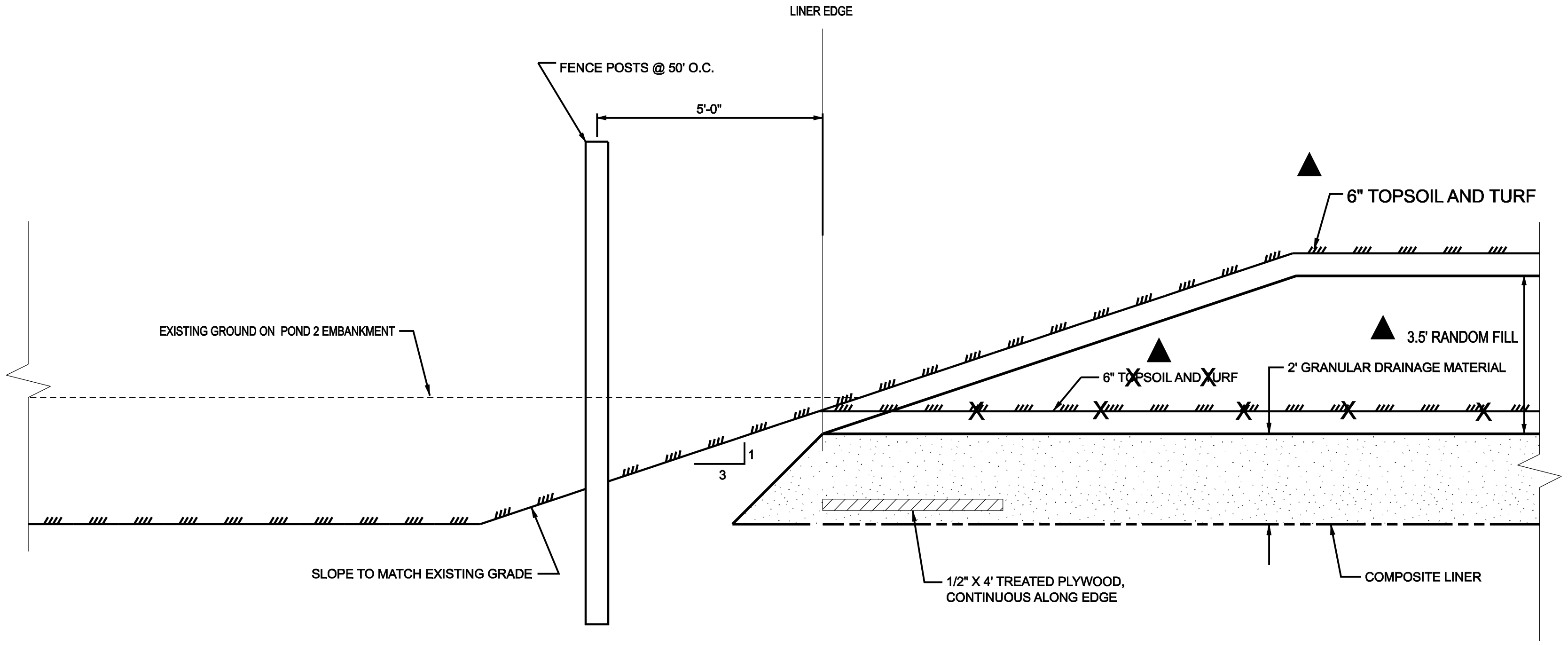

SECTION: LINER TERMINATION (1, P2, P8)

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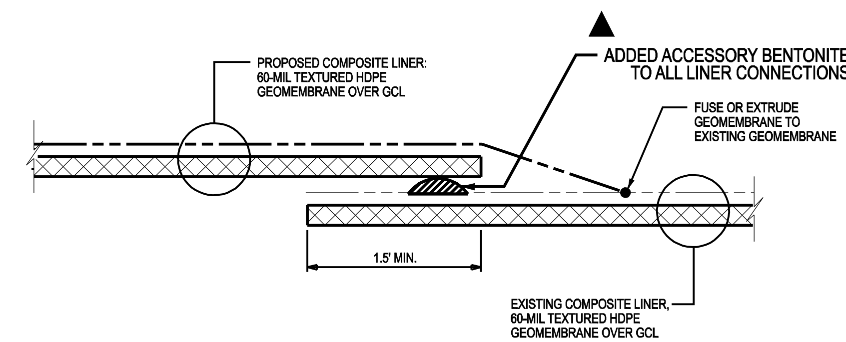

SECTION: COMPOSITE LINER AND CONNECTION TO EXISTING COMPOSITE LINER (4, P15, P16, P23, P24)

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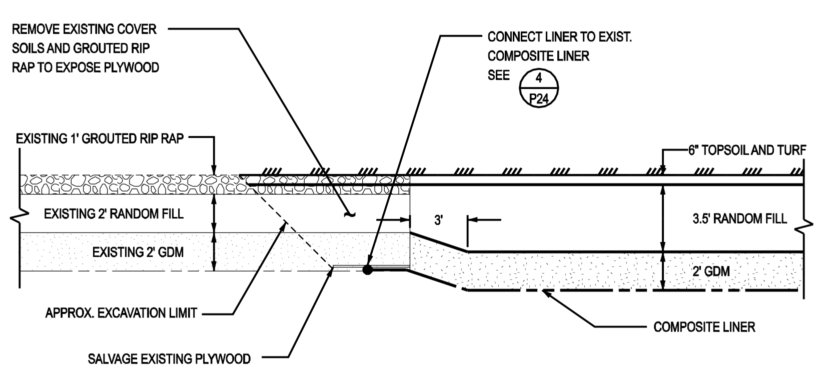

SECTION: WEST SLOPE - CONNECTION TO EXISTING LINER (2, P2, P3, P8)

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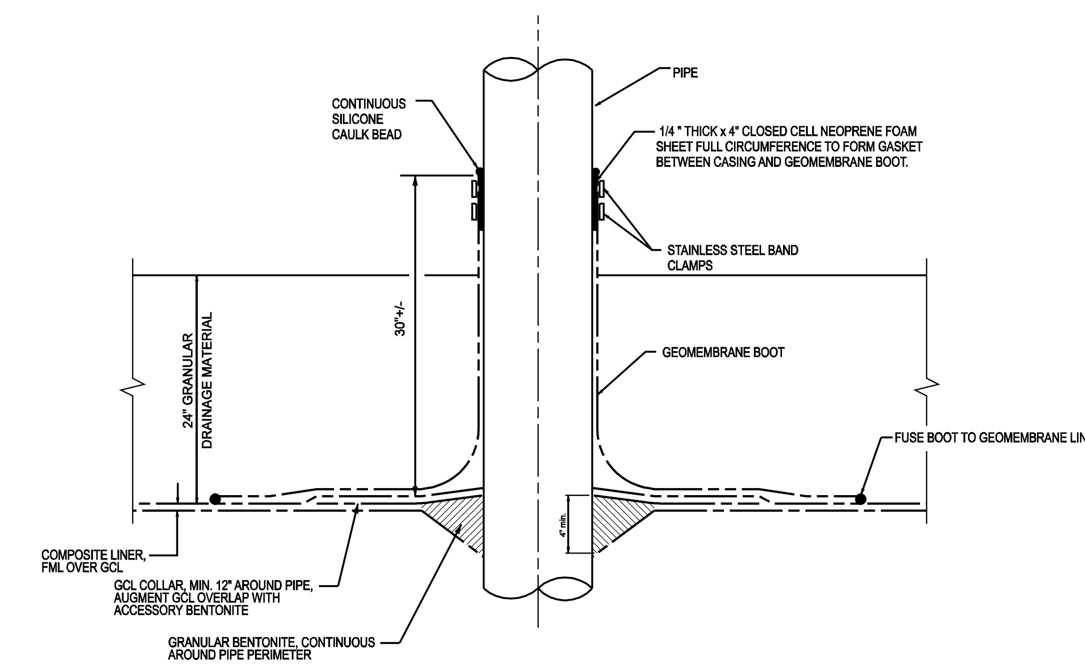

(1) DETAIL: GEOMEMBRANE BOOT AT POND 2 DEWATERING WELLS AND DECANT PIPE (5, P2, P23)

(TYP)

NOT TO SCALE

REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

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Signature Darren S Schwake

Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

FACILITY: SHERBURNE COUNTY GENERATING PLANT

TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
LINER DETAILS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-124
Sheet No. P24
REV ▲

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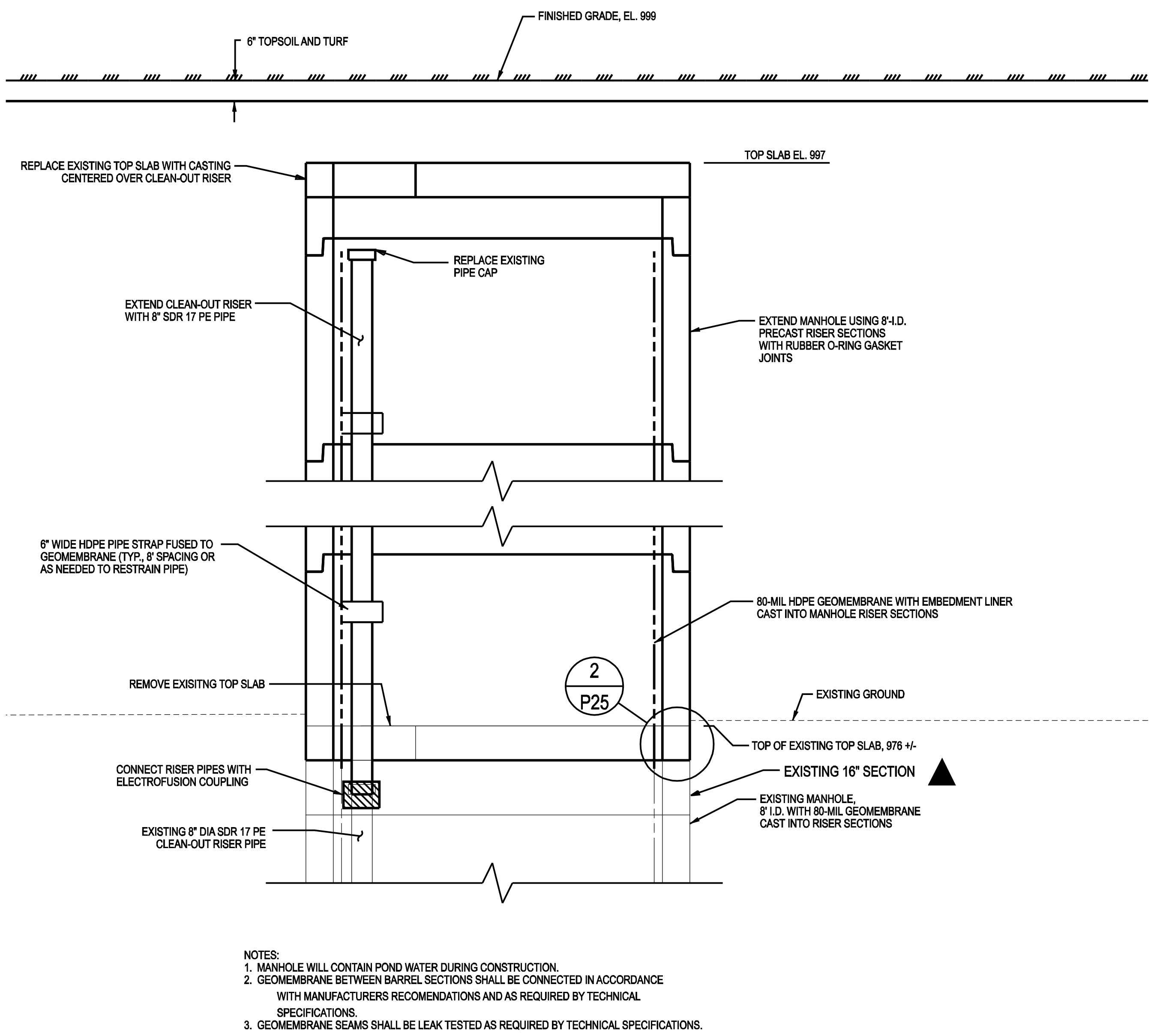
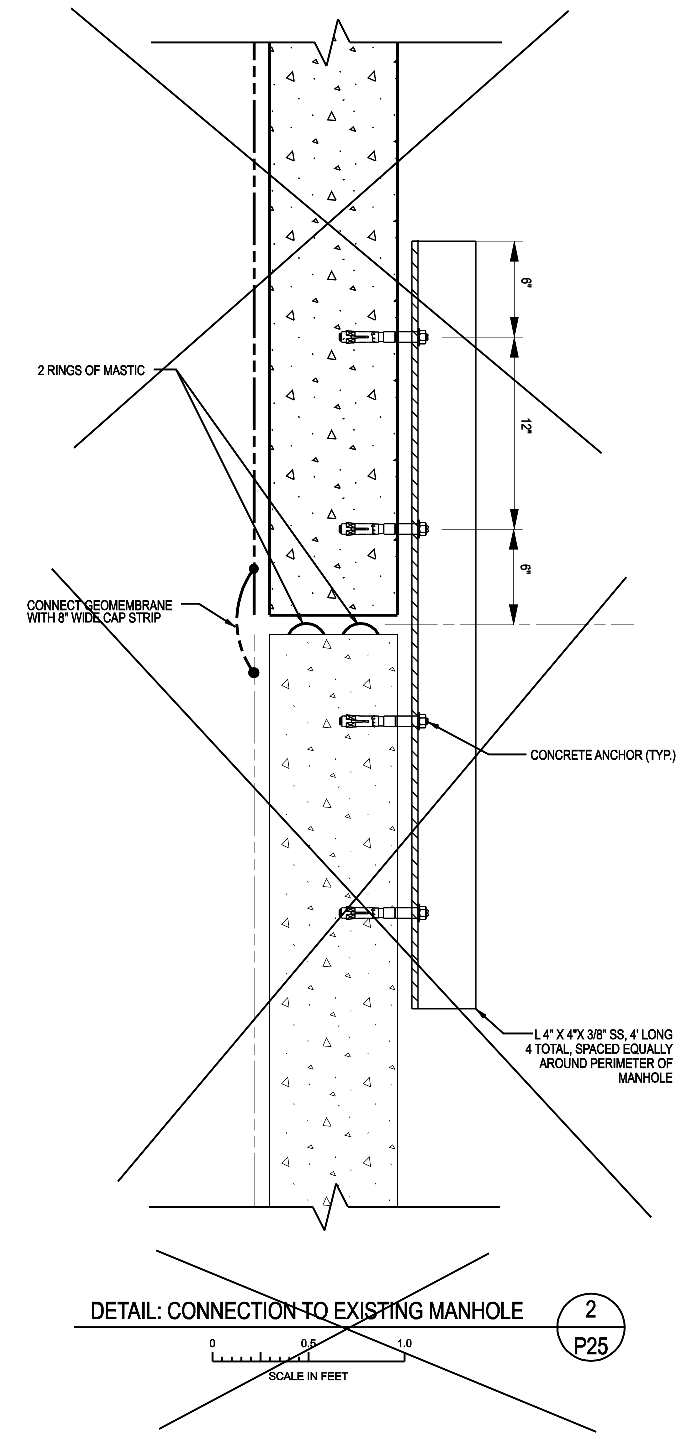


NOTES:
1. MANHOLE WILL CONTAIN POND WATER DURING CONSTRUCTION.
2. GEOMEMBRANE BETWEEN BARREL SECTIONS SHALL BE CONNECTED IN ACCORDANCE WITH MANUFACTURERS RECOMENDATIONS AND AS REQUIRED BY TECHNICAL SPECIFICATIONS.
3. GEOMEMBRANE SEAMS SHALL BE LEAK TESTED AS REQUIRED BY TECHNICAL SPECIFICATIONS.

SECTION: DEWATERING MANHOLE EXTENSION 1 / P19

0 2 4 SCALE IN FEET



~~DETAIL: CONNECTION TO EXISTING MANHOLE~~ 2 / P25

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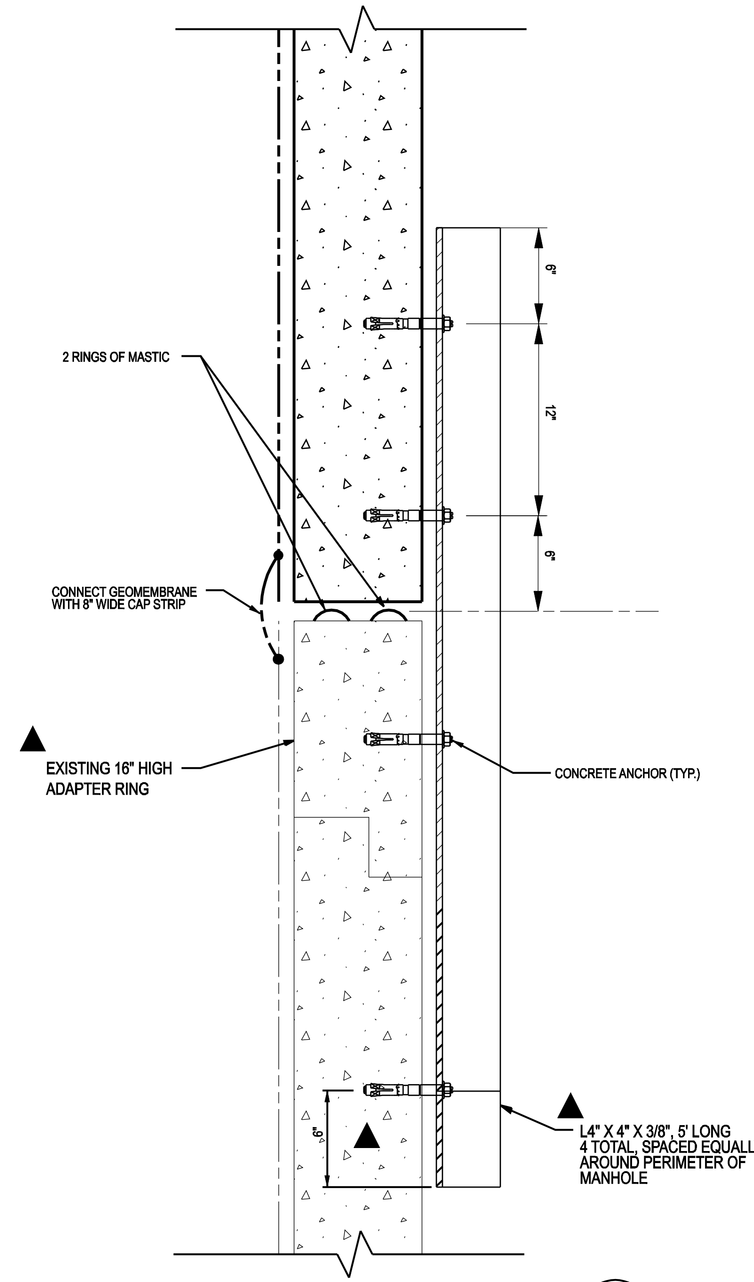

DETAIL: CONNECTION TO EXISTING MANHOLE 2 / P25

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REV	DATE	DESCRIPTION	BY	DWN	CHK'D
▲	02-25-09	RECORD DRAWINGS	IJF	DJR	DSS
1	06-24-08	EXTENDED WEST SLOPE LINER TO EL. 1010 REVISED SHEETS: P2, P3, P8, P9, P16, P21, P22, P23, P24	DSS	DJR	JRM
0	02-07-08	ISSUED FOR CONSTRUCTION	DSS	DLR	JRM
A	12-12-07	ISSUED FOR BIDDING	DSS	DLR	JRM

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Signature Darren S Schwake
Date 02-25-09 Reg. No. 24730

McCain and Associates, Inc.
5300 Highway 12
Maple Plain, MN 55359
ph 952-346-3900
fx 952-346-3901

DWN DATE
DGN'R CHK'D
APP'D & CERT.
FILMED

FACILITY: SHERBURNE COUNTY GENERATING PLANT
TITLE: 2008 ASH CONSTRUCTION PROJECTS
POND 3 NORTH
DEWATERING MANHOLE DETAILS

NORTHERN STATES POWER COMPANY
Minneapolis, Minnesota

XCEL DRAWING NO. NH-194808-125
Sheet No. P25
REV ▲

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Appendix I

Geosynthetic Clay Liner (GCL) Data

Bentonite Test Data
Geotextile Test Data
GCL Test Data
GCL Roll Inventory
Subgrade Acceptance Forms

Bentonite Test Data

BENTOFIX TECHNOLOGIES

CERTIFICATE OF ANALYSIS 2008

PRODUCT : BARA-KADE® 30

SHIPPED FROM: BENTONITE PERFORMANCE MINERALS LLC
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0001106454	06-05-08	7.9	0.00	4.12	14.6	122	30	980
B0001106455	06-06-08	9.1	0.04	4.63	13.4	120	31	991

JUNE No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
14	M AVG	9.51	0.02	4.17	13.94	121.14	29.57	984.57
	STD DEV	0.65	1.50	1.50	0.60	1.64	1.18	25.53

YTD No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
117	M AVG	9.19	0.04	3.23	14.00	121.85	30.98	1017.44
	STD DEV	0.64	0.08	1.55	0.70	2.81	1.93	38.07

SOLD TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: Bob Stadler (rstadler@gseworld.com)
Lynn Crumbley (lcrumbley@gseworld.com)
Chuck Taylor (ctaylor@gseworld.com)
USE GSE FOLDER

SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Quik Grout add.

CC: C. McAUGHAN
FILE

Q.A. SUPERVISOR
Alan Hardison
06/06/08

Prepared by: AWH

BENTOFIX TECHNOLOGIES

CERTIFICATE OF ANALYSIS 2008

PRODUCT : BARA-KADE® 30

SHIPPED FROM: BENTONITE PERFORMANCE MINERALS LLC
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0001106457	06-06-08	9.5	0.00	5.38	14.0	120	30	969
B0001111543	06-07-08	9.2	0.22	2.08	13.0	120	28	982

JUNE No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
	M AVG	9.49	0.04	4.12	13.89	121.00	29.50	983.44
16	STD DEV	0.61	1.53	1.53	0.60	1.58	1.17	24.18

YTD No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
	M AVG	9.20	0.04	3.23	13.99	121.82	30.95	1016.73
119	STD DEV	0.63	0.08	1.55	0.70	2.79	1.94	38.15

SOLD TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: Bob Stadler (rstadler@gseworld.com)
Lynn Crumbley (lcrumbley@gseworld.com)
Chuck Taylor (ctaylor@gseworld.com)
USE GSE FOLDER

SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Quik Grout add.

CC: C. McAUGHAN
FILE

Q.A. SUPERVISOR
Alan Hardison
06/07/08

Prepared by: AWH

BENTOFIX TECHNOLOGIES

CERTIFICATE OF ANALYSIS 2008

PRODUCT : BARA-KADE® 30

SHIPPED FROM: BENTONITE PERFORMANCE MINERALS LLC
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0001111547	06-07-08	9.1	0.13	2.14	12.6	122	29	1060

JUNE No. of CARS 17		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
	M AVG	9.47	0.04	4.00	13.81	121.06	29.47	987.94
	STD DEV	0.60	1.55	1.55	0.66	1.55	1.14	29.57

YTD No. of CARS 120		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
	M AVG	9.20	0.04	3.23	13.98	121.82	30.93	1017.09
	STD DEV	0.63	0.08	1.55	0.71	2.78	1.94	38.19

SOLD TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: Bob Stadler (rstadler@gseworld.com)
Lynn Crumbley (lcrumbley@gseworld.com)
Chuck Taylor (ctaylor@gseworld.com)
USE GSE FOLDER

SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Quik Grout add.

CC: C. McAUGHAN
FILE

Q.A. SUPERVISOR
Alan Hardison
06/07/08

Prepared by: AWH

BENTOFIX TECHNOLOGIES

CERTIFICATE OF ANALYSIS 2008

PRODUCT : BARA-KADE® 30

SHIPPED FROM: BENTONITE PERFORMANCE MINERALS LLC
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0001111550	06-07-08	10.3	0.25	2.68	13.4	126	31	1027

JUNE No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
18	M AVG	9.51	0.05	3.93	13.79	121.33	29.56	990.11
	STD DEV	0.61	1.54	1.54	0.65	1.89	1.17	30.10

YTD No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
121	M AVG	9.21	0.04	3.22	13.97	121.85	30.93	1017.17
	STD DEV	0.64	0.09	1.54	0.71	2.80	1.93	38.04

SOLD TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: Bob Stadler (rstadler@gseworld.com)
Lynn Crumbley (lcrumbley@gseworld.com)
Chuck Taylor (ctaylor@gseworld.com)
USE GSE FOLDER

SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Quik Grout add.

CC: C. McAUGHAN
FILE

Q.A. SUPERVISOR
Alan Hardison
06/08/08

Prepared by: AWH

BENTOFIX TECHNOLOGIES

CERTIFICATE OF ANALYSIS 2008

PRODUCT : BARA-KADE® 30

SHIPPED FROM: BENTONITE PERFORMANCE MINERALS LLC
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0001111552	06-08-08	9.6	0.19	2.37	12.8	124	30	984
B0001111555	06-09-08	8.7	0.04	4.97	13.0	122	31	995

JUNE No. of CARS 20		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
	M AVG	9.47	0.06	3.90	13.70	121.50	29.65	990.05
	STD DEV	0.61	1.52	1.52	0.67	1.88	1.15	28.61

YTD No. of CARS 123		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
	M AVG	9.20	0.04	3.23	13.96	121.87	30.93	1016.72
	STD DEV	0.63	0.09	1.54	0.72	2.78	1.91	37.90

SOLD TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: Bob Stadler (rstadler@gseworld.com)
Lynn Crumbley (lcrumbley@gseworld.com)
Chuck Taylor (ctaylor@gseworld.com)
USE GSE FOLDER

SHIPPED TO: GSE CLAY LINING TECHNOLOGY, Co.
3150 FIRST AVENUE
SPEARFISH, SD 57783

Quik Grout add.

CC: C. McAUGHAN
FILE

Q.A. SUPERVISOR
Alan Hardison
06/09/08

Prepared by: AWH

BENTOFIX TECHNOLOGIES

CERTIFICATE OF ANALYSIS 2008

PRODUCT : BARA-KADE® 30

SHIPPED FROM: **BENTONITE PERFORMANCE MINERALS LLC**
554 US HWY 212
COLONY PLANT
BELLE FOURCHE, S.D. 57717

BOL #	LOAD DATE	% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC MEQ 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
B0001125691	06-23-08	9.9	0.02	2.76	13.2	122	30	1103
B0001125693	06-23-08	9.9	0.03	2.85	13.0	122	28	1100
B0001125694	06-24-08	9.8	0.00	2.92	12.8	120	27	1054
B0001125695	06-24-08	9.8	0.02	2.56	14.2	124	30	1039
B0001125697	06-24-08	8.8	0.00	2.07	13.0	122	34	1048

JUNE No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
52	M AVG	9.50	0.04	3.97	13.75	121.73	30.60	1002.35
	STD DEV	0.52	1.60	1.60	0.69	2.04	1.77	35.85

YTD No. of CARS		% MOIST 12 MAX	Mesh % + 20 15 MAX	Mesh % - 200 10 MAX	FL 18 MAX	MBC meq 70 MIN	SWELL INDEX 25 MIN	PWA 750 MIN
155	M AVG	9.27	0.04	3.39	13.92	121.87	30.98	1015.34
	STD DEV	0.61	0.08	1.59	0.72	2.66	1.90	37.96

SOLD TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

Attn: **Bob Stadler (rstadler@gseworld.com)**
Lynn Crumbley (lcrumbley@gseworld.com)
Chuck Taylor (ctaylor@gseworld.com)
USE GSE FOLDER

SHIPPED TO: **GSE CLAY LINING TECHNOLOGY, Co.**
3150 FIRST AVENUE
SPEARFISH, SD 57783

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CC: C. McAUGHAN
FILE

Q.A. SUPERVISOR
Alan Hardison
06/25/08

Prepared by: AWH

Geotextile Test Data

GSE Clay Lining Technology Co.
3150 1st Ave.
Spearfish, SD
57783

Date: 05/07/08

CERTIFICATE OF CONFORMANCE

This is to certify that Style 215B, non-woven polypropylene fabric, produced by Albarrie Canada Ltd., will meet the following certifiable minimum average value when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 95 percent confidence level.

Physical Property	Test Method	U.S. Units	S.I. Units
Mass per Unit Area	ASTM D-5261	6 oz/yd²	204 gsm
Tensile Strength	ASTM D-4632	110 lbs	50 kg
Elongation	ASTM D-4632	15 %	15 %

Actual Test Results

Lot #: 080506215B
Load#: 19
Roll #: 258122
AB#: 5124

	U.S. Units	S.I. Units
Mass per Unit Area	6.6 oz/yd²	225 gsm
Tensile Strength	130 lbs	59 kg
Elongation	24 %	24 %

Kathy
QUALITY CONTROL

QMI REGISTERED
ISO 9001:2000
Certificate No. 4726

Roll List

Albarrie

Customer: GSE Spearfish | Load # 19

Product: 215B/483 | Date: 6/6/2008

Lot #: 080506215B

Roll#	Net Weight kg / lbs	Length m / yd	Area m² / yd²	Width cm / in	MPUA g/m² / oz/yd²
258116	429 / 948	400 / 437	1944 / 2325	486 / 191	221 / 6.5
258118	657 / 1452	600 / 656	2916 / 3488	486 / 191	225 / 6.6
258119	431 / 953	400 / 437	1944 / 2325	486 / 191	222 / 6.5
258121	636 / 1404	600 / 656	2922 / 3495	487 / 192	217 / 6.4
258122	646 / 1428	600 / 656	2922 / 3495	487 / 192	221 / 6.5
258124	597 / 1319	575 / 629	2800.3 / 3349	487 / 192	213 / 6.3
258125	605 / 1336	575 / 629	2794.5 / 3342	486 / 191	216 / 6.4
258126	631 / 1395	600 / 656	2916 / 3488	486 / 191	216 / 6.4
258127	628 / 1388	600 / 656	2916 / 3488	486 / 191	215 / 6.4
258129	641 / 1417	600 / 656	2910 / 3480	485 / 191	220 / 6.5
258130	669 / 1478	630 / 689	3055.5 / 3654	485 / 191	219 / 6.5
258131	622 / 1374	600 / 656	2910 / 3480	485 / 191	214 / 6.3
258132	605 / 1337	575 / 629	2788.8 / 3335	485 / 191	217 / 6.4
258134	628 / 1387	600 / 656	2910 / 3480	485 / 191	216 / 6.4
258136	416 / 919	400 / 437	1944 / 2325	486 / 191	214 / 6.3
Totals:	**8839 kg** **19486.3 lbs**	**8355 m** **9137.1 yd**	**40593 m²** **48548.8 yd²**		

GSE Clay Lining Technology Co.
3150 1st Ave.
Spearfish, SD
57783

Date: 05/12/08

CERTIFICATE OF CONFORMANCE

This is to certify that Style 215B, non-woven polypropylene fabric, produced by Albarrie Canada Ltd., will meet the following certifiable minimum average value when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 95 percent confidence level.

Physical Property	**Test Method**	**U.S. Units**	**S.I. Units**
Mass per Unit Area	ASTM D-5261	6 oz/yd²	204 gsm
Tensile Strength	ASTM D-4632	110 lbs	50 kg
Elongation	ASTM D-4632	15 %	15 %

Actual Test Results

Lot #: 080508215B
Load#: 21
Roll #: 258171
AB#: 5118

	U.S. Units	**S.I. Units**
Mass per Unit Area	6.3 oz/yd²	213 gsm
Tensile Strength	136 lbs	62 kg
Elongation	22 %	22 %

Kathy
QUALITY CONTROL

QMI REGISTERED
ISO 9001:2000
Certificate No. 4726

Roll List

Albarrie

Customer: GSE Spearfish | Load # 21

Product: 215B | Date: 6/9/2008

Lot #: 080508215B

	Net Weight		Length		Area		Width		MPUA	
Roll#	kg	lbs	m	yd	m²	yd²	cm	in	g/m²	oz/yd²
258161	643	1420	600	656	2916	3488	486	191	220	6.5
258162	687	1518	625	684	3037.5	3633	486	191	226	6.7
258164	648	1432	600	656	2904	3473	484	191	223	6.6
258165	653	1443	600	656	2904	3473	484	191	225	6.6
258167	639	1412	600	656	2904	3473	484	191	220	6.5
258168	426	941	400	437	1936	2315	484	191	220	6.5
258170	638	1409	600	656	2910	3480	485	191	219	6.5
258171	626	1383	586	641	2842.1	3399	485	191	220	6.5
258172	636	1404	600	656	2910	3480	485	191	218	6.4
258173	646	1428	600	656	2910	3480	485	191	222	6.5
258175	627	1386	600	656	2910	3480	485	191	215	6.4
258176	635	1403	600	656	2910	3480	485	191	218	6.4
258178	622	1375	600	656	2910	3480	485	191	214	6.3
258179	422	933	400	437	1940	2320	485	191	218	6.4
258180	423	935	400	437	1940	2320	485	191	218	6.4
Totals:	**8969.5 kg**		**8411 m**		**40783.6 m²**					
	19774.0 lbs		**9198.4 yd**		**48776.8 yd²**					

GSE Clay Lining Technology Co.
3150 1st Ave.
Spearfish, SD
57783

Date: 06/16/08

CERTIFICATE OF CONFORMANCE

This is to certify that Style 215B, non-woven polypropylene fabric, produced by Albarrie Canada Ltd., will meet the following certifiable minimum average value when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 95 percent confidence level.

Physical Property	**Test Method**	**U.S. Units**	**S.I. Units**
Mass per Unit Area	ASTM D-5261	6 oz/yd²	204 gsm
Tensile Strength	ASTM D-4632	110 lbs	50 kg
Elongation	ASTM D-4632	15 %	15 %

Actual Test Results

Lot #: 080613215B
Load#: 33
Roll #: 249789
AB#: 5132

	U.S. Units	**S.I. Units**
Mass per Unit Area	6.5 oz/yd²	221 gsm
Tensile Strength	139 lbs	63 kg
Elongation	26 %	26 %

Kathy
QUALITY CONTROL

QMI REGISTERED
ISO 9001:2000
Certificate No. 4728

Roll List

Albarrie

Customer: GSE Spearfish   Load # 33

Product: 215B/483   Date: 6/16/2008

Lot #: 080613215b

Roll#	Net Weight kg / lbs	Length m / yd	Area m² / yd²	Width cm / in	MPUA g/m² / oz/yd²
249783	660 / 1459	600 / 656	2910 / 3480	485 / 191	227 / 6.7
249784	563 / 1244	516 / 564	2502.6 / 2993	485 / 191	225 / 6.6
249785	665 / 1470	600 / 656	2904 / 3473	484 / 191	229 / 6.8
249786	491 / 1085	455 / 498	2202.2 / 2634	484 / 191	223 / 6.6
249787	648 / 1432	600 / 656	2904 / 3473	484 / 191	223 / 6.6
249788	478 / 1055	434 / 475	2100.6 / 2512	484 / 191	227 / 6.7
249789	639 / 1411	600 / 656	2904 / 3473	484 / 191	220 / 6.5
249790	430 / 949	411 / 449	1989.2 / 2379	484 / 191	216 / 6.4
249791	612 / 1353	600 / 656	2910 / 3480	485 / 191	210 / 6.2
249792	595 / 1315	550 / 601	2662 / 3184	484 / 191	224 / 6.6
249794	652 / 1441	600 / 656	2910 / 3480	485 / 191	224 / 6.6
249795	559 / 1235	530 / 580	2565.2 / 3068	484 / 191	218 / 6.4
249796	668 / 1476	625 / 684	3025 / 3618	484 / 191	221 / 6.5
249797	647 / 1430	610 / 667	2946.3 / 3524	483 / 190	220 / 6.5
249798	670 / 1481	625 / 684	3037.5 / 3633	486 / 191	221 / 6.5
Totals:	**8975.5 kg**	**8356 m**	**40472.6 m²**		
	19787.3 lbs	**9138.2 yd**	**48404.8 yd²**		

GSE Clay Lining Technology Co.
3150 1st Ave.
Spearfish, SD
57783

Date: 06/16/08

CERTIFICATE OF CONFORMANCE

This is to certify that Style 215B, non-woven polypropylene fabric, produced by Albarrie Canada Ltd., will meet the following certifiable minimum average value when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 95 percent confidence level.

Physical Property	**Test Method**	**U.S. Units**	**S.I. Units**
Mass per Unit Area	ASTM D-5261	6 oz/yd²	204 gsm
Tensile Strength	ASTM D-4632	110 lbs	50 kg
Elongation	ASTM D-4632	15 %	15 %

Actual Test Results

Lot #: 080614215B
Load#: 34
Roll #: 249807
AB#: 5131

	U.S. Units	**S.I. Units**
Mass per Unit Area	6.5 oz/yd²	221 gsm
Tensile Strength	133 lbs	60 kg
Elongation	21 %	21 %

Kathy
QUALITY CONTROL

QMI REGISTERED
ISO 9001:2000
Certificate No. 4728

Roll List

Albarrie

Customer: GSE Spearfish

Load # 34

Product: 215B/483

Date: 6/16/2008

Lot #: 080614215B

	Net Weight	Length	Area	Width	MPUA
Roll#	kg / lbs	m / yd	m² / yd²	cm / in	g/m² / oz/yd²
249799	636 / 1406	597 / 653	2895.5 / 3463	485 / 191	220 / 6.5
249800	637 / 1408	600 / 656	2910 / 3480	485 / 191	219 / 6.5
249801	591 / 1306	556 / 608	2696.6 / 3225	485 / 191	219 / 6.5
249802	692 / 1529	650 / 711	3152.5 / 3770	485 / 191	220 / 6.5
249803	623 / 1377	618 / 676	2997.3 / 3585	485 / 191	208 / 6.1
249804	635 / 1403	600 / 656	2910 / 3480	485 / 191	218 / 6.4
249805	647 / 1430	608 / 665	2948.8 / 3527	485 / 191	219 / 6.5
249806	618 / 1366	600 / 656	2910 / 3480	485 / 191	212 / 6.3
249807	649 / 1434	600 / 656	2910 / 3480	485 / 191	223 / 6.6
249809	638 / 1410	600 / 656	2910 / 3480	485 / 191	219 / 6.5
249810	433 / 957	400 / 437	1940 / 2320	485 / 191	223 / 6.6
249812	656 / 1450	600 / 656	2910 / 3480	485 / 191	225 / 6.6
249813	436 / 964	400 / 437	1936 / 2315	484 / 191	225 / 6.6
249815	654 / 1445	600 / 656	2910 / 3480	485 / 191	225 / 6.6
249816	439 / 970	400 / 437	1940 / 2320	485 / 191	226 / 6.7
Totals:	**8984 kg** **19806.0 lbs**	**8429 m** **9218.1 yd**	**40876.65 m²** **48888.1 yd²**		

GSE Clay Lining Technology Co.
3150 1st Ave.
Spearfish, SD
57783

Date: 05/20/08

CERTIFICATE OF CONFORMANCE

This is to certify that Style 205B, non-woven polypropylene fabric, produced by Albarrie Canada Ltd., will meet the following certifiable minimum average value when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 95 percent confidence level.

Physical Property	Test Method	U.S. Units	S.I. Units
Mass per Unit Area	ASTM D-5261	6.6 oz/yd²	223 gsm
Tensile Strength	ASTM D-4632	22 lbs	10 kg
Elongation	ASTM D-4632	100 %	100 %

Actual Test Results

Lot #: 080517205B-1
Load #: 76
Roll #: 246577
AB#: 5122

	U.S. Units	S.I. Units
Mass per Unit Area	7.2 oz/yd²	245 gsm
Tensile Strength	83 lbs	38 kg
Elongation	158 %	158 %

Kathy
QUALITY CONTROL

QMI REGISTERED
ISO 9001:2000
Certificate No. 4726

Roll List

Customer: GSE Spearfish　　Load # 76

Product: 205B　　Date: 6/3/2008

Lot #: 080517205B1

Albarrie

Roll#	Net Weight kg / lbs	Length m / yd	Area m² / yd²	Width cm / in	MPUA g/m² / oz/yd²
246573	561 / 1240	450 / 492	2277 / 2723	506 / 199	246 / 7.3
246574	542 / 1198	450 / 492	2277 / 2723	506 / 199	238 / 7.0
246575	526 / 1161	450 / 492	2277 / 2723	506 / 199	231 / 6.8
246577	541 / 1195	450 / 492	2277 / 2723	506 / 199	237 / 7.0
246578	575 / 1271	450 / 492	2277 / 2723	506 / 199	253 / 7.4
246579	561 / 1240	450 / 492	2277 / 2723	506 / 199	246 / 7.3
246580	552 / 1220	450 / 492	2277 / 2723	506 / 199	242 / 7.1
246581	544 / 1202	450 / 492	2277 / 2723	506 / 199	239 / 7.0
246582	546 / 1206	450 / 492	2277 / 2723	506 / 199	240 / 7.1
246583	551 / 1218	450 / 492	2277 / 2723	506 / 199	242 / 7.1
246584	540 / 1193	450 / 492	2277 / 2723	506 / 199	237 / 7.0
246585	483 / 1066	400 / 437	2024 / 2421	506 / 199	238 / 7.0
Totals:	**6520 kg** **14373.9 lbs**	**5350 m** **5850.8 yd**	**27071 m²** **32376.6 yd²**		

GSE Clay Lining Technology Co.
3150 1st Ave.
Spearfish, SD
57783

Date: 06/05/08

CERTIFICATE OF CONFORMANCE

This is to certify that Style 205B, non-woven polypropylene fabric, produced by Albarrie Canada Ltd., will meet the following certifiable minimum average value when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 95 percent confidence level.

Physical Property	Test Method	U.S. Units	S.I. Units
Mass per Unit Area	ASTM D-5261	6.6 oz/yd^2	223 gsm
Tensile Strength	ASTM D-4632	22 lbs	10 kg
Elongation	ASTM D-4632	100 %	100 %

Actual Test Results

Lot #: 080604205B-2
Load #: 94
Roll #: 249614
AB#: 5123

	U.S. Units	S.I. Units
Mass per Unit Area	7.5 oz/yd^2	254 gsm
Tensile Strength	75 lbs	34 kg
Elongation	152 %	152 %

Kathy
QUALITY CONTROL

QMI REGISTERED
ISO 9001:2000
Certificate No. 4726

Roll List

Customer: GSE Spearfish | Load # 94

Product: 205B/506 | Date: 6/6/2008

Lot #: 080604205b2

Albarrie

Roll#	Net Weight kg / lbs	Length m / yd	Area m² / yd²	Width cm / in	MPUA g/m² / oz/yd²
249608	538 / 1189	450 / 492	2277 / 2723	506 / 199	236 / 7.0
249609	543 / 1200	450 / 492	2277 / 2723	506 / 199	238 / 7.0
249610	549 / 1213	450 / 492	2277 / 2723	506 / 199	241 / 7.1
249611	544 / 1202	450 / 492	2277 / 2723	506 / 199	239 / 7.0
249612	532 / 1176	450 / 492	2277 / 2723	506 / 199	234 / 6.9
249613	533 / 1178	450 / 492	2277 / 2723	506 / 199	234 / 6.9
249614	532 / 1176	450 / 492	2277 / 2723	506 / 199	234 / 6.9
249615	528 / 1167	450 / 492	2277 / 2723	506 / 199	232 / 6.8
249616	536 / 1185	450 / 492	2277 / 2723	506 / 199	235 / 6.9
249617	541 / 1196	450 / 492	2277 / 2723	506 / 199	238 / 7.0
249618	533 / 1178	450 / 492	2277 / 2723	506 / 199	234 / 6.9
249619	489 / 1080	400 / 437	2024 / 2421	506 / 199	241 / 7.1
Totals:	**6397.5 kg** **14103.8 lbs**	**5350 m** **5850.8 yd**	**27071 m²** **32376.6 yd²**		

GSE Clay Lining Technology Co.
3150 1st Ave.
Spearfish, SD
57783

Date: 06/23/08

CERTIFICATE OF CONFORMANCE

This is to certify that Style 205B, non-woven polypropylene fabric, produced by Albarrie Canada Ltd., will meet the following certifiable minimum average value when tested in accordance with the proper ASTM test methods. A minimum average roll value is calculated as the mean minus two standard deviations, yielding a 95 percent confidence level.

Physical Property	Test Method	U.S. Units	S.I. Units
Mass per Unit Area	ASTM D-5261	6.6 oz/yd^2	223 gsm
Tensile Strength	ASTM D-4632	22 lbs	10 kg
Elongation	ASTM D-4632	100 %	100 %

Actual Test Results

Lot #: 080621205B-1
Load #: 117
Roll #: 249949
AB#: 5135

	U.S. Units	S.I. Units
Mass per Unit Area	7.4 oz/yd^2	252 gsm
Tensile Strength	77 lbs	35 kg
Elongation	158 %	158 %

Kathy
QUALITY CONTROL

QMI REGISTERED
ISO 9001:2000
Certificate No. 4726

Roll List

Albarrie

Customer: GSE Spearfish Load # 117

Product: 205B/506 Date: 6/23/2008

Lot #: 080621205B1

	Net Weight	Length	Area	Width	MPUA
Roll#	kg lbs	m yd	m² yd²	cm in	g/m² oz/yd²
249943	538 / 1189	450 / 492	2277 / 2723	506 / 199	236 / 7.0
249944	541 / 1196	450 / 492	2277 / 2723	506 / 199	238 / 7.0
249945	539 / 1191	450 / 492	2277 / 2723	506 / 199	237 / 7.0
249946	538 / 1189	450 / 492	2277 / 2723	506 / 199	236 / 7.0
249947	540 / 1193	450 / 492	2277 / 2723	506 / 199	237 / 7.0
249948	532 / 1176	450 / 492	2277 / 2723	506 / 199	234 / 6.9
249949	540 / 1193	450 / 492	2277 / 2723	506 / 199	237 / 7.0
249950	526 / 1162	450 / 492	2277 / 2723	506 / 199	231 / 6.8
249951	557 / 1231	450 / 492	2277 / 2723	506 / 199	245 / 7.2
249952	557 / 1231	450 / 492	2277 / 2723	506 / 199	245 / 7.2
249953	550 / 1216	450 / 492	2277 / 2723	506 / 199	242 / 7.1
249954	485 / 1072	400 / 437	2024 / 2421	506 / 199	240 / 7.1
Totals:	**6443 kg**	**5350 m**	**27071 m²**		
	14204.1 lbs	**5850.8 yd**	**32376.6 yd²**		

GCL Test Data

BENTOFIX TECHNOLOGIES, INC

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX® MANUFACTURING CERTIFICATION

CUSTOMER:	Clean Air And Water Systems, LLC	**SHIP DATE:**	
PROJECT:	Sherburne Co. Generating Plant Pond No. 3	**# ROLLS**	74
ORDER NO.:	SO 53884	**PRODUCT TYPE:**	BENTOFIX® NWL

Bentofix Technologies, Inc. hereby certifies that the Bentofix® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed Bentofix Technologies, Inc.'s specifications for Bentofix®.

The Bentofix® 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 D 5890	1/60,000 lbs (27,216 kg)
Moisture Content	ASTM D 4643	1/60,000 lbs (27,216 kg)
Fluid Loss	ASTM D 5891	1/60,000 lbs (27,216 kg)

GEOTEXTILE testing on the raw materials was performed as follows:

Grab Tensile/Elongation	ASTM D 4632	1/200,000 ft² [20,000 mt²]
Mass Per Unit Area	ASTM D 5261	1/200,000 ft² [20,000 mt²]

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

Bentonite Mass Per Unit Area	ASTM D 5993	1/40,000 ft² [4,000 mt²]
Grab Tensile/Elongation / Peel Strength	ASTM D 4632	1/40,000 ft² [4,000 mt²]
Hydraulic Conductivity	ASTM D 5084	Weekly
**certified to meet the required specification of < 5E ⁻9 cm/sec*		
Index Flux	ASTM D 5887	Weekly
**certified to meet the required specification of < 1E ⁻8 m³/m²/s*		
Internal Shear	ASTM D 6243	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# 28061104

ROLL# 502112116- 502112189

Chuck Taylor

Chuck Taylor
Lab Technician

6-12-08
DATE

BENTOFIX TECHNOLOGIES, INC

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX® MANUFACTURING CERTIFICATION

CUSTOMER:	Clean Air And Water Systems, LLC	**SHIP DATE:**	
PROJECT:	Sherburne Co. Generating Plant Pond No. 3	**# ROLLS**	73
ORDER NO.:	SO 53884	**PRODUCT TYPE:**	BENTOFIX® NWL

Bentofix Technologies, Inc. hereby certifies that the Bentofix® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed Bentofix Technologies, Inc.'s specifications for Bentofix®.

The Bentofix® 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 D 5890	1/60,000 lbs (27,216 kg)
Moisture Content	ASTM D 4643	1/60,000 lbs (27,216 kg)
Fluid Loss	ASTM D 5891	1/60,000 lbs (27,216 kg)

GEOTEXTILE testing on the raw materials was performed as follows:

Grab Tensile/Elongation	ASTM D 4632	1/200,000 ft² [20,000 mt²]
Mass Per Unit Area	ASTM D 5261	1/200,000 ft² [20,000 mt²]

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

Bentonite Mass Per Unit Area	ASTM D 5993	1/40,000 ft² [4,000 mt²]
Grab Tensile/Elongation / Peel Strength	ASTM D 4632	1/40,000 ft² [4,000 mt²]
Hydraulic Conductivity	ASTM D 5084	Weekly
**certified to meet the required specification of < 5E ¯9 cm/sec*		
Index Flux	ASTM D 5887	Weekly
**certified to meet the required specification of ≤ 1E ¯8 $m^3/m^2/s$*		
Internal Shear	ASTM D 6243	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# 28061204

ROLL# 502112190- 502112262

Chuck Taylor
Chuck Taylor
Lab Technician

6-13-08
DATE

BENTOFIX TECHNOLOGIES, INC

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX® MANUFACTURING CERTIFICATION

CUSTOMER:	Clean Air and Water Systems, LLC	**SHIP DATE:**	
PROJECT:	Sherburne Co. Generating Plant Pond No. 3	**# ROLLS**	44
ORDER NO.:	SO 54923	**PRODUCT TYPE:**	BENTOFIX® NWL

Bentofix Technologies, Inc. hereby certifies that the Bentofix® Geosynthetic Clay Liner purchased and shipped for the above referenced project does meet or exceed Bentofix Technologies, Inc.'s specifications for Bentofix®.

The Bentofix® 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 D 5890	1/60,000 lbs (27,216 kg)
Moisture Content	ASTM D 4643	1/60,000 lbs (27,216 kg)
Fluid Loss	ASTM D 5891	1/60,000 lbs (27,216 kg)

GEOTEXTILE testing on the raw materials was performed as follows:

Grab Tensile/Elongation	ASTM D 4632	1/200,000 ft^2 [20,000 mt^2]
Mass Per Unit Area	ASTM D 5261	1/200,000 ft^2 [20,000 mt^2]

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

Bentonite Mass Per Unit Area	ASTM D 5993	1/40,000 ft^2 [4,000 mt^2]
Grab Tensile/Elongation / Peel Strength	ASTM D 4632	1/40,000 ft^2 [4,000 mt^2]
Hydraulic Conductivity	ASTM D 5084	Weekly
**certified to meet the required specification of < 5E⁻9 cm/sec*		
Index Flux	ASTM D 5887	Weekly
**certified to meet the required specification of < 1E⁻8 $m^3/m^2/s$*		
Internal Shear	ASTM D 6243	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# 28062604

ROLL# 502112864- 502112907

Chuck Taylor

Chuck Taylor
Lab Technician

6-30-08
DATE

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length ft / m	Width ft / m
28061104	502112116	6/11/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4687 g/m²	0.960 lb/ft²
Grab Strength	ASTM D4632	83.9 kg	185.0 lbs
Elongation			160 %
Peel Strength	ASTM D4632 mod	8.6 kg	19 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080517205B-1
Mass	265 g/m²	7.83 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080508215B
Mass	222 g/m²	6.55 oz/yd²

Bentonite

Shipment Lot #			1106455
Moisture Content	ASTM D4643		9.6 %
Swell Index	ASTM D5890		24.0 ml
Fluid Loss	ASTM D5891		13.6 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3833 g/m²	0.785 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length ft / m	Width ft / m
28061104	502112132	6/11/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4814 g/m²	0.986 lb/ft²
Grab Strength	ASTM D4632	88.5 kg	195.0 lbs
Elongation			133 %
Peel Strength	ASTM D4632 mod	18.6 kg	41 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080517205B-1
Mass	265 g/m²	7.83 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080508215B
Mass	222 g/m²	6.55 oz/yd²

Bentonite

Shipment Lot #			1106457
Moisture Content	ASTM D4643		10.2 %
Swell Index	ASTM D5890		24.0 ml
Fluid Loss	ASTM D5891		13.4 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3925 g/m²	0.804 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length	Width
				ft / m	ft / m
28061104	502112164	6/11/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	5083 g/m²	1.041 lb/ft²
Grab Strength	ASTM D4632	91.2 kg	201.0 lbs
Elongation			154 %
Peel Strength	ASTM D4632 mod	15.4 kg	34 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080517205B-1
Mass	265 g/m²	7.83 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080506215B
Mass	226 g/m²	6.67 oz/yd²

Bentonite

Shipment Lot #			1111543
Moisture Content	ASTM D4643		9.7 %
Swell Index	ASTM D5890		24.0 ml
Fluid Loss	ASTM D5891		13.8 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	4184 g/m²	0.857 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length ft / m	Width ft / m
28061104	502112180	6/11/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4785 g/m²	0.980 lb/ft²
Grab Strength	ASTM D4632	77.6 kg	171.0 lbs
Elongation			138 %
Peel Strength	ASTM D4632 mod	13.6 kg	30 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080517205B-1
Mass	265 g/m²	7.83 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080506215B
Mass	226 g/m²	6.67 oz/yd²

Bentonite

Shipment Lot #			1111547
Moisture Content	ASTM D4643		9.8 %
Swell Index	ASTM D5890		29.0 ml
Fluid Loss	ASTM D5891		13.4 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3911 g/m²	0.801 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length	Width
				ft / m	ft / m
28061204	502112190	6/12/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4570 g/m²	0.936 lb/ft²
Grab Strength	ASTM D4632	90.3 kg	199.0 lbs
Elongation			145 %
Peel Strength	ASTM D4632 mod	16.3 kg	36 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080604205B-2
Mass	241 g/m²	7.12 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080506215B
Mass	226 g/m²	6.67 oz/yd²

Bentonite

Shipment Lot #			1111547
Moisture Content	ASTM D4643		9.8 %
Swell Index	ASTM D5890		29.0 ml
Fluid Loss	ASTM D5891		13.4 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3740 g/m²	0.766 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length ft / m	Width ft / m
28061204	502112206	6/12/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4956 g/m²	1.015 lb/ft²
Grab Strength	ASTM D4632	89.8 kg	198.0 lbs
Elongation			135 %
Peel Strength	ASTM D4632 mod	17.2 kg	38 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080604205B-2
Mass	241 g/m²	7.12 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080506215B
Mass	226 g/m²	6.67 oz/yd²

Bentonite

Shipment Lot #			1111550
Moisture Content	ASTM D4643		11.1 %
Swell Index	ASTM D5890		26.0 ml
Fluid Loss	ASTM D5891		14.0 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	4038 g/m²	0.827 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length	Width
				ft / m	ft / m
28061204	502112222	6/12/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4692 g/m²	0.961 lb/ft²
Grab Strength	ASTM D4632	85.3 kg	188.0 lbs
Elongation			146 %
Peel Strength	ASTM D4632 mod	12.7 kg	28 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080604205B-2
Mass	241 g/m²	7.12 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080506215B
Mass	226 g/m²	6.67 oz/yd²

Bentonite

Shipment Lot #			1111550
Moisture Content	ASTM D4643		11.1 %
Swell Index	ASTM D5890		26.0 ml
Fluid Loss	ASTM D5891		14.0 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3803 g/m²	0.779 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length ft / m	Width ft / m
28061204	502112238	6/12/2008	Bentofix NWL	150.0 45.72	15.5 4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4970 g/m²	1.018 lb/ft²
Grab Strength	ASTM D4632	79.4 kg	175.0 lbs
Elongation			133 %
Peel Strength	ASTM D4632 mod	10.9 kg	24 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080604205B-2
Mass	241 g/m²	7.12 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080506215B
Mass	226 g/m²	6.67 oz/yd²

Bentonite

Shipment Lot #			1111552
Moisture Content	ASTM D4643		10.3 %
Swell Index	ASTM D5890		27.0 ml
Fluid Loss	ASTM D5891		13.6 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	4082 g/m²	0.836 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length	Width
				ft / m	ft / m
28061204	502112254	6/12/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4785 g/m²	0.980 lb/ft²
Grab Strength	ASTM D4632	83.9 kg	185.0 lbs
Elongation			142 %
Peel Strength	ASTM D4632 mod	11.8 kg	26 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080604205B-2
Mass	241 g/m²	7.12 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080506215B
Mass	226 g/m²	6.67 oz/yd²

Bentonite

Shipment Lot #			1111552
Moisture Content	ASTM D4643		10.3 %
Swell Index	ASTM D5890		27.0 ml
Fluid Loss	ASTM D5891		13.6 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3916 g/m²	0.802 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length ft / m	Width ft / m
28062604	502112864	6/26/2008	Bentofix NWL	150.0 45.72	15.5 4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4755 g/m²	0.974 lb/ft²
Grab Strength	ASTM D4632	90.3 kg	199.0 lbs
Elongation			111 %
Peel Strength	ASTM D4632 mod	14.5 kg	32 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

pe		Non-woven
Layer #		080621205B-1
Mass	239 g/m²	7.06 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080614215B
Mass	206 g/m²	6.08 oz/yd²

Bentonite

Shipment Lot #			1125694
Moisture Content	ASTM D4643		10.5 %
Swell Index	ASTM D5890		28.0 ml
Fluid Loss	ASTM D5891		15.0 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3901 g/m²	0.799 lb/ft²

BENTOFIX TECHNOLOGIES INC.
QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length ft / m	Width ft / m
28062604	502112869	6/27/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4824 g/m²	0.988 lb/ft²
Grab Strength	ASTM D4632	84.4 kg	186.0 lbs
Elongation			116 %
Peel Strength	ASTM D4632 mod	10.9 kg	24 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080621205B-1
Mass	239 g/m²	7.06 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080614215B
Mass	206 g/m²	6.08 oz/yd²

Bentonite

Shipment Lot #			1125694
Moisture Content	ASTM D4643		10.5 %
Swell Index	ASTM D5890		28.0 ml
Fluid Loss	ASTM D5891		15.0 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3960 g/m²	0.811 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length ft / m	Width ft / m
28062604	502112885	6/27/2008	Bentofix NWL	150.0 45.72	15.5 4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4882 g/m²	1.000 lb/ft²
Grab Strength	ASTM D4632	87.5 kg	193.0 lbs
Elongation			121 %
Peel Strength	ASTM D4632 mod	16.3 kg	36 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

Type		Non-woven
Layer #		080621205B-1
Mass	239 g/m²	7.06 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080613215B
Mass	251 g/m²	7.39 oz/yd²

Bentonite

Shipment Lot #			1125691
Moisture Content	ASTM D4643		11.4 %
Swell Index	ASTM D5890		26.0 ml
Fluid Loss	ASTM D5891		15.2 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3950 g/m²	0.809 lb/ft²

BENTOFIX TECHNOLOGIES INC.

QUALITY CONTROL CERTIFICATE

Lot #	Roll #	Date Produced	Product	Length ft / m	Width ft / m
28062604	502112901	6/27/2008	Bentofix NWL	150.0	15.5
				45.72	4.72

Finished Product

Type		Bentofix NWL	
Mass	ASTM D5993	4848 g/m²	0.993 lb/ft²
Grab Strength	ASTM D4632	73.5 kg	162.0 lbs
Elongation			130 %
Peel Strength	ASTM D4632 mod	9.1 kg	20 lbs
Index Flux	ASTM D5887	<1E-8 m³/m²/sec	
Permeability	ASTM D5084	<5E-9 cm/s	

Top Layer

..e		Non-woven
..yer #		080621205B-1
Mass	239 g/m²	7.06 oz/yd²

Bottom Layer

Type		Scrim Nonwoven
Layer #		080613215B
Mass	251 g/m²	7.39 oz/yd²

Bentonite

Shipment Lot #			1125691
Moisture Content	ASTM D4643		11.4 %
Swell Index	ASTM D5890		26.0 ml
Fluid Loss	ASTM D5891		15.2 ml
Bentonite Mass Per Unit Area @ 0% mc	ASTM D5993	3911 g/m²	0.801 lb/ft²

GCL Roll Inventory

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76430

Received at Spearfish, SD from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology, Inc. and Carrier. GSE Lining Technology, Inc.'s obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment;

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/13/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		36	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	502112116	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,355.00
3	502112117	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,310.00
4	502112118	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,300.00
5	502112119	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,360.00
6	502112120	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,365.00
7	502112121	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,415.00
8	502112122	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,335.00
9	502112123	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,375.00
10	502112124	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,375.00
11	502112125	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,310.00
12	502112126	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,345.00
13	502112127	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,425.00
14	502112133	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,340.00
15	502112134	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,370.00
16	502112135	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,375.00
17	502112136	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,355.00
		41,886		*Continued on next page.....*	42,480.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

GSE

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76430

Received at Spearfish, SD from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology, Inc. and Carrier. GSE Lining Technology, Inc.'s obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment.

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/13/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
18	502112137	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,395.00
19	502112138	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,375.00

Total Quantity 41,886

Total Weight: 42,480.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76427

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/13/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery   Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		38	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	502112128	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,440.00
3	502112129	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,440.00
4	502112130	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,465.00
5	502112131	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,500.00
6	502112132	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,390.00
7	502112139	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,360.00
8	502112140	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,350.00
9	502112141	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,365.00
10	502112142	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,300.00
11	502112143	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,300.00
12	502112144	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,440.00
13	502112145	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,545.00
14	502112146	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,570.00
15	502112147	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,425.00
16	502112148	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,390.00
17	502112149	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,420.00
		44,213		*Continued on next page.....*	46,075.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76427

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/13/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
18	502112150	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,460.00
19	502112151	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,470.00
20	502112152	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,445.00

Total Quantity 44,213

Total Weight: 46,075.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number:
PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD Shippers No. 76402

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/12/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		36	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	502112153	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,380.00
3	502112154	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,415.00
4	502112155	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,340.00
5	502112156	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,400.00
6	502112157	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,440.00
7	502112158	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,410.00
8	502112159	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,430.00
9	502112160	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,485.00
10	502112161	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,410.00
11	502112162	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,420.00
12	502112163	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,425.00
13	502112164	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,445.00
14	502112165	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,440.00
15	502112166	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,440.00
16	502112167	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,435.00
17	502112168	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,435.00
		41,886		*Continued on next page.....*	43,610.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Trucker's P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: ______

Carrier Signature: ______

Date: ______

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76402

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/12/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery   Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
18	502112169	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,440.00
19	502112170	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,420.00

Total Quantity 41,886

Total Weight: 43,610.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature: Steve [illegible]

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD Shippers No. 76396

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Becker MN 55308

Date: 06/12/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		38	EA	**6067** SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	502112171	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,435.00
3	502112172	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,430.00
4	502112173	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,405.00
5	502112174	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,375.00
6	502112175	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,415.00
7	502112176	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,400.00
8	502112177	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,375.00
9	502112178	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,335.00
10	502112179	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,345.00
11	502112180	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,360.00
12	502112181	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,375.00
13	502112182	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,425.00
14	502112183	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,395.00
15	502112184	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,380.00
16	502112185	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,460.00
17	502112186	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,420.00
		44,213		*Continued on next page.....*	45,520.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up # 2024

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76396

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Becker MN 55308

Date: 06/12/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
18	502112187	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,435.00
19	502112188	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,455.00
20	502112189	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,300.00

Total Quantity 44,213

Total Weight: 45,520.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76571

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/17/08

Branch Plant: 1515

Shipping Instructions:
Call 24 hours before delivery   Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		36	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	502112190	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,250.00
3	502112191	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,270.00
4	502112192	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,390.00
5	502112193	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,465.00
6	502112194	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,520.00
7	502112195	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,430.00
8	502112196	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,425.00
9	502112197	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,460.00
10	502112198	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,500.00
11	502112199	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,485.00
12	502112200	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,490.00
13	502112201	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,500.00
14	502112202	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,555.00
15	502112203	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,555.00
16	502112204	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,440.00
17	502112205	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,445.00
		41,886 41850 SF		*Continued on next page.....*	44,210.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:
X

Pick Up # 20335A

Seal #

Truckers P.O. # 5571156

Driver Requirements:
1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:
Carrier Signature:
Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76571

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/17/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery   Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight	Project# 524350
√18	502112206	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,510.00	Freight charges are prepaid unless marked collect. Check box if collect ☐
√19	502112207	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,520.00	

Kent Odland

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up # 5CB351

Seal #

Truckers P.O. # 551156

Total Quantity 41,886 41,850 SF

Total Weight: 44,210.00

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76555

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/17/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		36	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	502112208	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,485.00
3	502112209	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,450.00
4	502112210	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,560.00
5	502112211	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,470.00
6	502112212	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,445.00
7	502112213	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,480.00
8	502112214	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,450.00
9	502112215	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,380.00
10	502112216	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,385.00
11	502112217	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,430.00
12	502112218	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,365.00
13	502112219	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,420.00
14	502112220	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,360.00
15	502112221	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,385.00
16	502112222	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,395.00
17	502112223	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,325.00
		41,886		*Continued on next page.....*	43,525.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

____
Signature of Consignor

Local Verification Signed:

X ______________________

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: ______________________

Carrier Signature: ______________________

Date: ______________________

Shipping Order - Packing List - Original - Not Negotiable

GSE

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76555

Received at Spearfish, SD from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology, Inc. and Carrier. GSE Lining Technology, Inc.'s obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment.

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/17/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery   Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
18	502112224	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,380.00
19	502112225	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,370.00

Total Quantity 41,886   Total Weight: 43,525.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

____
Signature of Consignor

Local Verification Signed:

X ______________________

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: ______________________

Carrier Signature: ______________________

Date: ______________________

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76502

Received at Spearfish, SD from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology, Inc. and Carrier. GSE Lining Technology, Inc.'s obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment.

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/16/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		36	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
12	502112226	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,345.00
13	502112227	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,390.00
14	502112228	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,390.00
15	502112229	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,320.00
16	502112230	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,400.00
17	502112231	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,530.00
18	502112232	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,475.00
19	502112233	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,315.00
10	502112234	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,300.00
11	502112235	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,380.00
12	502112236	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,505.00
13	502112237	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,420.00
14	502112238	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,405.00
15	502112239	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,380.00
16	502112240	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,355.00
17	502112241	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,365.00
	41,886			*Continued on next page.....*	43,005.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76502

Received at Spearfish, SD from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology, Inc. and Carrier. GSE Lining Technology, Inc.'s obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment.

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/16/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
18	502112242	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,345.00
19	502112243	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,385.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Total Quantity 41,886 Total Weight: 43,005.00

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

GSE

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76497

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/16/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		38	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	502112244	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,345.00
3	502112245	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,365.00
4	502112246	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,340.00
5	502112247	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,410.00
6	502112248	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,400.00
7	502112249	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,365.00
8	502112250	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,370.00
9	502112251	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,360.00
10	502112252	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,350.00
11	502112253	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,355.00
12	502112254	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,320.00
13	502112255	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,390.00
14	502112256	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,395.00
15	502112257	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,460.00
16	502112258	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,480.00
17	502112259	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,450.00
		44,213		*Continued on next page.....*	45,605.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

____
Signature of Consignor

Local Verification Signed:

X ______________________

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: ______________________

Carrier Signature: ______________________

Date: ______________________

GSE

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 76497

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Kent Odland 612-919-8266
Becker MN 55308

Date: 06/16/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 53885 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
18	502112260	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,470.00
19	502112261	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,520.00
20	502112262	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,460.00

Total Quantity 44,213

Total Weight: 45,605.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number:
PO 1004-08/SO 53884

If this shipment is to be delivered to consignor, consignor shall sign the following statement:

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: ____________

Carrier Signature: ____________

Date: ____________

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 77183

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Mitch Sunstad @ 612-490-7849
Becker MN 55308

Date: 07/03/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 54924 SG

Project# 524350

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		28	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	502112864	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,425.00
3	502112865	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,425.00
4	502112866	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,410.00
5	502112867	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,315.00
6	502112868	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,325.00
7	502112869	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,375.00
8	502112870	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,370.00
9	502112871	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,300.00
10	502112872	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,310.00
11	502112873	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,295.00
12	502112874	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,330.00
13	502112875	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,330.00
14	502112876	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,295.00
15	502112877	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,390.00

Total Quantity 32,578 Total Weight: 32,895.00

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1042-08/SO 54923

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 77181

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Mitch Sunstad @ 612-490-7849
Becker MN 55308

Date: 07/03/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 54924 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		28	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	502112878	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,445.00
3	502112879	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,280.00
4	502112880	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,250.00
5	502112881	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,335.00
6	502112882	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,340.00
7	502112883	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,340.00
8	502112884	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,350.00
9	502112885	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,415.00
10	502112886	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,465.00
11	502112887	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,430.00
12	502112888	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,385.00
13	502112889	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,425.00
14	502112890	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,460.00
15	502112891	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,380.00

Total Quantity 32,578

Total Weight: 33,300.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1042-08/SO 54923

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 77163

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Mitch Sunstad @ 612-490-7849
Becker MN 55308

Date: 07/02/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 54924 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		32	EA	6067 SLING, P#EN1-602X8'F6I (C) 2IX8F6I ORANGE 3800# CKR	
2	1118773	44	BC	BENTGRAN00 Loose Bentonite Clay Clay 50 lb. Bag	
3	502112892	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,360.00
4	502112893	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,420.00
5	502112894	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,405.00
6	502112895	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,385.00
7	502112896	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,400.00
8	502112897	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,415.00
9	502112898	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,460.00
10	502112899	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,440.00
11	502112900	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,460.00
12	502112901	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,390.00
13	502112902	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,500.00
14	502112903	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,510.00
15	502112904	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,430.00
16	502112905	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,385.00
17	502112906	2325	SF	BFIX330NWL Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,450.00
		37,276		*Continued on next page.....*	38,735.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: PO 1042-08/SO 54923

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name:

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at SPEARFISH, SD

Shippers No. 77163

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Mitch Sunstad @ 612-490-7849
Becker MN 55308

Date: 07/02/08

Branch Plant: 1515

Shipping Instructions:

Call 24 hours before delivery Mitch Sunstad 612-490-7849

Sales Order 54924 SG

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
18	502112907	2325	SF	**BFIX330NWL** Fabric GCL, NW/FW, 15.5' Bentofix NWL, 0.75 psf	2,325.00

Total Quantity 37,276

Total Weight: 38,735.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number:
PO 1042-08/SO 54923

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X ____________

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (605) 642-8531 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: ____________

Carrier Signature: ____________

Date: ____________

BENTOFIX TECHNOLOGIES, INC.

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX ROLL LIST

PROJECT: Sherburne Co. Generating Plant Pond No. 3
STYLE: Bentofix NWL
DATE: June 12, 2008

	BENTOFIX ROLL #	BENTOFIX LOT #	LENGTH (feet)	WIDTH (feet)
1	502112116	28061104	150.0	15.5
2	502112117	28061104	150.0	15.5
3	502112118	28061104	150.0	15.5
4	502112119	28061104	150.0	15.5
5	502112120	28061104	150.0	15.5
6	502112121	28061104	150.0	15.5
7	502112122	28061104	150.0	15.5
8	502112123	28061104	150.0	15.5
9	502112124	28061104	150.0	15.5
10	502112125	28061104	150.0	15.5
11	502112126	28061104	150.0	15.5
12	502112127	28061104	150.0	15.5
13	502112128	28061104	150.0	15.5
14	502112129	28061104	150.0	15.5
15	502112130	28061104	150.0	15.5
16	502112131	28061104	150.0	15.5
17	502112132	28061104	150.0	15.5
18	502112133	28061104	150.0	15.5
19	502112134	28061104	150.0	15.5
20	502112135	28061104	150.0	15.5
21	502112136	28061104	150.0	15.5
22	502112137	28061104	150.0	15.5
23	502112138	28061104	150.0	15.5
24	502112139	28061104	150.0	15.5
25	502112140	28061104	150.0	15.5
26	502112141	28061104	150.0	15.5
27	502112142	28061104	150.0	15.5
28	502112143	28061104	150.0	15.5
29	502112144	28061104	150.0	15.5
30	502112145	28061104	150.0	15.5

BENTOFIX TECHNOLOGIES, INC.

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX ROLL LIST

PROJECT: Sherburne Co. Generating Plant Pond No. 3
STYLE: Bentofix NWL
DATE: June 12, 2008

	BENTOFIX ROLL #	BENTOFIX LOT #	LENGTH (feet)	WIDTH (feet)
31	502112146	28061104	150.0	15.5
32	502112147	28061104	150.0	15.5
33	502112148	28061104	150.0	15.5
34	502112149	28061104	150.0	15.5
35	502112150	28061104	150.0	15.5
36	502112151	28061104	150.0	15.5
37	502112152	28061104	150.0	15.5
38	502112153	28061104	150.0	15.5
39	502112154	28061104	150.0	15.5
40	502112155	28061104	150.0	15.5
41	502112156	28061104	150.0	15.5
42	502112157	28061104	150.0	15.5
43	502112158	28061104	150.0	15.5
44	502112159	28061104	150.0	15.5
45	502112160	28061104	150.0	15.5
46	502112161	28061104	150.0	15.5
47	502112162	28061104	150.0	15.5
48	502112163	28061104	150.0	15.5
49	502112164	28061104	150.0	15.5
50	502112165	28061104	150.0	15.5
51	502112166	28061104	150.0	15.5
52	502112167	28061104	150.0	15.5
53	502112168	28061104	150.0	15.5
54	502112169	28061104	150.0	15.5
55	502112170	28061104	150.0	15.5
56	502112171	28061104	150.0	15.5
57	502112172	28061104	150.0	15.5
58	502112173	28061104	150.0	15.5
59	502112174	28061104	150.0	15.5
60	502112175	28061104	150.0	15.5

BENTOFIX TECHNOLOGIES, INC.

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX ROLL LIST

PROJECT: Sherburne Co. Generating Plant Pond No. 3
STYLE: Bentofix NWL
DATE: June 12, 2008

	BENTOFIX ROLL #	BENTOFIX LOT #	LENGTH (feet)	WIDTH (feet)
61	502112176	28061104	150.0	15.5
62	502112177	28061104	150.0	15.5
63	502112178	28061104	150.0	15.5
64	502112179	28061104	150.0	15.5
65	502112180	28061104	150.0	15.5
66	502112181	28061104	150.0	15.5
67	502112182	28061104	150.0	15.5
68	502112183	28061104	150.0	15.5
69	502112184	28061104	150.0	15.5
70	502112185	28061104	150.0	15.5
71	502112186	28061104	150.0	15.5
72	502112187	28061104	150.0	15.5
73	502112188	28061104	150.0	15.5
74	502112189	28061104	150.0	15.5

BENTOFIX TECHNOLOGIES, INC.

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX ROLL LIST

PROJECT: Sherburne Co. Generating Plant Pond No. 3
STYLE: Bentofix NWL
DATE: June 13, 2008

	BENTOFIX ROLL #	BENTOFIX LOT #	LENGTH (feet)	WIDTH (feet)
1	502112190	28061204	150.0	15.5
2	502112191	28061204	150.0	15.5
3	502112192	28061204	150.0	15.5
4	502112193	28061204	150.0	15.5
5	502112194	28061204	150.0	15.5
6	502112195	28061204	150.0	15.5
7	502112196	28061204	150.0	15.5
8	502112197	28061204	150.0	15.5
9	502112198	28061204	150.0	15.5
10	502112199	28061204	150.0	15.5
11	502112200	28061204	150.0	15.5
12	502112201	28061204	150.0	15.5
13	502112202	28061204	150.0	15.5
14	502112203	28061204	150.0	15.5
15	502112204	28061204	150.0	15.5
16	502112205	28061204	150.0	15.5
17	502112206	28061204	150.0	15.5
18	502112207	28061204	150.0	15.5
19	502112208	28061204	150.0	15.5
20	502112209	28061204	150.0	15.5
21	502112210	28061204	150.0	15.5
22	502112211	28061204	150.0	15.5
23	502112212	28061204	150.0	15.5
24	502112213	28061204	150.0	15.5
25	502112214	28061204	150.0	15.5
26	502112215	28061204	150.0	15.5
27	502112216	28061204	150.0	15.5
28	502112217	28061204	150.0	15.5
29	502112218	28061204	150.0	15.5
30	502112219	28061204	150.0	15.5

BENTOFIX TECHNOLOGIES, INC.

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX ROLL LIST

PROJECT: Sherburne Co. Generating Plant Pond No. 3
STYLE: Bentofix NWL
DATE: June 13, 2008

	BENTOFIX ROLL #	BENTOFIX LOT #	LENGTH (feet)	WIDTH (feet)
31	502112220	28061204	150.0	15.5
32	502112221	28061204	150.0	15.5
33	502112222	28061204	150.0	15.5
34	502112223	28061204	150.0	15.5
35	502112224	28061204	150.0	15.5
36	502112225	28061204	150.0	15.5
37	502112226	28061204	150.0	15.5
38	502112227	28061204	150.0	15.5
39	502112228	28061204	150.0	15.5
40	502112229	28061204	150.0	15.5
41	502112230	28061204	150.0	15.5
42	502112231	28061204	150.0	15.5
43	502112232	28061204	150.0	15.5
44	502112233	28061204	150.0	15.5
45	502112234	28061204	150.0	15.5
46	502112235	28061204	150.0	15.5
47	502112236	28061204	150.0	15.5
48	502112237	28061204	150.0	15.5
49	502112238	28061204	150.0	15.5
50	502112239	28061204	150.0	15.5
51	502112240	28061204	150.0	15.5
52	502112241	28061204	150.0	15.5
53	502112242	28061204	150.0	15.5
54	502112243	28061204	150.0	15.5
55	502112244	28061204	150.0	15.5
56	502112245	28061204	150.0	15.5
57	502112246	28061204	150.0	15.5
58	502112247	28061204	150.0	15.5
59	502112248	28061204	150.0	15.5
60	502112249	28061204	150.0	15.5

BENTOFIX TECHNOLOGIES, INC.

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX ROLL LIST

PROJECT: Sherburne Co. Generating Plant Pond No. 3
STYLE: Bentofix NWL
DATE: June 13, 2008

	BENTOFIX ROLL #	BENTOFIX LOT #	LENGTH (feet)	WIDTH (feet)
61	502112250	28061204	150.0	15.5
62	502112251	28061204	150.0	15.5
63	502112252	28061204	150.0	15.5
64	502112253	28061204	150.0	15.5
65	502112254	28061204	150.0	15.5
66	502112255	28061204	150.0	15.5
67	502112256	28061204	150.0	15.5
68	502112257	28061204	150.0	15.5
69	502112258	28061204	150.0	15.5
70	502112259	28061204	150.0	15.5
71	502112260	28061204	150.0	15.5
72	502112261	28061204	150.0	15.5
73	502112262	28061204	150.0	15.5

BENTOFIX TECHNOLOGIES, INC.

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX ROLL LIST

PROJECT: Sherburne Co. Generating Plant Pond No. 3
STYLE: Bentofix NWL
DATE: June 30, 2008

	BENTOFIX ROLL #	BENTOFIX LOT #	LENGTH (feet)	WIDTH (feet)
1	502112864	28062604	150.0	15.5
2	502112865	28062604	150.0	15.5
3	502112866	28062604	150.0	15.5
4	502112867	28062604	150.0	15.5
5	502112868	28062604	150.0	15.5
6	502112869	28062604	150.0	15.5
7	502112870	28062604	150.0	15.5
8	502112871	28062604	150.0	15.5
9	502112872	28062604	150.0	15.5
10	502112873	28062604	150.0	15.5
11	502112874	28062604	150.0	15.5
12	502112875	28062604	150.0	15.5
13	502112876	28062604	150.0	15.5
14	502112877	28062604	150.0	15.5
15	502112878	28062604	150.0	15.5
16	502112879	28062604	150.0	15.5
17	502112880	28062604	150.0	15.5
18	502112881	28062604	150.0	15.5
19	502112882	28062604	150.0	15.5
20	502112883	28062604	150.0	15.5
21	502112884	28062604	150.0	15.5
22	502112885	28062604	150.0	15.5
23	502112886	28062604	150.0	15.5
24	502112887	28062604	150.0	15.5
25	502112888	28062604	150.0	15.5
26	502112889	28062604	150.0	15.5
27	502112890	28062604	150.0	15.5
28	502112891	28062604	150.0	15.5
29	502112892	28062604	150.0	15.5
30	502112893	28062604	150.0	15.5

BENTOFIX TECHNOLOGIES, INC.

3150 1st Ave
Spearfish, SD 57783

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

BENTOFIX ROLL LIST

PROJECT: Sherburne Co. Generating Plant Pond No. 3
STYLE: Bentofix NWL
DATE: June 30, 2008

	BENTOFIX ROLL #	BENTOFIX LOT #	LENGTH (feet)	WIDTH (feet)
31	502112894	28062604	150.0	15.5
32	502112895	28062604	150.0	15.5
33	502112896	28062604	150.0	15.5
34	502112897	28062604	150.0	15.5
35	502112898	28062604	150.0	15.5
36	502112899	28062604	150.0	15.5
37	502112900	28062604	150.0	15.5
38	502112901	28062604	150.0	15.5
39	502112902	28062604	150.0	15.5
40	502112903	28062604	150.0	15.5
41	502112904	28062604	150.0	15.5
42	502112905	28062604	150.0	15.5
43	502112906	28062604	150.0	15.5
44	502112907	28062604	150.0	15.5

Subgrade Acceptance Forms

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION

PROJECT NAME: Sherco

LOCATION: Becker, MN

JOB NUMBER: 200806 CLIENT: Veit

AREA ACCEPTED: 28,337 sq. ft. East slope of weir, and north face

COMMENTS: of south slope, east of weir

INSTALLER: The undersigned authorized representative of CAAW Systems certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

CAAW Systems shall be responsible for the integrity of finished geosynthetic material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. CAAW Systems has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

CERTIFICATE APPROVED BY:

Installers Acceptance		Inspectors Acceptance	
Company:	Clean Air And Water Systems, LLC	Company:	McCain + Associates
By:	Sengratana Sengsay	By:	Isaac J. Fuhr
Title:	QAQC	Title:	Field Engineer
Date:	6-20-08	Date:	6/20/08

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION

PROJECT NAME: SHERCO POND 3 SLOPE LINER

LOCATION: BECKER, MN

JOB NUMBER: 200806 CLIENT: VEIT COMPANY

AREA ACCEPTED: 19,627 SQ FT.

COMMENTS: WEST SLOPE of the weir ~~EAST SLOPE~~, S. face of S. embankment (East end, W. of weir and easterly 100' of S. embankment, west of weir (N. face)

INSTALLER: The undersigned authorized representative of CAAW Systems certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

CAAW Systems shall be responsible for the integrity of finished geosynthetic material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. CAAW Systems has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

CERTIFICATE APPROVED BY:

Installers Acceptance		Inspectors Acceptance	
Company:	Clean Air And Water Systems, LLC	Company:	McCain and Associates, Inc.
By:	Sengratana Sengsay	By:	Isaac J. Fuhr
Title:	QAQC	Title:	Field Engineer
Date:	6-21-08	Date:	6/21/08

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION

PROJECT NAME: Sherco power plant

LOCATION: Becker, Mn

JOB NUMBER: 200806 CLIENT: Veit

AREA ACCEPTED: 36,480 sq Ft.

COMMENTS: North face of the South Slope (East half)

INSTALLER: The undersigned authorized representative of CAAW Systems certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

AAW Systems shall be responsible for the integrity of finished geosynthetic material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. CAAW Systems has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

CERTIFICATE APPROVED BY:

Installers Acceptance		Inspectors Acceptance	
Company:	Clean Air And Water Systems, LLC	Company:	McCain + Assoc.
By:	Sengratana Sengsay	By:	Isaac Fuhr
Title:	QAQC	Title:	Field Eng.
Date:	6-24-08	Date:	6/24/08

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION

PROJECT NAME: Sherco Power Plant Pond 3 Slope

LOCATION: Becker, MN

JOB NUMBER: 200806 CLIENT: Veit

AREA ACCEPTED: 43,776 sq Ft.

COMMENTS: Southern Slope - North face Westside

INSTALLER: The undersigned authorized representative of CAAW Systems certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

CAAW Systems shall be responsible for the integrity of finished geosynthetic material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. CAAW Systems has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

CERTIFICATE APPROVED BY:

Installers Acceptance		Inspectors Acceptance	
Company:	Clean Air And Water Systems, LLC	Company:	McCain + Assoc.
By:	Sengratana Sengsay	By:	Isaac Fehr
Title:	QAQC	Title:	Field Eng.
Date:	6-25-08	Date:	6/25/08

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION

PROJECT NAME: Sherco Power Plant Pond 3 Slope Liner

LOCATION: Becker, Mn

JOB NUMBER: 200806 CLIENT: Veit

AREA ACCEPTED: 103,617 sq ft

COMMENTS: South Slope - Southwest Corner face
West Slope - East face

INSTALLER: The undersigned authorized representative of CAAW Systems certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

CAAW Systems shall be responsible for the integrity of finished geosynthetic material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. CAAW Systems has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

CERTIFICATE APPROVED BY:

Installers Acceptance		Inspectors Acceptance	
Company:	Clean Air And Water Systems, LLC	Company:	McCain
By:	Sengratana Sengsay	By:	[illegible]
Title:	QAQC	Title:	Field engineer
Date:	7-1-08	Date:	7/1/08

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION

PROJECT NAME: Sherco Power Plant - Pond 3 Slope liner

LOCATION: Becker, MN

JOB NUMBER: 200806 CLIENT: Veit

AREA ACCEPTED: 83,835 sq. ft

COMMENTS: West Slope - east face to the northwest corner

INSTALLER: The undersigned authorized representative of CAAW Systems certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

CAAW Systems shall be responsible for the integrity of finished geosynthetic material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. CAAW Systems has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

CERTIFICATE APPROVED BY:

Installers Acceptance		Inspectors Acceptance	
Company:	Clean Air And Water Systems, LLC	Company:	McCain + Associates
By:	Sengratana Sengsay	By:	Isaac Fuhr
Title:	QAQC	Title:	Field Engineer
Date:	7-7-08	Date:	7/8/08

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION

PROJECT NAME: Sherco Power Plant – Pond 3 Slope Liner

LOCATION: Becker, MN

JOB NUMBER: 200806 CLIENT: Veit

AREA ACCEPTED: 10,400 sq ft

COMMENTS: West slope – East face of the northwest Corner from el. 995 to 1010 (northern 165' of W. slope of Pond 3N)

INSTALLER: The undersigned authorized representative of CAAW Systems certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

AAW Systems shall be responsible for the integrity of finished geosynthetic material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. CAAW Systems has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

CERTIFICATE APPROVED BY:

Installers Acceptance		Inspectors Acceptance	
Company:	Clean Air And Water Systems, LLC	Company:	McCain + Associates, Inc
By:	Sengratana Sengsay	By:	Isaac Fuhr
Title:	QAQC	Title:	Field Engineer
Date:	7.9.08	Date:	7/9/08

CERTIFICATE OF ACCEPTANCE OF SUBGRADE SURFACE PREPARATION FOR GEOMEMBRANE INSTALLATION

PROJECT NAME: Sherco Generating pland (pond 3)

LOCATION: Becker MN

JOB NUMBER: ~~Whole Area~~ 200806 CLIENT:

AREA ACCEPTED: Whole Area of Upper flap

COMMENTS:

INSTALLER: The undersigned authorized representative of CAAW Systems certifies that he or she has visually inspected the subgrade surface of the area described above and has found the surface to be acceptable for installation of the geosynthetic materials.

CAAW Systems shall be responsible for the integrity of finished geosynthetic material until completion of the installation or demobilization from site.

This certification is based on observations of the subgrade surface conditions only. CAAW Systems has made no sub-terrain inspections or tests and makes no representations or warranties as to the conditions that may exist below the surface of the subgrade.

CERTIFICATE APPROVED BY:

	Installers Acceptance		Inspectors Acceptance
Company:	Clean Air And Water Systems, LLC	Company:	McCain + Associates
By:	Jack Xaysana	By:	Isaac Fehr
Title:	Superintendent	Title:	Field Engineer
Date:	8-11-07	Date:	8/12/08

Appendix J

High Density Polyethylene (HDPE) Geomembrane Data

Geomembrane Roll Packing Lists
Geomembrane Roll Test Data
Resin Test Data
O.I.T and Oven Aging Test Data
Stress Crack Resistance Test Data
Welding Rod Test Data
Material Delivery Inventory
Tensiometer Calibration Certificates
Trial Weld Testing Reports
Panel Placement Forms
Panel Seaming Forms
Non-Destructive Testing Reports
Destructive Testing Reports
Geomembrane Repair Reports
As-Built Geomembrane Panel Layout Drawing
Warranty

Geomembrane Roll Packing List

Shipping Order - Packing List - Original - Not Negotiable

GSE

GSE Lining Technology, Inc. at HOUSTON, TEXAS

Shippers No. 74485

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Becker MN 55308

Date: 03/27/08

received 3/31/08

Roll Certifications Included

Branch Plant: 1500

Shipping Instructions:

Call 24 hours before pickup Mitch Sunstad 612-490-7849

Sales Order 53884 SO

Project# 524350

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		1	EA	FREIGHTSHT002 DOM. SHIPPING CHARGE DOMESTIC SHEET TAXABLE	
✓ 2	108127180	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,924.00
✓ 3	108127181	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,940.00
✓ 4	108127184	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,952.00
✓ 5	108127185	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,944.00
✓ 6	108127188	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,944.00
✓ 7	108127189	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,946.00
✓ 8	108127191	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,940.00
✓ 9	108127196	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,950.00
✓ 10	108127197	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,954.00
✓ 11	108127198	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,958.00
✓ 12	108127201	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,944.00
✓ 13	108127205 dropped - bad strap	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,944.00

Total Quantity 140,401 Total Weight: 47,340.00

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: 1004-08/REF SG 53885

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up # 1935412

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: Barnett

Carrier Signature:

Date:

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at HOUSTON, TEXAS

Shippers No. 74480

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Becker MN 55308

Date: 03/27/08

Roll Certifications Included

Branch Plant: 1500

Shipping Instructions:

Call 24 hours before pickup — Mitch Sunstad 612-490-7849

Sales Order: 53884 SO

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		1	EA	FREIGHTSHT002 DOM. SHIPPING CHARGE DOMESTIC SHEET TAXABLE	
2	108127182	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,950.00
3	108127186	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,942.00
4	108127187	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,930.00
5	108127195	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,944.00
6	108127199	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,956.00
7	108127200	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,946.00
8	108127202	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,940.00
9	108127203	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,972.00
10	108127204	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,938.00
11	108127207	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,928.00
12	108127208	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,914.00
13	108127209	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,912.00

Delivery 04/3/08

Total Quantity 140,401

Total Weight: 47,272.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: 1004-08/REF SG 53885

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up #

Seal #

Truckers P.O. #

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: Bennett

Carrier Signature:

Date:

GSE

Shipping Order - Packing List - Original - Not Negotiable

T893

GSE Lining Technology, Inc. at HOUSTON, TEXAS

Shippers No. 74487

Received at Houston, Texas from GSE Lining Technology, Inc. the property described below, in apparent good order, except as noted (contents and condition of packages unknown), marked, consigned, and destined as indicated below, which said Carrier agrees to carry to the place of delivery at said destination. It is mutually agreed as to each Carrier of all or any said property, over all or any portion of said route to destination, and as to each party at any time interested in all or any of said property, that every service performed hereunder shall be subject to the rates and contract agreed to in writing by GSE Lining Technology, Inc. and Carrier. GSE Lining Technology, Inc.'s obligation to pay freight charges for the shipment is conditioned on (1) the existence of a separate written contract with the carrier transporting the freight and (2) the carrier's name appearing on this Bill of Lading, and other carriers must look solely to a party other than GSE Lining Technology, Inc. for payment.

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Becker MN 55308

Roll Certifications Included

Received 3/31/08 TB

Date: 03/27/08

Branch Plant: 1500

Shipping Instructions:

Call 24 hours before pickup — Mitch Sunstad 612-490-7849

Sales Order 53884 SO

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		1	EA	FREIGHTSHT002 DOM. SHIPPING CHARGE DOMESTIC SHEET TAXABLE	
2	104138219	15750	SF	LUT040G000 40 mil GM17 UltraFlex Textured Blk, VF, 2 Side Tex, 22.5'	3,612.00
3	104138222	15750	SF	LUT040G000 40 mil GM17 UltraFlex Textured Blk, VF, 2 Side Tex, 22.5'	3,618.00
4	104138223	15750	SF	LUT040G000 40 mil GM17 UltraFlex Textured Blk, VF, 2 Side Tex, 22.5'	3,618.00
5	104138224	15750	SF	LUT040G000 40 mil GM17 UltraFlex Textured Blk, VF, 2 Side Tex, 22.5'	3,610.00
6	104138225	15750	SF	LUT040G000 40 mil GM17 UltraFlex Textured Blk, VF, 2 Side Tex, 22.5'	3,594.00
7	104138226	15750	SF	LUT040G000 40 mil GM17 UltraFlex Textured Blk, VF, 2 Side Tex, 22.5'	3,586.00
8	108127183	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,940.00
9	108127190	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,946.00
10	108127192	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,940.00
11	108127193	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,946.00
12	108127194	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,942.00
13	108127206	11700	SF	HDT060GW00 60 mil GM13 GSE Weld Edge Text Blk, HDT, 2 Side Tex, 22.5'	3,944.00

[signature] 3/31/08

Total Quantity 164,701 **Total Weight:** 45,296.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: 1004-08/REF SG 53885

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up # 19593RT

Seal #

Truckers P.O. # 1023800

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: Dahlheit

Carrier Signature: [signature]

Date: 3-27-08

Shipping Order - Packing List - Original - Not Negotiable

GSE Lining Technology, Inc. at HOUSTON, TEXAS

Shippers No. 77036

Ship To: CAAWS/Sherco Ash
Sherburne County Generating Station
13999 Industrial Boulevard
Mitch Sunstad @ 612-490-7849
Becker MN 55308

Roll Certifications Included

Date: 06/27/08

Branch Plant: 1500

Shipping Instructions:

Call 24 hours before pickup Mitch Sunstad @ 612-490-7849

Sales Order 54923 SO

No. Line	Roll #	QTY Shipped	UM	Kind of Package, Description of Articles, Special Marks and Exceptions	Weight
1		1	EA	FREIGHTSHT002 DOM. SHIPPING CHARGE DOMESTIC SHEET TAXABLE	
2	108115340	12600	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	4,330.00
3	108120310	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	4,064.00
4	108120311	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	4,068.00
5	108120312	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	4,080.00
6	108120314	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	4,102.00
7	108120315	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	4,080.00
8	108120316	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	4,020.00
9	108120490	11025	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	3,992.00
10	108128133	11700	SF	HDT060AW00 60 mil Avg GSE Weld Edge Text. Blk, HDT, 2 Side Tex, 22.5'	4,254.00

Del. 6/30/08

Total Quantity 105,526 Total Weight: 36,990.00

Project# 524350

Freight charges are prepaid unless marked collect.

Check box if collect ☐

Customer P.O. Number: 1042-08

If this shipment is to be delivered to consignor, consignor shall sign the following statement.

Carrier may decline to deliver this shipment without payment of freight and all other lawful charges.

Signature of Consignor

Local Verification Signed:

X

Pick Up # 20748RR

Seal #

Truckers P.O. # P0301829

Driver Requirements:

1) Driver must pre call 24 hrs prior to delivery and on Friday for Monday delivery.
2) Driver must call (281) 230-6781 when unloaded.
3) Driver must call and advise any delay in transit.
4) A copy of this bill of lading must accompany Freight Invoice.

Carrier Name: Melton

Carrier Signature:

Date:

Geomembrane Roll Test Data

GSE Lining Technology, Inc

Roll Test Data Report

Bill of Lading: 74485

Sales Order No.	Project Number	Customer Name	Project Location	Product Name	Report Date
53884	524350	Clean Air & Water Systems, LLC	Becker, MN	HDT060GW00	3/27/2008

GSE QC APPROVED

*Modified

	ASTM D 5994		ASTM D638,Type IV / D6693								ASTM D 1004		ASTM D 4833	ASTM D 1505	ASTM D 4218/1603	ASTM D 5596	GRI GM 12	
	Average Thickness (mils)	Minimum Thickness (mils)	TD Strength @ Yield (ppi)	MD Strength @ Yield (ppi)	TD Strength @ Break (ppi)	MD Strength @ Break (ppi)	TD Elongation @ Yield (%)	MD Elongation @ Yield (%)	TD Elongation @ Break (%)	MD Elongation @ Break (%)	TD Tear Resistance (lbs)	MD Tear Resistance (lbs)	Puncture Resistance (lbs)	Density (g/cc)	Carbon Black Content (%)	Carbon Black Dispersion Views in Cat1 - Cat2	Asperity Height Side A (mils)	Asperity Height Side B (mils)
Roll No.	every roll		every 4th								every 4th		every 4th	every 4th	every 4th	every 4th	every 2nd	
108127180	58	53	161	165	177	177	15	16	549	461	52	54	148	0.946	2.62	10	25	22
108127181	58	54	164	161	179	200	16	17	529	543	52	55	150	0.946	2.59	10	23	22
108127184	58	54	164	161	179	200	16	17	529	543	52	55	150	0.946	2.59	10	23	21
108127185	59	54	163	158	174	203	15	18	456	566	51	53	145	0.946	2.46	10	22	22
108127188	59	54	163	158	174	203	15	18	456	566	51	53	145	0.946	2.46	10	21	21
108127189	58	53	158	161	170	192	16	16	513	526	51	53	148	0.945	2.56	10	22	22
108127191	59	54	158	161	170	192	16	16	513	526	51	53	148	0.945	2.56	10	22	22
108127196	57	55	159	163	187	201	16	16	599	554	52	54	151	0.945	2.55	10	22	21
108127197	58	55	164	162	186	210	15	17	510	559	51	53	146	0.945	2.49	10	20	20
108127198	58	56	164	162	186	210	15	17	510	559	51	53	146	0.945	2.49	10	20	20
108127201	57	53	164	166	185	202	16	16	546	595	52	54	150	0.945	2.51	10	20	18
108127205	58	56	175	169	161	196	15	17	320	486	51	55	144	0.945	2.58	10	20	18

Approved By: Jane Allen

GSE-8.2.4-029 Rev - - 03/05

19103 Gundle Road - Houston, Texas 77073

GSE Lining Technology, Inc

Roll Test Data Report

Bill of Lading: 74480

Sales Order No.	Project Number	Customer Name	Project Location	Product Name	Report Date
53884	524350	Clean Air & Water Systems, LLC	Becker, MN	HDT060GW00	3/27/2008

GSE QC APPROVED

*Modified

Roll No.	ASTM D 5994 Average Thickness (mils)	ASTM D 5994 Minimum Thickness (mils)	ASTM D638, Type IV / D6693 TD Strength @ Yield (ppi)	MD Strength @ Yield (ppi)	TD Strength @ Break (ppi)	MD Strength @ Break (ppi)	TD Elongation @ Yield (%)	MD Elongation @ Yield (%)	TD Elongation @ Break (%)	MD Elongation @ Break (%)	ASTM D 1004 TD Tear Resistance (lbs)	ASTM D 1004 MD Tear Resistance (lbs)	ASTM D 4833 Puncture Resistance (lbs)	ASTM D 1505 Density (g/cc)	ASTM D 4218/1603 Carbon Black Content (%)	ASTM D 5596 Carbon Black Dispersion Views in Cat1 - Cat2	GRI GM 12 Asperity Height Side A (mils)	GRI GM 12 Asperity Height Side B (mils)
	every roll		every 4th								every 4th		every 4th	every 4th	every 4th	every 4th	every 2nd	
108127182	59	53	164	161	179	200	16	17	529	543	52	55	150	0.946	2.59	10	23	22
108127186	59	53	163	158	174	203	15	18	456	566	51	53	145	0.946	2.46	10	22	22
108127187	59	53	163	158	174	203	15	18	456	566	51	53	145	0.946	2.46	10	21	21
108127195	58	55	159	163	187	201	16	16	599	554	52	54	151	0.945	2.55	10	22	21
108127199	57	54	164	162	186	210	15	17	510	559	51	53	146	0.945	2.49	10	22	21
108127200	57	54	164	162	186	210	15	17	510	559	51	53	146	0.945	2.49	10	22	21
108127202	57	53	164	166	185	202	16	16	546	595	52	54	150	0.945	2.51	10	20	18
108127203	57	53	164	166	185	202	16	16	546	595	52	54	150	0.945	2.51	10	20	18
108127204	57	53	164	166	185	202	16	16	546	595	52	54	150	0.945	2.51	10	20	18
108127207	58	54	175	169	161	196	15	17	320	486	51	55	144	0.945	2.58	10	20	18
108127208	58	52	175	169	161	196	15	17	320	486	51	55	144	0.945	2.58	10	20	18
108127209	58	53	166	159	176	187	18	17	514	549	50	54	143	0.945	2.58	10	20	19

Approved By: Jane Allen

GSE-8.2.4-029 Rev - - 03/05

19103 Gundle Road - Houston, Texas 77073

GSE Lining Technology, Inc

Roll Test Data Report

Bill of Lading: 74487

Sales Order No.	Project Number	Customer Name	Project Location	Product Name		Report Date
53884	524350	Clean Air & Water Systems, LLC	Becker, MN	HDT060GW00	GSE QC APPROVED	3/27/2008

*Modified

	ASTM D 5994		ASTM D638,Type IV / D6693								ASTM D 1004		ASTM D 4833	ASTM D 1505	ASTM D 4218/1603	ASTM D 5596	GRI GM 12	
	Average Thickness (mils)	Minimum Thickness (mils)	TD Strength @ Yield (ppi)	MD Strength @ Yield (ppi)	TD Strength @ Break (ppi)	MD Strength @ Break (ppi)	TD Elongation @ Yield (%)	MD Elongation @ Yield (%)	TD Elongation @ Break (%)	MD Elongation @ Break (%)	TD Tear Resistance (lbs)	MD Tear Resistance (lbs)	Puncture Resistance (lbs)	Density (g/cc)	Carbon Black Content (%)	Carbon Black Dispersion Views in Cat1 - Cat2	Asperity Height Side A (mils)	Asperity Height Side B (mils)
Roll No.	every roll		every 4th								every 4th		every 4th	every 4th	every 4th	every 4th	every 2nd	
108127189	59	53	164	161	179	200	16	17	529	543	52	55	150	0.946	2.59	10	23	21
108127190	58	53	158	161	170	192	16	16	513	526	51	53	148	0.945	2.56	10	22	22
108127192	58	53	158	161	170	192	16	16	513	526	51	53	148	0.945	2.56	10	22	22
108127193	58	54	159	163	187	201	16	16	599	554	52	54	151	0.945	2.55	10	23	21
108127194	58	53	159	163	187	201	16	16	599	554	52	54	151	0.945	2.55	10	23	21
108127206	58	56	175	169	161	196	15	17	320	486	51	55	144	0.945	2.58	10	20	18

Approved By: Jane Allen

This test report shall not be reproduced, except in full, without written approval of the laboratory.

GSE-8.2.4-029 Rev -- 03/05

19103 Gundle Road - Houston, Texas 77073

GSE Lining Technology, Inc

Roll Test Data Report

Sales Order No.	Project Number	Customer Name	Project Location	Product Name	Report Date
54923	524350	Clean Air and Water Systems, LLC	Becker, MN	HDT060AW00	6/27/2008

GSE QC APPROVED

Roll No.	Average Thickness (mils)	Minimum Thickness (mils)	TD Strength @ Yield (ppi)	MD Strength @ Yield (ppi)	TD Strength @ Break (ppi)	MD Strength @ Break (ppi)	TD Elongation @ Yield (%)	MD Elongation @ Yield (%)	TD Elongation @ Break (%)	MD Elongation @ Break (%)	TD Tear Resistance (lbs)	MD Tear Resistance (lbs)	Puncture Resistance (lbs)	Density (g/cc)	Carbon Black Content (%)	Carbon Black Dispersion Views in Cat1 - Cat2	Asperity Height Side A (mils)	Asperity Height Side B (mils)
	ASTM D 5994		ASTM D638,Type IV / D6693								ASTM D 1004		ASTM D 4833	ASTM D 1505	ASTM D 4218/1603	ASTM D 5596	GRI GM 12	
	every roll		every 4th								every 4th		every 4th	every 4th	every 4th	every 4th	every 2nd	
108115340	61	57	172	166	179	205	15	17	480	520	55	56	153	0.947	2.52	10	24	26
108120310	62	59	164	163	181	199	15	15	545	555	53	57	146	0.945	2.37	10	21	19
108120311	62	57	164	163	181	199	15	15	545	555	53	57	146	0.945	2.37	10	23	24
108120312	62	56	164	163	181	199	15	15	545	555	53	57	146	0.945	2.37	10	23	24
108120314	61	58	169	165	146	176	15	16	335	470	55	58	150	0.945	2.40	10	26	27
108120315	62	59	169	165	146	176	15	16	335	470	55	58	150	0.945	2.40	10	26	24
108120316	61	56	169	165	146	176	15	16	335	470	55	58	150	0.945	2.40	10	26	24
108120490	64	60	162	161	171	156	15	16	440	410	55	57	140	0.944	2.43	10	28	24
108128133	61	58	182	179	174	178	15	17	336	334	57	60	158	0.946	2.41	10	27	27

Laboratory Manager: Jane Allen

GSE-8.2.4-029 Rev – 03/05

19103 Gundle Road - Houston, Texas 77073

Resin Test Data

Chevron Phillips Chemical Company LP

CoA Date: 03/31/2008

Certificate of Analysis

Shipped To: GSE LINING TECHNOLOGY INC: HC 19103 GUNDLE ROAD WESTFIELD TX 77090 USA Recipient: Phouangsavanh Fax:	CPC Delivery #: 87622564 PO #: 44276 Weight: 185900 LB Ship Date: 03/31/2008 Package: BULK Mode: Hopper Car Car #: GOCX058030 Seal No: 252855

Product:
MARLEX POLYETHYLENE K306 BULK

Lot Number: 8280314

Property	Test Method	Value	Unit
Melt Index	ASTM D1238	0.1	g/10ml
HLMI Flow Rate	ASTM D1238	12.7	g/10ml
Density	ASTM D1505	0.937	g/cm3
Production Date		03/19/2008	

The data set forth herein have been carefully compiled by Chevron Phillips Chemical Company LP.
However, there is no warranty of any kind, either expressed or implied, applicable to its use, and the user assumes all risk and liability in connection therewith.

Troy Griffin

Troy Griffin
Quality Systems Coordinator

For CoA questions contact Customer Service Representative at 800-231-1212

PETROMONT

Petromont and Company, Limited Partnership
Petromont Inc., Sole General Partner
10455 Metropolitain East
Montreal-East, QC, H1B 1A1
CANADA
Tel: 514-640-7400
http://www.petromont.qc.ca

Customer information	Quality certificate
GSE LINING TECHNOLOGY INC.(D) 19103 GUNDLE ROAD HOUSTON TX 77073 USA	Date 2006/04/11 12:14:19
Contact DON BOHAC	Delivery item S-7000 PETROMONT HDPE-7000
Your reference	Delivery number and item
Your material number	Order number and item
	Vehicule UNPX 123407

Material : S-7000 PETROMONT HDPE-7000
Batch MM 194884

Characteristics	Unit	Value	Lower limit	Upper limit
Melt index 190C 2.16 kg	g/10mi	0.130		
Flow Index 190C 21.6kg	g/10mi	16.3	13.0	18.0
Melt Flow Ratio	---	125.7		
Density Annealed 15C/min	g/cc	0.9373	0.9360	0.9390
Oxydative Induction Time	min	156		

End

Daniel L'Archevêque
Quality Control Laboratory
Authorized representative

Responsible Care
Beyond what's required.

Petromont certifies that the batch number of the product list above meet its internal manufacturing specifications for the properties listed above.

PĖTROMONT

Petromont and Company, Limited Partnership
Petromont Inc., Sole General Partner
10455 Metropolitain East
Montreal-East, QC, H1B 1A1
CANADA
Tel: 514-640-7400
http://www.petromont.qc.ca

Customer information

GSE LINING TECHNOLOGY.INC
PETROMONT INC.C/O.
14732 WESTFIELD
WESTFIELD TX 77090
USA

Contact
DON BOHAC

Your reference

Your material number

Quality certificate

Date
2007/01/04 16:53:43

Delivery item
PETROMONT HDPE-7000

Delivery number and item

Order number and item

Vehicule
UNPX 23722

Material : PETROMONT HDPE-7000
Batch MM 196810

Characteristics	Unit	Value	Lower limit	Upper limit
Melt index 190C 2.16 kg	g/10mi	0.130		
Flow Index 190C 21.6kg	g/10mi	16.4	13.0	18.0
Melt Flow Ratio	---	126.4		
Density Annealed 15C/min	g/cc	0.9381	0.9360	0.9390
Oxydative Induction Time	min	174	130	

*** End ***

Daniel L'Archevêque
Quality Control Laboratory
Authorized representative.

Responsible Care®
Beyond what's required.

Petromont certifies that the batch number of the product list above meet its internal manufacturing specifications for the properties listed above.

PETROMONT

Petromont and Company, Limited Partnership
Petromont Inc., Sole General Partner
10455 Metropolitain East
Montreal-East, QC, H1B 1A1
CANADA
Tel: 514-640-7400
http://www.petromont.qc.ca

Customer information

GSE LINING TECHNOLOGY INC
PETROMONT INC.C/O
14732 WESTFIELD
WESTFIELD TX 77090
USA

Contact
DON BOHAC

Your reference

Your material number

Quality certificate

Date
2007/01/04 16:53:55

Delivery item
PETROMONT HDPE-7000

Delivery number and item

Order number and item

Vehicule
UNPX123683

Material : PETROMONT HDPE-7000
Batch MM 196812

Characteristics	Unit	Value	Lower limit	Upper limit
Melt index 190C 2.16 kg	g/10mi	0.130		
Flow Index 190C 21.6kg	g/10mi	16.7	13.0	18.0
Melt Flow Ratio	---	128.3		
Density Annealed 15C/min	g/cc	0.9375	0.9360	0.9390
Oxydative Induction Time	min	174	130	

End

Daniel L'Archevêque
Quality Control Laboratory
Authorized representative

Responsible Care®
Beyond what's required.

Petromont certifies that the batch number of the product list above meet its internal manufacturing specifications for the properties listed above.

Report Date
7/1/2008

GSE

Quality Assurance Laboratory Test Results

Job Name: Sherburne Co. Generating Plant Pond No. 3
Sales Order: 54923

Required Testing: ASTM D 3895 -- Standard Test Method for Oxidative Induction Time of Polyolefins by Differential Scanning Calorimetry

Custom Frequency: 1/200,000 lbs

Custom Criteria: 100 minutes

Product Code	Resin Lot Number	Test Results
HDT060AW00	194884	PASS
HDT060AW00	196812	PASS
HDT060AW00	196810	PASS
HDT060AW00	8280314	PASS

Approved By: Jeff Theobald
Date Approved: June 27, 2008

O.I.T and Oven Aging Test Data

Report Date
5/16/2008

GSE

Quality Assurance Laboratory Test Results

Job Name: Sherburne Co. Generating Plant Pond No. 3
Sales Order: 53884

Required Testing: ASTM D 3895 -- Standard Test Method for Oxidative Induction Time of Polyolefins by Differential Scanning Calorimetry

Custom Frequency: 1/200,000

Custom Criteria: 100 minutes

Roll Number	Product Code	Resin Lot Number	Test Results
108127180	HDT060GW00	199786	146
108127197	HDT060GW00	199786	151

Approved By: Jane Allen
Date Approved: March 27, 2008

Report Date
7/1/2008

GSE

Quality Assurance Laboratory Test Results

Job Name: Sherburne Co. Generating Plant Pond No. 3
SO Number: 54923

The table below summarizes additive performance of GSE Houston products as perceived by OIT retention after Oven and UV Aging per GRI Test Method GM13:

		Oven Aging @ 85° C (ASTM D 5721)				UV Resistance per GRI GM11			
		90 days per ASTM D 3895				1600 hours UV Aging per ASTM D 5885			
Product Type	**Formulation**	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)
HDPE Geomembrane	Chevron Phillips Marlex® K306 + Carbon Black	697	661	94	55	697	565	81	50

Approved By: Jeff Theobald
Date: June 27, 2008

Report Date
7/1/2008

GSE

Quality Assurance Laboratory Test Results

Job Name: Sherburne Co. Generating Plant Pond No. 3
SO Number: 54923

The table below summarizes additive performance of GSE Houston products as perceived by OIT retention after Oven and UV Aging per GRI Test Method GM13:

		Oven Aging @ 85° C (ASTM D 5721) 90 days per ASTM D 3895				UV Resistance per GRI GM11 1600 hours UV Aging per ASTM D 5885			
Product Type	**Formulation**	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)
HDPE Geomembrane	PETROMONT 7000	539	505	93	80	539	515	95	50

Approved By: Jeff Theobald
Date: June 27, 2008

Report Date
5/16/2008

Quality Assurance Laboratory Test Results

Job Name: Sherburne Co. Generating Plant Pond No. 3
SO Number: 53884

The table below summarizes additive performance of GSE Houston products as perceived by OIT retention after Oven and UV Aging per GRI Test Method GM13:

		Oven Aging @ 85° C (ASTM D 5721) 90 days per ASTM D 3895				UV Resistance per GRI GM11 1600 hours UV Aging per ASTM D 5885			
Product Type	**Formulation**	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)	Initial HP OIT (min)	Final HP OIT (min)	Retained (%)	GRI Criteria (%)
HDPE Geomembrane	PETROMONT 7000	539	505	93	80	539	515	95	50

Approved By: Jane Allen
Date: March 14, 2008

Stress Crack Resistance Test Data

Report Date
7/1/2008

GSE

Quality Assurance Laboratory Test Results

Job Name: Sherburne Co. Generating Plant Pond No. 3
Sales Order: 54923

Required Testing: ASTM D 5397 - Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test

Custom Frequency: 1/Resin Lot

Custom Criteria: 300 hours

Product Code	Resin Lot Number	Test Results
HDT060AW00	194884	PASS
HDT060AW00	196812	PASS
HDT060AW00	196810	PASS
HDT060AW00	8280314	PASS

Approved By: Jeff Theobald
Date Approved: June 27, 2008

Report Date
5/16/2008

Quality Assurance Laboratory Test Results

Job Name: Sherburne Co. Generating Plant Pond No. 3
Sales Order: 53884

Required Testing: ASTM D 5397 - Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test

Custom Frequency: 1/200,000 lbs

Custom Criteria: 300 hours

Product Code	Resin Lot Number	Test Results
HDT060GW00	199786	PASS

Approved By: Jane Allen
Date Approved: March 31, 2008

The above stated data shall not be reproduced except in full, without the written approval of the laboratory.

Welding Rod Test Data

GSE Lining Technology, Inc.

Weld Lot Data Report

LOT IDENTIFICATION		RESIN INFORMATION	
Rod Lot Number	121002629	*Resin Lot*	8271403
Product Name	HDROD4MM	*Resin Type*	K306
Production Date	11/9/2007	*Resin Vendor*	Chevron Phillips

Physical Property	*Test Method*	*Test Results*
Carbon Content, %	ASTM D1603*	2.37
Thickness, mil	ASTM D374*	150

APPROVED
AS
11/9/2007
QA

GSE Lining Technology, Inc.

Weld Lot Data Report

LOT IDENTIFICATION		RESIN INFORMATION	
Rod Lot Number	121002723	*Resin Lot*	8271822
Product Name	HDROD4MM	*Resin Type*	K306
Production Date	1/11/2008	*Resin Vendor*	Chevron Phillips

Physical Property	*Test Method*	*Test Results*
Carbon Content, %	ASTM D1603*	2.48
Thickness, mil	ASTM D374*	152

APPROVED
AS
1/11/2008
QA

Weld Lot Data Report

GSE Lining Technology, Inc.

LOT IDENTIFICATION		RESIN INFORMATION	
Rod Lot Number	121003047	Resin Lot	8280477
Product Name	HDROD4MM	Resin Type	K306
Production Date	7/9/2008	Resin Vendor	Chevron Phillips

Physical Property	Test Method	Test Results
Carbon Content, %	ASTM D1603*	2.37
Thickness, mil	ASTM D374*	152

APPROVED
7/9/2008
QA

GSE Lining Technology, Inc.

Weld Lot Data Report

LOT IDENTIFICATION		RESIN INFORMATION	
Rod Lot Number	121003048	Resin Lot	8280477
Product Name	HDROD4MM	Resin Type	K306
Production Date	7/9/2008	Resin Vendor	Chevron Phillips

Physical Property	Test Method	Test Results
Carbon Content, %	ASTM D1603*	2.27
Thickness, mil	ASTM D374*	152

APPROVED
J. 7.
7/9/2008
QA

Material Delivery Inventory

CAAW Systems

MATERIAL DELIVERY / INVENTORY CHECKLIST

PAGE NO.: 1

DATE:	N/A	**Q.C. NAME:**	Sengratana Sengsay
PROJECT NAME:	Sherco Power Plant	**MAT. TYPE:**	60 Mil. HDPE Text.
PROJECT NUMBER:	200806	**TRUCK NUMBER:**	N/A
LOCATION	Becker, MN	**BILL OF LADING #**	N/A

Panel / Roll Number	Panel / Roll Size	Square Foot	Comments
108127193	520.00 x 23	11,700	
108127194	520.00 x 23	11,700	
108127190	520.00 x 23	11,700	
108127206	520.00 x 23	11,700	
108127183	520.00 x 23	11,700	
108127192	520.00 x 23	11,700	
108127199	520.00 x 23	11,700	
108127208	520.00 x 23	11,700	
108127207	520.00 x 23	11,700	
108127186	520.00 x 23	11,700	
108127187	520.00 x 23	11,700	
108127209	520.00 x 23	11,700	
108127200	520.00 x 23	11,700	
108127195	520.00 x 23	11,700	
108127182	520.00 x 23	11,700	
108127204	520.00 x 23	11,700	
108127203	520.00 x 23	11,700	
108127202	520.00 x 23	11,700	
108127201	520.00 x 23	11,700	
108127181	520.00 x 23	11,700	
108127191	520.00 x 23	11,700	
108127189	520.00 x 23	11,700	
108127188	520.00 x 23	11,700	
108127185	520.00 x 23	11,700	
108127184	520.00 x 23	11,700	
108127180	520.00 x 23	11,700	
108127197	520.00 x 23	11,700	
108127196	520.00 x 23	11,700	
108127205	520.00 x 23	11,700	
	x		
	x		
	TOTAL =	339,300	

CAAW Systems

MATERIAL DELIVERY / INVENTORY CHECKLIST

DATE:		**Q.C. NAME:**	Sengratana Sengsay
PROJECT NAME:	Sherco Power Plant	**MAT. TYPE:**	
PROJECT NUMBER:	200806	**TRUCK NUMBER:**	
LOCATION	Becker, MN	**BILL OF LADING #**	

Panel / Roll Number	Panel / Roll Size	Square Foot	Comments
108128133	520.00 x 23	11,700	
108120311	520.00 x 23	11,700	
108120312	520.00 x 23	11,700	
108120315	520.00 x 23	11,700	
108120314	520.00 x 23	11,700	
108120340	520.00 x 23	11,700	
108120310	520.00 x 23	11,700	
108120490	520.00 x 23	11,700	
108120316	520.00 x 23	11,700	
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	x		
	TOTAL =	105,300	

Tensiometer Calibration Certificates

Demtech Services, Inc.
Placerville, California, USA

CALIBRATION CERTIFICATE

Customer Name: **Clean Air and Water**

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell
Range: 0 - 750 lbs. Tension
Model No: M2405-750#
Serial No: **205340**

Calibration Apparatus:
Dead Weight system w/
Fluke Model 187 Multimeter

A/D Module Model No: T-029
A/D Module Serial No: 1205205340
Channel No: N/A

Dead Weight:		Reference Cell:	
W1	2	R1	2
W2	152	R2	152
W3	302	R3	302

Indicator reading with no load: 0

Offset: 3.666810E+00 Scale: 4.973312E+00

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F
Exitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Calibration Technician: Dean Cato Date: 05/06/08

Dean P Cato

Demtech Services, Inc.

Placerville, California, USA

CALIBRATION CERTIFICATE

Customer Name: Clean Air and Water

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell

Range: 0 - 750 lbs. Tension

Model No: M2405-750#

Serial No: **207087**

A/D Module Model No: T-029

A/D Module Serial No: 3205207087

Channel No: N/A

Calibration Apparatus:

Reference load cell (S/N 204781)

Dead Weight:		Reference Cell:	
W1	2	R1	2
W2	152	R2	152
W3	302	R3	302

Indicator reading with no load: 0

Offset: **2.018465** Scale: **4.980715**

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F

Exitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Calibration Technician: Dean Cato Date: 05/06/08

Dean P. Cato

Demtech Services, Inc.

Placerville, California, USA

CALIBRATION CERTIFICATE

Customer Name: **Clean Air and Water Systems**

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell

Range: 0 - 750 lbs. Tension

Model No: M2405-750#

Serial No: **209336**

A/D Module Model No: T-029

A/D Module Serial No: 2206209336

Channel No: N/A

Calibration Apparatus:

Reference load cell (S/N 204781)

Dead Weight:		Reference Cell:	
W1	2	R1	2
W2	152	R2	152
W3	302	R3	302

Indicator reading with no load: 0

Offset: **9.459557** Scale: **3.652074**

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F

Exitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Calibration Technician: DM

Date: 07/11/07

Demtech Services, Inc.

Placerville, California, USA

CALIBRATION CERTIFICATE

Customer Name: Clean Air and Water Systems

Tensiometer Model: Pro-Tester T-0100

Device Calibrated: S-Type load cell

Range: 0 - 750 lbs. Tension

Model No: M2405-750#

Serial No: 210537

A/D Module Model No: T-029

A/D Module Serial No: 22062210537

Channel No: N/A

Indicator reading with no load: 0

Calibration Apparatus:

Reference load cell (S/N 204781)

Dead Weight:		Reference Cell:	
W1	2	R1	2
W2	152	R2	152
W3	302	R3	302

Offset: 1.128319 Scale: 4.034506

Applied Force lbs.	Cell Response:	Deviation Error:
2	2	0.00
52	52	0.00
102	102	0.00
152	152	0.00
202	202	0.00
252	252	0.00
302	302	0.00

Total Deviation Error (%): 0.00%

Temperature at time of calibration: 73 degrees F

Exitation Voltage: 5 V DC

This calibration conforms to the standards set by ASTM E4 and is traceable to NIST standards

Note: A/D Module and load cell above have been systems calibrated and are considered a matched pair. In general, calibrated A/D Modules and load cells are not interchangeable.

Calibration Technician: DM

Date: 07/11/07

DM

Trial Weld Testing Reports

CAAW Systems

TRIAL WELD TESTING REPORT FORM

PAGE NO.: 1

PROJECT NAME:	Sherco Power Plant	JOB NUMBER:	200806	MAT'L TYPE:	60 Mil. HDPE Text
TENSIOMETER ID:	0				

DATE	SAMPLE I.D. (TW#)	TIME	AMB. TEMP (ºF)	WEATHER (CLOUDY/ SUNNY)	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	Comments
6/20/2008	1	14:28	83	sunny	ss	428	ck	B:	W: 859	115	114	118			148	124		P	
								P:	S: 550	119	105	112							
6/20/2008	2	14:30	83	sunny	ss	138	kk	B:	W: 850	121	110	118			145	142		P	
								P:	S: 500	114	116	110							
6/20/2008	3	14:33	83	sunny	ss	428	ck	B:	W: 850	114	129	110			140	140		P	
								P:	S: 450	119	120	120							
6/20/2008	4	14:31	83	sunny	ss	138	kk	B:	W: 850	111	112	117			141	133		P	
								P:	S: 400	114	127	121							
6/21/2008	1	14:25	86	sunny	ss	428	ck	B:	W: 850	114	107	112			139	147		P	
								P:	S: 600	113	114	112							
6/21/2008	2	14:25	86	sunny	ss	138	kk	B:	W: 850	116	113	118			152	133		P	
								P:	S: 600	123	116	116							
6/21/2008	3	15:55	86	sunny	ss	138	kk	B:	W: 850	106	119	111			137	133		P	
								P:	S: 400	109	115	120							
6/21/2008	4	14:28	86	sunny	ss	428	ck	B:	W: 850	121	126	119			152	132		P	
								P:	S: 500	139	122	109							
6/23/2008	1	07:45	78	sunny	ss	76	vk	B: 525	W:	104	120	109			148	153	153	P	
								P: 225	S:										
6/23/2008	2	08:20	78	sunny	ss	88	vp	B: 550	W:	120	114	130			162	159	152	P	
								P: 200	S:										
6/23/2008	3	13:00	78	cloudy	ss	88	vp	B: 550	W:	112	119	110			123	123	127	P	
								P: 200	S:										
6/23/2008	4	13:02	78	cloudy	ss	76	vk	B: 525	W:	124	118	120			127	133	138	P	
								P: 225	S:										
								B:	W:										
								P:	S:										

CAAW Systems

TRIAL WELD TESTING REPORT FORM

PROJECT NAME:	Sherco Power Plant	JOB NUMBER:	200806	MAT'L TYPE:	60 Mil. HDPE Text

TENSIOMETER ID: 0

DATE	SAMPLE I.D. (TW#)	TIME	AMB. TEMP (ºF)	WEATHER (CLOUDY/ SUNNY)	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	Comments
6/24/2008	1	14:42	75	cloudy	ss	428	ck	B:	W: 850	101	102	101			133	129	134	P	
								P:	S: 550	103	108	112							
6/24/2008	2	14:43	75	cloudy	ss	428	ck	B:	W: 850	123	111	114			139	137	138	P	
								P:	S: 450	121	108	112							
6/24/2008	3	14:55	75	cloudy	ss	138	kk	B:	W: 850	103	107	109			141	122	140	P	
								P:	S: 500	118	102	100							
6/24/2008	4	15:00	75	cloudy	ss	138	kk	B:	W: 850	137	121	113			131	132	131	P	
								P:	S: 400	120	125	110							
6/25/2008	1	08:30	71	cloudy	ss	88	vp	B: 550	W:	138	142	136			159	161	155	P	
								P: 200	S:										
6/25/2008	2	13:29	78	sunny	ss	428	ck	B:	W: 850	109	103	103			127	126	127	P	
								P:	S: 650	111	104	113							
6/25/2008	3	13:30	78	suuny	ss	138	hn	B:	W: 850	102	107	112			131	125	127	P	
								P:	S: 500	111	108	105							
6/25/2008	4	13:05	78	sunny	ss	88	vp	B: 550	W:	122	118	120			132	127	121	P	
								P: 200	S:										
6/25/2008	5	13:30	78	sunny	ss	428	ck	B:	W: 850	109	113	106			144	137	133	P	
								P:	S: 500	113	106	110							
6/25/2008	6	13:30	78	sunny	ss	138	hn	B:	W: 850	108	111	109			144	142	138	P	
								P:	S: 500	107	104	111							
6/26/2008	1	07:17	76	sunny	ss	88	vp	B: 550	W:	127	110	137			167	161	165	P	
								P: 200	S:										
6/26/2008	2	09:33	79	cloudy	ss	428	ck	B:	W: 850	121	117	119			153	141	146	P	
								P:	S: 450	129	109	107							
6/26/2008	3	09:35	79	cloudy	ss	138	kk	B:	W: 850	126	115	119			152	141	146	P	
								P:	S: 500	119	119	126							

CAAW Systems

TRIAL WELD TESTING REPORT FORM

PAGE NO.: 3

PROJECT NAME:	Sherco Power Plant	JOB NUMBER:	200806	MAT'L TYPE:
TENSIOMETER ID:	0			

DATE	SAMPLE I.D. (TW#)	TIME	AMB. TEMP (ºF)	WEATHER (CLOUDY/ SUNNY)	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	Comments
6/26/2008	4	09:35	84	cloudy	ss	428	ck	B:	W: 850	127	108	123			151	154	149	P	
								P:	S: 400	124	118	126							
6/26/2008	5	13:58	84	cloudy	ss	88	kk	B: 550	W:	117	132	130			141	142	141	P	
								P: 200	S:										
6/26/2008	6	14:11	84	cloudy	ss	76	vk	B: 545	W:	142	120	123			149	153	145	P	
								P: 245	S:										
								B:	W:										
								P:	S:										
6/24/2008	1	07:30	78	sunny	ss	428	ck	B:	W: 850	138	134	130			198	170	195	P	
								P:	S: 500	134	138	135							
6/24/2008	2	07:40	78	sunny	ss	88	vp	B: 550	W:	154	148	149			158	156	153	P	
								P: 200	S:										
6/24/2008	3	07:45	78	sunny	ss	428	ck	B:	W: 850	154	149	135			164	158	152	P	
								P:	S: 400	141	137	142							
6/24/2008	4	08:00	78	sunny	ss	76	vk	B: 545	W:	120	119	141			154	153	147	P	
								P: 245	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										

CAAW Systems
TRIAL WELD TESTING REPORT FORM

PROJECT NAME: Sherco Power Plant | **JOB NUMBER:** 200806 | **MAT'L TYPE:**

TENSIOMETER ID: 0

DATE	SAMPLE I.D. (TW#)	TIME	AMB. TEMP (ºF)	WEATHER (CLOUDY/ SUNNY)	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	Comments
6/24/2008	1	14:42	75	cloudy	ss	428	ck	B:	W: 850	101	102	101			133	129	134	P	
								P:	S: 550	103	108	112							
6/24/2008	2	14:43	75	cloudy	ss	428	ck	B:	W: 850	123	111	114			139	137	138	P	
								P:	S: 450	121	108	112							
6/24/2008	3	14:55	75	cloudy	ss	138	kk	B:	W: 850	103	107	109			141	122	140	P	
								P:	S: 500	118	102	100							
6/24/2008	4	15:00	75	cloudy	ss	138	kk	B:	W: 850	137	121	113			131	132	131	P	
								P:	S: 400	120	125	110							
6/25/2008	1	08:30	78	sunny	ss	88	vp	B: 550	W:	122	118	120			132	127	121	P	
								P: 200	S:										
6/25/2008	2	13:29	787	sunny	ss	428	ck	B:	W: 850	109	103	103			127	126	127	P	
								P:	S: 60	111	104	113							
6/25/2008	3	13:30	78	sunny	ss	138	kk	B:	W: 850	102	107	112			131	125	127	P	
								P:	S: 500	111	108	105							
6/25/2008	4	13:05	78	sunny	ss	88	vp	B: 550	W:	122	118	120			132	127	121	P	
								P: 200	S:										
6/25/2008	5	13:30	78	sunny	ss	428	ck	B:	W: 850	109	113	106			144	137	133	P	
								P:	S: 500	113	106	110							
5/25/2008	6	13:30	78	sunny	ss	138	kk	B:	W: 850	108	111	109			144	142	138	P	
								P:	S: 500	107	104	111							
6/26/2008	1	07:17	76	sunny	ss	88	vp	B: 550	W:	127	110	137			167	161	165	P	
								P: 200	S:										
6/26/2008	2	09:33	84	cloudy	ss	428	ck	B:	W: 850	121	117	119			153	147	149	P	
								P:	S: 450	129	109	107							
6/26/2008	3	09:35	84	cloudy	ss	138	kk	B:	W: 850	126	115	119			152	141	146	P	
								P:	S: 500	119	119	126							

CAAW Systems

TRIAL WELD TESTING REPORT FORM

PAGE NO.: 5

PROJECT NAME:	Sherco Power Plant	JOB NUMBER:	200806	MAT'L TYPE:
TENSIOMETER ID:	0			

DATE	SAMPLE I.D. (TW#)	TIME	AMB. TEMP (ºF)	WEATHER (CLOUDY/ SUNNY)	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	Comments
6/27/2008	1	07:20	68	cloudy	ss	76	vk	B: 545	W:	107	106	130			169	165	161	P	
								P: 245	S:										
6/27/2008	2	07:28	68	cloudy	ss	88	vp	B: 550	W:	130	136	123			171	173	163	P	
								P: 200	S:										
6/30/2008	1	07:20	78	sunny	ss	88	vp	B: 550	W:	125	132	110			135	154	143	P	
								P: 200	S:										
6/30/2008	2	13:05	87	sunny	ss	88	vp	B: 550	W:	126	121	115			135	140	126	P	
								P: 200	S:										
6/30/2008	3	14:15	88	sunny	ss	428	ck	B:	W: 850	111	106	110			136	131	138	P	
								P:	S: 600	133	111	111							
6/30/2008	4	14:20	88	sunny	ss	427	kk	B:	W: 850	122	107	104			140	131	129	P	
								P:	S: 500	123	118	129							
6/30/2008	5	14:25	88	sunny	ss	427	kk	B:	W: 850	101	105	122			139	144	141	P	
								P:	S: 400	127	107	116							
6/30/2008	6	14:17	88	sunny	ss	428	ck	B:	W: 850	130	113	112			130	125	130	P	
								P:	S: 500	120	111	122							
7/1/2008	1	07:27	77	sunny	ss	88	vp	B: 550	W:	116	112	112			156	157	152	P	
								P: 200	S:										
7/1/2008	2	13:12	89	sunny	ss	88	vp	B: 550	W:	123	134	126			143	134	130	P	
								P: 200	S:										
7/1/2008	3	15:13	89	sunny	ss	428	ck	B:	W: 850	115	111	106			133	126	128	P	
								P:	S: 600	105	101	118							
7/1/2008	4	15:15	89	sunny	ss	427	kk	B:	W: 850	119	106	109			136	129	137	P	
								P:	S: 550	109	102	106							
7/1/2008	5	15:20	89	sunny	ss	427	kk	B:	W: 850	121	112	119			142	146	140	P	
								P:	S: 450	125	111	107							

CAAW Systems
TRIAL WELD TESTING REPORT FORM

PROJECT NAME: Sherco Power Plant | **JOB NUMBER:** 200806 | **MAT'L TYPE:**

TENSIOMETER ID: 0

DATE	SAMPLE I.D. (TW#)	TIME	AMB. TEMP (ºF)	WEATHER (CLOUDY/ SUNNY)	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	Comments
7/1/2008	6	15:15	89	sunny	ss	428	ck	B:	W: 850	114	99	118			136	130	137	P	
								P:	S: 500	117	122	121							
7/2/2008	1	07:10	74	sunny	ss	88	vp	B: 550	W:	141	133	131			164	163	173	P	
								P: 200	S:										
7/2/2008	2	07:27	74	sunny	ss	175	vk	B: 545	W:	110	101	108			169	173	163	P	
								P: 245	S:										
7/2/2008	3	13:20	76	sunny	ss	88	vp	B: 550	W:	127	124	112			150	137	145	P	
								P: 200	S:										
7/2/2008	4	13:20	76	sunny	ss	175	vk	B: 545	W:	128	135	127			143	143	137	P	
								P: 245	S:										
7/3/2008	1	07:04	73	sunny	ss	88	vp	B: 550	W:	122	142	146			180	186	174	P	
								P: 200	S:										
7/3/2008	2	14:15	73	sunny	ss	427	kk1	B:	W: 850	112	106	111			133	125	125	P	
								P:	S: 550	124	122	108							
7/3/2008	3	14:17	73	sunny	ss	428	ck	B:	W: 850	126	105	124			144	138	131	P	
								P:	S: 600	116	112	104							
7/3/2008	4	14:20	73	sunny	ss	138	kk2	B:	W: 850	129	103	110			136	136	138	P	
								P:	S: 400	101	115	111							
7/3/2008	5	14:20	73	sunny	ss	428	ck	B:	W: 850	132	122	127			157	143	139	P	
								P:	S: 550	128	125	121							
7/3/2008	6	14:!5	73	sunny	ss	427	kk1	B:	W: 850	121	115	104			132	128	132	P	
								P:	S: 450	116	115	112							
7/3/2008	7	14:20	73	sunny	ss	138	kk2	B:	W: 850	114	127	122			156	134	131	P	
								P:	S: 400	123	112	126							
7/3/2008	8	16:25	73	sunny	ss	88	vp	B: 550	W:	123	112	126			150	148	139	P	
								P: 200	S:										

CAAW Systems

TRIAL WELD TESTING REPORT FORM

PAGE NO.: 7

PROJECT NAME: Sherco Power Plant | JOB NUMBER: 200806 | MAT'L TYPE:

TENSIOMETER ID: 0

DATE	SAMPLE I.D. (TW#)	TIME	AMB. TEMP (ºF)	WEATHER (CLOUDY/ SUNNY)	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	Comments
7/5/2008	1	07:50	74	sunny	ss	88	vp	B: 550	W:	138	110	114			172	172	164	P	
								P: 200	S:										
7/5/2008	2	07:51	74	sunny	ss	76	vk	B: 545	W:	135	126	126			168	172	159	P	
								P: 245	S:										
7/7/2008	1	07:26	72	cloudy	ss	88	vp	B: 550	W:	133	124	126			141	166	164	P	
								P: 200	S:										
7/7/2008	2	09:33	72	cloudy	ss	428	ck	B:	W: 850	116	135	110			161	155	155	P	
								P:	S: 550	119	131	127							
7/7/2008	3	09:30	72	cloudy	ss	427	kk	B:	W: 850	124	127	121			165	156	160	P	
								P:	S: 500	127	117	131							
7/7/2008	4	09:34	72	cloudy	ss	428	ck	B:	W: 850	119	122	131			175	162	167	P	
								P:	S: 450	126	121	122							
7/7/2008	5	09:35	72	cloudy	ss	427	kk	B:	W: 850	129	131	131			167	165	169	P	
								P:	S: 400	131	126	105							
7/8/2008	1	10:05	74	cloudy	ss	427	kk	B:	W: 850	125	115	111			160	162	114	P	
								P:	S: 550	129	132	128							
7/8/2008	2	10:00	74	cloudy	ss	427	kk	B:	W: 850	122	119	124			167	159	155	P	
								P:	S: 400	124	124	139							
7/8/2008	3	10:40	74	cloudy	ss	428	ck	B:	W: 850	122	100	122			134	154	144	P	
								P:	S: 500	125	124	115							
7/8/2008	4	10:51	74	cloudy	ss	428	ck	B:	W: 850	141	122	137			148	137	144	P	
								P:	S: 400	117	106	111							
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										

CAAW Systems

TRIAL WELD TESTING REPORT FORM

PROJECT NAME:	Sherco Power Plant	JOB NUMBER:	200806	MAT'L TYPE:	
TENSIOMETER ID:	0				

DATE	SAMPLE I.D. (TW#)	TIME	AMB. TEMP (ºF)	WEATHER (CLOUDY/ SUNNY)	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	Comments
7/9/2008	1	08:23	83	sunny	ss	428	ck	B:	W: 850	131	143	143			174	183	174	P	
								P:	S: 550	134	135	127							
7/9/2008	2	08:30	83	sunny	ss	427	kk	B:	W: 850	115	120	115			169	174	155	P	
								P:	S: 500	126	131	129							
7/9/2008	3	08:25	83	sunny	ss	428	ck	B:	W: 850	140	138	139			181	172	179	P	
								P:	S: 450	141	137	156							
7/9/2008	4	08:35	83	sunny	ss	427	kk	B:	W: 850	125	146	126			160	176	164	P	
								P:	S: 400	125	138	145							
7/9/2008	5	13:19	83	sunny	ss	175	vk	B: 545	W:	125	128	142			150	143	139	P	
								P: 245	S:										
7/9/2008	6	13:00	83	sunny	ss	88	vp	B: 550	W:	128	137	123			141	138	135	P	
								P: 200	S:										
7/10/2008	1	07:13	76	sunny	ss	76	vk	B: 545	W:	118	118	117			180	172	156	P	
								P: 245	S:										
7/10/2008	2	07:17	76	sunny	ss	88	vp	B: 550	W:	115	116	116			166	176	169	P	
								P: 200	S:										
7/11/2008	1	07:30	72	sunny	ss	88	vp	B: 550	W:	113	113	135			167	172	167	P	
								P: 200	S:										
7/11/2008	2	08:22	72	sunny	ss	88	vp	B: 550	W:	120	122	136			165	159	162	P	
								P: 200	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										

CAAW Systems

TRIAL WELD TESTING REPORT FORM

PAGE NO.: 1

PROJECT NAME: Sherco Pond (3 upper weir flap) **JOB NUMBER:** 200806 **MAT'L TYPE:**

TENSIOMETER ID: T-020/05

DATE	SAMPLE I.D. (TW#)	TIME	AMB. TEMP (ºF)	WEATHER (CLOUDY/ SUNNY)	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	Comments
8/11/2008	1	08:45		SUNNY	AK	286	PX	B: 500	W:									P	60 MILL
								P: 400	S:	148	156	155			170	180	164		
8/11/2008	2	13:15		PART CLOUDY	AK	69	PX	B:	W: 850	127	124	126						P	60 MILL
								P:	S: 5	128	124	115			181	184	163		
8/11/2008	3	13:15		PART CLOUDY	AK	737	SX	B:	W: 850	147	136	126						P	60 MILL
								P:	S: 5	125	122	120			183	180	171		
8/11/2008	4	13;00		PART CLOUDY	AK	333	KX	B:	W: 850	137	127	133						P	60 MILL
								P:	S: 5.5	128	129	120			175	176	166		
8/11/2008	5	15:30		CLOUDY	AK	286	PX	B: 500	W:									P	60 MILL
								P: 400	S:	136	132	127			147	145	144		
8/11/2008	6	15:31		CLOUDY	AK	46	AM	B: 500	W:									P	60 MILL
								P: 500	S:	140	145	119			155	162	162		
8/11/2008	7	18:35		CLOUDY	AK	286	PX	B: 500	W:									P	40 MILL
								P: 450	S:	76	86	76			77	74	75		
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										
								B:	W:										
								P:	S:										

Panel Placement Forms

CAAW Systems

PANEL PLACEMENT FORM

PROJECT NAME: Sherco Power Plant **JOB NUMBER:** 200806 **Material Type:** 60 Mil. HDPE Text

DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
6/20/2008		P1	139	22.00	3,058	207	
6/20/2008		P2	141	22.00	3,102	207	
6/20/2008		P3	142	22.00	3,124	207	
6/20/2008		P4	67	22.00	1,474	207	
6/20/2008		P5	72	22.00	1,584	208	
6/20/2008		P6	142	22.00	3,124	208	
6/20/2008		P7	142	22.00	3,124	208	
6/20/2008		P8	140	22.00	3,080	199	
6/20/2008		P9	142	22.00	3,124	199	
6/20/2008		P10	92	22.00	2,024	199	
6/20/2008		P11	38	23.00	437	199	
6/20/2008		P12	38	23.00	437	199	
6/20/2008		P13	19	19.00	181	199	
6/20/2008		P14	38	22.00	619	199	
6/20/2008		P15	57	22.00	1,045	199	
6/20/2008		P16	81	22.00	1,582	192	
6/20/2008		P17	81	22.00	1,782	192	
6/20/2008		P18	10	22.00	220	199	
6/20/2008		P19	42	15.00	315	192	
Total Area (SF) This Page Only =					33,436		

CAAW Systems

PANEL PLACEMENT FORM

PROJECT NAME: Sherco Power Plant **JOB NUMBER:** 200806 **Material Type:** 60 Mil. HDPE Text

DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
6/21/2008		P20	95	22.00	2,090	192	
6/21/2008		P21	75	22.00	1,650	192	
6/21/2008		P22	51	22.00	1,122	192	
6/21/2008		P23A	29	22.00	638	192	
6/21/2008		P23B	11	8.00	44	192	
6/21/2008		P24	26	22.00	572	192	
6/21/2008		P25	74	22.00	1,628	186	
6/21/2008		P26	97	22.00	2,134	186	
6/21/2008		P27	115	22.00	2,530	186	
6/21/2008		P28	124	22.00	2,728	186	
6/21/2008		P29	61	22.00	1,342	186	
6/21/2008		P30	63	22.00	1,386	187	
6/21/2008		P31	100	22.00	2,200	187	
6/21/2008		P32	63	22.00	1,386	187	
6/21/2008		P33	27	16.00	216	187	
6/21/2008		P34	120	22.00	2,640	187	
6/21/2008		P35	106	22.00	2,332	209	
6/21/2008		P36	88	22.00	1,936	209	
6/21/2008		P37	65	22.00	1,430	209	
6/21/2008		P38	43	22.00	946	209	
6/21/2008		P39	21	22.00	462	209	
6/21/2008		P40	13	10.00	130	209	
6/21/2008		P41	22	13.00	286	209	
Total Area (SF) This Page Only =					31,828		

CAAW Systems
PANEL PLACEMENT FORM

PROJECT NAME:		Sherco Power Plant				JOB NUMBER: 200806	Material Type: 60 Mil. HDPE Text
DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
6/24/2008		P42	25	22.00	550	209	
6/24/2008		P43	49	22.00	1,078	209	
6/24/2008		P44	49	22.00	1,078	209	
6/24/2008		P45	49	22.00	1,078	209	
6/24/2008		P46	20	22.00	440	209	
6/24/2008		P47	96	22.00	2,112	209	
6/24/2008		P48	27	22.00	594	209	
6/24/2008		P49	69	22.00	1,518	182	
6/24/2008		P50	96	22.00	2,112	182	
6/24/2008		P51	96	22.00	2,112	182	
6/24/2008		P52	96	22.00	2,112	182	
6/24/2008		P53	96	22.00	2,112	182	
6/24/2008		P54	43	22.00	946	182	
6/24/2008		P55	54	22.00	1,188	203	
6/24/2008		P56	96	22.00	2,112	203	
6/24/2008		P57	96	22.00	2,112	203	
6/24/2008		P58	96	22.00	2,112	203	
6/24/2008		P59	96	22.00	2,112	203	
6/24/2008		P60	60	22.00	1,320	203	
6/24/2008		P61	36	22.00	792	202	
6/24/2008		P62	96	22.00	2,112	202	
6/24/2008		P63	96	22.00	2,112	202	
6/25/2008		P64	96	22.00	2,112	202	
6/25/2008		P65	96	22.00	2,112	202	
			Total Area (SF) This Page Only =		38,038		

CAAW Systems

PANEL PLACEMENT FORM

PROJECT NAME:		Sherco Power Plant				**JOB NUMBER:** 200806	**Material Type:** 60 Mil. HDPE Text
DATE	**TIME**	**PANEL NO.**	**PANEL LENGTH (FT)**	**PANEL WIDTH (FT)**	**PANEL AREA (SF)**	**ROLL NO.**	**COMMENTS**
6/25/2008		P66	69	22.00	1,518	202	
6/25/2008		P67	27	22.00	594	204	
6/25/2008		P68	96	22.00	2,112	204	
6/25/2008		P69	96	22.00	2,112	204	
6/25/2008		P70	96	22.00	2,112	204	
6/25/2008		P71	96	22.00	2,112	204	
6/25/2008		P72	82	22.00	1,804	204	
6/25/2008		P73	14	22.00	308	200	
6/25/2008		P74	96	22.00	2,112	200	
6/25/2008		P75	96	22.00	2,112	200	
6/25/2008		P76	96	22.00	2,112	200	
6/25/2008		P77	96	22.00	2,112	200	
6/25/2008		P78	96	22.00	2,112	200	
6/25/2008		P79	96	22.00	2,112	195	
6/25/2008		P80	96	22.00	2,112	195	
6/25/2008		P81	96	22.00	2,112	195	
6/25/2008		P82	96	22.00	2,112	195	
6/25/2008		P83	96	22.00	2,112	195	
6/25/2008		P84	96	22.00	2,112	193	
6/25/2008		P85	96	22.00	2,112	193	
6/25/2008		P86	96	22.00	2,112	193	
6/25/2008		P87	96	22.00	2,112	193	
6/25/2008		P88	96	22.00	2,112	193	
				Total Area (SF) This Page Only =	44,352		

CAAW Systems

PANEL PLACEMENT FORM

PROJECT NAME: Sherco Power Plant **JOB NUMBER:** 200806 **Material Type:** 60 Mil. HDPE Text

DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
6/26/2008		P89	96	22.00	2,112	194	
6/26/2008		P90	96	22.00	2,112	194	
6/26/2008		P91	96	22.00	2,112	194	
6/26/2008		P92	96	22.00	2,112	194	
6/26/2008		P93	96	22.00	2,112	194	
6/26/2008		P94	19	22.00	418	194	
6/26/2008		P95	77	22.00	1,694	201	
6/26/2008		P96	96	22.00	2,112	201	
6/26/2008		P97	96	22.00	2,112	201	
6/26/2008		P98	96	22.00	2,112	201	
6/26/2008		P99	78	22.00	1,474	201	
6/26/2008		P100	56	22.00	946	201	
Total Area (SF) This Page Only =					21,428		

CAAW Systems

PANEL PLACEMENT FORM

PROJECT NAME: Sherco Power Plant | **JOB NUMBER:** 200806 | **Material Type:**

DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
6/30/2008		P101	135	22.00	2,970	188	
6/30/2008		P102	120	22.00	2,640	188	
6/30/2008		P103	97	22.00	2,134	188	
6/30/2008		P104	81	22.00	1,782	188	
6/30/2008		P105	80	22.00	1,760	188	
6/30/2008		P106	35	5.00	175	185	
6/30/2008		P107	30	5.00	150	185	
6/30/2008		P108	92	22.00	2,024	108	
6/30/2008		P109	116	22.00	2,552	185	
6/30/2008		P110	137	22.00	3,014	191	
6/30/2008		P111	160	22.00	3,520	191	
6/30/2008		P112	169	22.00	3,520	191	
6/30/2008		P113	175	22.00	3,850	185	
6/30/2008		P114	175	22.00	3,850	185	
6/30/2008		P115	168	22.00	2,893	189	
6/30/2008		P116	95	22.00	1,848	189	
6/30/2008		P117	73	22.00	1,353	189	
6/30/2008		P118	50	22.00	550	189	
6/30/2008		P119	21	16.00	168	189	
Total Area (SF) This Page Only =					40,753		

CAAW Systems

PANEL PLACEMENT FORM

PROJECT NAME:	Sherco Power Plant	JOB NUMBER: 200806	Material Type:

DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
7/1/2008		P120	135	22.00	2,970	189	
7/1/2008		P121	135	22.00	2,970	205	
7/1/2008		P122	135	22.00	2,970	205	
7/1/2008		P123	135	22.00	2,970	205	
7/1/2008		P124	99	22.00	2,178	205	
7/1/2008		P125	36	22.00	792	180	
7/1/2008		P126	135	22.00	2,970	180	
7/1/2008		P127	135	22.00	2,970	180	
7/1/2008		P128	135	22.00	2,970	180	
7/1/2008		P129	53	22.00	1,166	180	
7/1/2008		P130	82	22.00	1,804	184	
7/1/2008		P131	135	22.00	2,970	184	
7/1/2008		P132	135	22.00	2,970	184	
7/1/2008		P133	135	22.00	2,970	184	
7/1/2008		P134	135	22.00	2,970	198	
7/1/2008		P135	135	22.00	2,970	198	
7/1/2008		P136	135	22.00	2,970	198	
7/1/2008		P137	97	22.00	2,134	198	
7/1/2008		P138	38	22.00	836	197	
7/1/2008		P139	135	22.00	2,970	197	
7/1/2008		P140	135	22.00	2,970	197	
7/1/2008		P141	135	22.00	2,970	197	
7/1/2008		P142	135	22.00	2,970	196	
				Total Area (SF) This Page Only =	59,400		

CAAW Systems

PANEL PLACEMENT FORM

PROJECT NAME: Sherco Power Plant **JOB NUMBER:** 200806 **Material Type:**

DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
7/3/2008		P143	135	22.00	2,970	196	
7/3/2008		P144	135	22.00	2,970	196	
7/3/2008		P145	97	22.00	2,134	196	
7/3/2008		P146	38	22.00	836	183	
7/3/2008		P147	135	22.00	2,970	183	
7/3/2008		P148	135	22.00	2,970	183	
7/3/2008		P149	135	22.00	2,970	183	
7/3/2008		P150	53	22.00	1,166	183	
7/3/2008		P151	82	22.00	1,804	181	
7/3/2008		P152	135	22.00	2,970	181	
7/3/2008		P153	135	22.00	2,970	181	
7/3/2008		P154	135	22.00	2,970	181	
7/3/2008		P155	28	22.00	616	181	
7/3/2008		P156	107	22.00	2,354	206	
7/3/2008		P157	135	22.00	2,970	206	
7/3/2008		P158	135	22.00	2,970	206	
7/3/2008		P159	124	22.00	2,728	206	
7/3/2008		P160	11	22.00	242	190	
7/3/2008		P161	135	22.00	2,970	190	
7/3/2008		P162	135	22.00	2,970	190	
7/3/2008		P163	135	22.00	2,970	190	
7/3/2008		P164	98	22.00	2,156	190	
7/3/2008		P165	37	22.00	814	315	
7/3/2008		P166	135	22.00	2,970	315	
				Total Area (SF) This Page Only =	56,430		

CAAW Systems

PANEL PLACEMENT FORM

PROJECT NAME:		Sherco Power Plant				JOB NUMBER: 200806	Material Type:
DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
7/3/2008		P167	135	22.00	2,970	316	
7/7/2008		P168	135	22.00	2,970	316	
7/7/2008		P169	85	22.00	1,870	316	
7/7/2008		P170	50	22.00	1,100	310	
7/8/2008		P171	135	22.00	2,970	310	
7/8/2008		P172	135	22.00	2,970	310	
7/8/2008		P173	135	22.00	2,970	310	
7/8/2008		P174	135	22.00	2,970	490	
7/8/2008		P175	135	22.00	2,970	490	
7/8/2008		P176	135	22.00	2,970	490	
7/8/2008		P177	60	22.00	1,320	490	
7/8/2008		P178	65	22.00	1,430	340	
7/8/2008		P179	135	22.00	2,970	340	
7/8/2008		P180	135	22.00	2,970	340	
7/8/2008		P181	135	22.00	2,970	340	
7/8/2008		P182	72	22.00	1,584	340	
7/8/2008		P183	65	22.00	1,430	315	
7/9/2008		P184	135	22.00	2,970	315	
7/9/2008		P185	135	22.00	2,970	315	
7/9/2008		P186	65	22.00	1,430	315	
7/9/2008		P187	65	22.00	1,430	315	
7/9/2008		P188	34	22.00	748	315	
7/9/2008		P189	31	22.00	682	314	
7/9/2008		P190	65	22.00	1,430	314	
				Total Area (SF) This Page Only =	53,064		

CAAW Systems

PANEL PLACEMENT FORM

PROJECT NAME: Sherco Power Plant **JOB NUMBER:** 200806 **Material Type:**

DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
7/9/2008		P191	65	22.00	1,430	314	
7/9/2008		P192	65	22.00	1,430	314	
7/9/2008		P193	65	22.00	1,430	314	
7/9/2008		P194	65	22.00	715	314	
7/9/2008		P195	8	5.00	20	314	
Total Area (SF) This Page Only =					5,025		

CAAW Systems

PANEL PLACEMENT FORM

PAGE NO.: 1

PROJECT NAME: Sherco Pond (3 upper weir flap) **JOB NUMBER:** 200806 **Material Type:**

DATE	TIME	PANEL NO.	PANEL LENGTH (FT)	PANEL WIDTH (FT)	PANEL AREA (SF)	ROLL NO.	COMMENTS
8/11/2008	13:30	1	95	22.00	2,090	20311	
8/11/2008	13:34	2	99	22.00	2,178	20311	
8/11/2008	13:39	3	99	22.00	2,178	20311	
8/11/2008	13:43	4	99	22.00	2,178	20311	
8/11/2008	13:47	5	76	22.00	1,672	20311	
8/11/2008	13:52	6	50	22.00	1,100	12014	
8/11/2008	14:04	7	28	14.00	392	12014	
8/11/2008	14:12	8	99	22.00	2,178	12014	
8/11/2008	14:16	9	77	22.00	1,694	12014	
8/11/2008	14:20	10	53.5	22.00	1,177	12014	
8/11/2008	14:23	11	33	22.00	726	12014	
8/11/2008	14:25	12	23	5.00	115	12014	
8/11/2008		ANCHORTREND	213	5.00	1,065		
Total Area (SF) This Page Only =					18,743		

Panel Seaming Forms

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:** 60 Mil. HDPE Text

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/20/2008	14:40	P1/P2	139	ck	850	550	428	10MPH/74		
6/20/2008	14:45	P2/P3	141	kk	850	500	138	10MPH/74		
6/20/2008	15:10	P3/P4	67	ck	850	550	428	10MPH/74		
6/20/2008	15:22	P3/P5	72	ck	850	550	428	10MPH/74		
6/20/2008	15:15	P4/P6	79	kk	850	500	138	10MPH/74		
6/20/2008	15:15	P5/P6	63	kk	850	500	138	10MPH/74		
6/20/2008	15:03	P4/P5	25	ck	850	550	428	10MPH/74		
6/20/2008	15:25	P6/P7	142	ck	850	550	428	10MPH/74		
6/20/2008	15:40	P7/P8	142	kk	850	500	138	10MPH/74		
6/20/2008	15:55	P8/P9	140	ck	850	550	428	10MPH/74		
6/20/2008	16:30	P9/P10	101	kk	850	500	138	10MPH/74		
6/20/2008	16:45	P10/P11	92	ck	850	550	428	10MPH/74		
6/20/2008	17:00	P11/P12	38	kk	850	500	138	10MPH/74		
6/20/2008	17:05	P12/P13	23	kk	850	500	138	10MPH/74		
6/20/2008	17:15	P13/P14	19	kk	850	500	138	10MPH/74		
6/20/2008	17:19	P14/P15	38	ck	850	550	428	10MPH/74		
6/20/2008	17:35	P15/P16	57	kk	850	500	138	10MPH/74		
6/20/2008	17:40	P16/P17	81	ck	850	550	428	10MPH/74		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	60 Mil. HDPE Text

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/20/2008	17:00	P17/P9	13	kk	850	500	138	10MPH/74		
6/20/2008	17:00	P9/P16	20	kk	850	500	138	10MPH/74		
6/20/2008	17:56	P9/P18	10	ck	850	550	428	10MPH/74		
6/20/2008	17:00	P18/P16	7	kk	850	500	138	10MPH/74		
6/20/2008	17:55	P18/P10	15	ck	850	550	428	10MPH/74		
6/20/2008	17:00	P18/P15	11	kk	850	500	138	10MPH/74		
6/20/2008	17:00	P10/P15	10	kk	850	500	138	10MPH/74		
6/20/2008	17:00	P11/P15	4	kk	850	500	138	10MPH/74		
6/20/2008	17:00	P11/P14	27	kk	850	500	138	10MPH/74		
6/20/2008	18:13	P19/P17	42	ck	850	550	428	10MPH/74		
6/21/2008	14:55	P20/P21	75	ck	850	550	428	10MPH/74		
6/21/2008	15:00	P21/P22	51	kk	850	400	138	10MPH/74		
6/21/2008	15:07	P22/P23A	29	ck	850	550	428	10MPH/74		
6/21/2008	15:15	P23A/P23B	11	kk	850	400	138	10MPH/74		
6/21/2008	15:40	P24/P25	26	ck	850	550	428	10MPH/74		
6/21/2008	18:55	P26/P10	15	kk	850	400	138	10MPH/74		
6/21/2008	18:59	P26/P9	6	kk	850	400	138	10MPH/74		
6/21/2008	19:03	P27/P9	14	kk	850	400	138	10MPH/74		
6/21/2008	19:09	P27/P8	6	kk	850	400	138	10MPH/74		
6/21/2008	19:11	P28/P8	15	kk	850	400	138	10MPH/74		
6/21/2008	19:15	P28/P7	8	kk	850	400	138	10MPH/74		
6/21/2008	19:19	P29/P7	14	kk	850	400	138	10MPH/74		
6/21/2008	19:23	P29/P6	8	kk	850	400	138	10MPH/74		
6/21/2008	19:27	P31/P6	12	kk	850	400	138	10MPH/74		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:** 60 Mil. HDPE Text

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/21/2008	17:24	P28/P20	5	kk	850	400	138	10MPH/83		
6/21/2008	17:26	P28/P20	10	kk	850	400	138	10MPH/83		
6/21/2008	15:47	P25/P23	22	ck	850	500	428	10MPH/83		
6/21/2008	15:40	P25/P24	26	ck	850	600	428	10MPH/83		
6/21/2008	16:00	P26/P25	74	ck	850	600	428	10MPH/83		
6/21/2008	16:25	P26/P27	97	ck	850	600	428	10MPH/83		
6/21/2008	16:40	P27/P28	115	ck	850	600	428	10MPH/83		
6/21/2008	16:55	P28/P29	61	kk	850	500	138	10MPH/83		
6/21/2008	16:53	P29/P30	24	ck	850	500	428	10MPH/83		
6/21/2008	16:55	P30/P28	63	kk	850	500	138	10MPH/83		
6/21/2008	17:20	P31/P30	45	ck	850	600	428	10MPH/83		
6/21/2008	17:11	P31/P29	55	ck	850	600	428	10MPH/83		
6/21/2008	17:30	P31/P32	63	kk	850	500	138	10MPH/83		
6/21/2008	17:25	P32/P33	22	ck	850	600	428	10MPH/83		
6/21/2008	18:35	P39/P38	21	ck	850	500	428	10MPH/83		
6/21/2008	18:25	P38/P37	43	ck	850	600	428	10MPH/83		
6/21/2008	18:15	P37/P36	65	ck	850	600	428	10MPH/83		
6/21/2008	18:15	P36/P35	88	kk	850	500	138	10MPH/83		
6/21/2008	17:50	P34/P35	106	ck	850	600	428	10MPH/83		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	60 Mil. HDPE Text

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/21/2008	19:31	P31/P4	8	kk	850	400	138	10MPH/83		
6/21/2008	19:35	P32/P4	13	kk	850	400	138	10MPH/83		
6/21/2008	19:39	P32/P3	8	kk	850	400	138	10MPH/83		
6/21/2008	19:43	P3/P33	13	kk	850	400	138	10MPH/83		
6/21/2008	19:47	P2/P33	7	kk	850	400	138	10MPH/83		
6/21/2008	19:48	P2/P39	3	kk	850	400	138	10MPH/83		
6/21/2008	19:51	P2/P40	9	kk	850	400	138	10MPH/83		
6/21/2008	19:54	P1/P41	22	kk	850	400	138	10MPH/83		
6/21/2008	18:45	P41/P40	13	ck	850	850	500	10MPH/83		
6/21/2008	18:20	P40/P39	14	ck	850	850	500	10MPH/83		
6/21/2008	18:50	P33/P39	25	kk	850	400	138	10MPH/83		
6/21/2008	18:53	P38/P33	13	kk	850	400	138	10MPH/83		
6/21/2008	18:56	P38/P32	16	kk	850	400	138	10MPH/83		
6/21/2008	18:59	P37/P32	28	kk	850	400	138	10MPH/83		
6/21/2008	19:02	P36/P31	31	kk	850	400	138	10MPH/83		
6/21/2008	19:04	P35/P31	11	kk	850	400	138	10MPH/83		
6/21/2008	19:09	P30/P35	15	kk	850	400	138	10MPH/83		
6/21/2008	19:00	P34/P20	10	ck	850	850	500	10MPH/83		
6/21/2008	19:03	P34/P30	21	ck	850	850	500	10MPH/83		
6/21/2008	18:55	P20/P30	6	ck	850	850	500	10MPH/83		
6/21/2008	18:55	P20/P28	10	ck	850	850	500	10MPH/83		
6/21/2008	17:15	P22/P26	18	kk	850	400	138	10MPH/83		
6/21/2008	17:18	P27/P21	22	kk	850	400	138	10MPH/83		
6/21/2008	17:22	P21/P28	7	kk	850	400	138	10MPH/83		

CAAW Systems

PANEL SEAMING FORM

PAGE NO.: 5

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	60 Mil. HDPE Text

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/23/2008	14:00	P21/OC	22	vp	550	200	88	5MPH/79		
6/23/2008	14:00	P22/OC	22	vp	550	200	88	5MPH/79		
6/23/2008	14:00	P23A/OC	22	vp	550	200	88	5MPH/79		
6/23/2008	14:00	P23B/OC	6	vp	550	200	88	5MPH/79		
6/23/2008	14:00	P24/OC	22	vp	550	200	88	5MPH/79		
6/23/2008	14:00	P25/OC	35	vp	550	200	88	5MPH/79		
6/23/2008	09:15	P19/OC	11	vp	550	200	88	5MPH/79		
6/23/2008	09:15	P17/OC	22	vp	550	200	88	5MPH/79		
6/23/2008	09:15	P16/OC	22	vp	550	200	88	5MPH/79		
6/23/2008	09:15	P15/OC	22	vp	550	200	88	5MPH/79		
6/23/2008	09:15	P14/OC	22	vp	550	200	88	5MPH/79		
6/23/2008	09:15	P13/OC	22	vp	550	200	88	5MPH/79		
6/23/2008	09:15	P12/OC	25	vp	550	200	88	5MPH/79		
6/23/2008	09:15	P11/OC	35	vp	550	200	88	5MPH/79		
6/24/2008	08:55	P46/P24	10	vp	550	200	88	10-15MPH/74		
6/24/2008	08:55	P45/P24	9	vp	550	200	88	10-15MPH/74		
6/24/2008	08:55	P45/P25	24	vp	550	200	88	10-15MPH/74		
6/24/2008	08:55	P44/P25	10	vp	550	200	88	10-15MPH/74		
6/24/2008	08:55	P46/P23B	6	vp	550	200	88	10-15MPH/74		
6/24/2008	08:55	P46/OC	6	vp	550	200	88	10-15MPH/74		
6/24/2008	08:55	P44/P11	12	vp	550	200	88	10-15MPH/74		
6/24/2008	08:55	P43/P11	27	vp	550	200	88	10-15MPH/74		
6/24/2008	08:55	P42/P12	21	vp	550	200	88	10-15MPH/74		
6/24/2008	08:55	P42/OC	4	vp	550	200	88	10-15MPH/74		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	60 Mil. HDPE Text

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/24/2008	07:55	P42/P43	25	ck	850	450	428	10MPH/78		
6/24/2008	08:03	P43/P44	49	ck	850	450	428	10MPH/78		
6/24/2008	08:13	P44/P45	49	ck	850	450	428	10MPH/78		
6/24/2008	08:25	P45/P46	20	ck	850	450	428	10MPH/78		
6/24/2008	14:55	P20/P47	96	ck	850	550	428	10-15MPH/77		
6/24/2008	15:15	P47/P48	27	kk	850	500	138	10-15MPH/77		
6/24/2008	15:22	P47/P49	69	kk	850	500	138	10-15MPH/77		
6/24/2008	15:10	P48/P49	24	ck	850	450	428	10-15MPH/77		
6/24/2008	15:14	P48/P50	15	ck	850	550	428	10-15MPH/77		
6/24/2008	15:20	P49/P50	81	ck	850	550	428	10-15MPH/77		
6/24/2008	15:30	P50/P51	96	kk	850	500	138	10-15MPH/77		
6/24/2008	15:35	P51/P52	96	ck	850	550	428	10-15MPH/77		
6/24/2008	15:45	P52/P53	96	ck	850	550	428	10-15MPH/77		
6/24/2008	16:15	P53/P54	43	ck	850	550	428	10-15MPH/77		
6/24/2008	16:21	P53/P55	53	ck	850	550	428	10-15MPH/77		
6/24/2008	16:07	P54/P55	26	ck	850	550	428	10-15MPH/77		
6/24/2008	16:30	P54/P56	30	kk	850	500	138	10-15MPH/77		
6/24/2008	16:35	P55/P56	66	kk	850	500	138	10-15MPH/77		
6/24/2008	16:29	P56/P57	96	ck	850	550	428	10-15MPH/77		
6/24/2008	16:43	P57/P58	96	ck	850	550	428	10-15MPH/77		
6/24/2008	16:45	P58/P59	96	kk	850	500	138	10-15MPH/77		
6/24/2008	17:25	P59/P61	60	ck	850	550	428	10-15MPH/77		
6/24/2008	17:33	P59/P60	36	ck	850	550	428	10-15MPH/77		
6/24/2008	17:35	P60/P61	24	kk	850	400	138	10-15MPH/77		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	60 Mil. HDPE Text

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/24/2008	17:40	P60/P62	51	kk	850	500	138	10-15MPH/77		
6/24/2008	17:47	P62/P61	45	kk	850	500	138	10-15MPH/77		
6/24/2008	17:43	P62/P63	96	ck	850	550	428	10-15MPH/77		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME:		Sherco Power Plant			JOB #:		200806	MATERIAL TYPE:		
DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/25/2008	08:12	P20/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P47/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P48/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P50/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P51/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P52/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P53/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P54/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P56/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P57/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P58/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P59/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P60/OC	22	vp	550	200	88	10MPH/73		
6/25/2008	08:12	P62/OC	15	vp	550	200	88	10MPH/73		
6/26/2008	14:25	P62/OC	6	kk	550	200	88	10MPH/74		
6/26/2008	14:25	P63/OC	22	kk	550	200	88	10MPH/74		
6/26/2008	14:25	P64/OC	22	kk	550	200	88	10MPH/74		
6/26/2008	14:25	P65/OC	22	kk	550	200	88	10MPH/74		
6/26/2008	14:25	P66/OC	22	kk	550	200	88	10MPH/74		
6/26/2008	14:25	P68/OC	22	kk	550	200	88	10MPH/74		
6/26/2008	14:25	P69/OC	22	kk	550	200	88	10MPH/74		
6/26/2008	14:25	P70/OC	22	vk	545	245	76	10MPH/74		

CAAW Systems
PANEL SEAMING FORM

PROJECT NAME: Sherco Power Plant | JOB #: 200806 | MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/26/2008	15:08	P71/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P72/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P74/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P75/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P76/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P77/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P78/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P79/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P80/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P81/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P82/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P83/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	15:08	P84/OC	22	vk	545	245	76	5MPH/78		
6/26/2008	18:00	P85/OC	22	kk	550	200	88	5MPH/78		
6/26/2008	18:00	P86/OC	22	kk	550	200	88	5MPH/78		
6/26/2008	18:00	P87/OC	22	kk	550	200	88	5MPH/78		
6/26/2008	18:00	P88/OC	22	kk	550	200	88	5MPH/78		
6/27/2008	08:00	P89/OC	22	vp	550	200	88	5MPH/78		
6/27/2008	08:00	P90/OC	22	vp	550	200	88	5MPH/78		
6/27/2008	08:30	P91/OC	22	kk	550	200	88	5MPH/78		
6/27/2008	08:30	P92/OC	22	kk	550	200	88	5MPH/78		
6/27/2008	08:30	P93/OC	22	kk	550	200	88	5MPH/78		
6/27/2008	08:30	P94/OC	22	kk	550	200	88	5MPH/78		
6/27/2008	08:30	P96/OC	22	kk	550	200	88	5MPH/78		

CAAW Systems

PANEL SEAMING FORM

PAGE NO.: 10

PROJECT NAME: Sherco Power Plant | JOB #: 200806 | MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/25/2008	13:39	P63/P64	96	ck	850	650	428	10-15MPH/78		
6/25/2008	13:50	P64/P65	96	ck	850	650	428	10-15MPH/78		
6/25/2008	14:00	P65/P66	69	hn	850	500	138	10-15MPH/78		
6/25/2008	14:10	P65/P67	27	hn	850	500	138	10-15MPH/78		
6/25/2008	13:40	P66/P67	24	hn	850	500	138	10-15MPH/78		
6/25/2008	14:10	P66/P68	57	ck	850	650	428	10-15MPH/78		
6/25/2008	14:16	P67/P68	39	ck	850	650	428	10-15MPH/78		
6/25/2008	14:25	P68/P69	96	hn	850	500	138	10-15MPH/78		
6/25/2008	14:25	P69/P70	96	ck	850	650	428	10-15MPH/78		
6/25/2008	14:30	P70/P71	96	hn	850	500	138	10-15MPH/78		
6/25/2008	14:45	P71/P72	96	ck	850	650	428	10-15MPH/78		
6/25/2008	14:45	P74/P72	82	hn	850	500	138	10-15MPH/78		
6/25/2008	14:55	P71/P72	96	ck	850	650	428	10-15MPH/78		
6/25/2008	14:53	P73/P74	14	hn	850	500	138	10-15MPH/78		
6/25/2008	14:35	P73/P72	14	ck	850	650	428	10-15MPH/78		
6/25/2008	14:57	P74/P75	82	ck	850	650	428	10-15MPH/78		
6/25/2008	15:15	P75/P76	96	hn	850	500	138	10-15MPH/78		
6/25/2008	15:15	P76/P77	96	ck	850	650	428	10-15MPH/78		
6/25/2008	15:27	P77/P78	96	hn	850	500	138	10-15MPH/78		
6/25/2008	15:31	P78/P79	96	ck	850	650	428	10-15MPH/78		
6/25/2008	15:52	P79/P80	96	hn	850	500	138	10-15MPH/78		
6/25/2008	16:03	P80/P81	96	ck	850	650	428	10-15MPH/78		
6/25/2008	18:00	P81/P82	96	hn	850	500	138	10-15MPH/78		
6/25/2008	17:53	P82/P83	96	ck	850	650	428	10-15MPH/78		

CAAW Systems

PANEL SEAMING FORM

PAGE NO.: 11

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/25/2008	18:15	P83/P84	96	hn	850	500	138	10-15MPH/78		
6/25/2008	18:15	P84/P85	96	ck	850	650	428	10-15MPH/78		
6/25/2008	18:28	P85/P86	96	hn	850	500	138	10-15MPH/78		
6/25/2008	18:35	P86/P87	96	ck	850	650	428	10-15MPH/78		
6/25/2008	18:45	P87/P88	96	hn	850	500	138	10-15MPH/78		
6/25/2008	18:48	P88/P89	96	hn	850	500	138	10-15MPH/78		
6/26/2008	09:50	P89/P90	96	kk	850	500	138	10-15MPH/83		
6/26/2008	10:05	P90/P91	96	ck	850	450	428	10-15MPH/83		
6/26/2008	10:10	P91/P92	96	kk	850	500	138	10-15MPH/83		
6/26/2008	10:33	P92/P93	96	ck	850	450	428	10-15MPH/83		
6/26/2008	10:50	P93/P94	30	kk	850	500	138	10-15MPH/83		
6/26/2008	10:50	P93/P95	66	ck	850	450	428	10-15MPH/83		
6/26/2008	10:25	P94/P95	24	ck	850	450	428	10-15MPH/83		
6/26/2008	11:08	P96/P94	19	ck	850	450	428	10-15MPH/83		
6/26/2008	11:12	P96/P95	76	ck	850	450	428	10-15MPH/83		
6/26/2008	11:23	P96/P97	96	ck	850	450	428	10-15MPH/83		
6/26/2008	11:40	P97/P98	96	ck	850	450	428	10-15MPH/83		
6/26/2008	11:55	P98/P99	78	ck	850	450	428	10-15MPH/83		
6/26/2008	12:10	P99/P100	56	ck	850	450	428	10-15MPH/83		
6/30/2008	09:00	P97/OC	22	vp	550	200	88	10MPH/78		
7/2/2008	09:25	P98/OC	7	vp	550	200	88	20-30MPH/74		
7/2/2008	09:25	P101/OC	7	vp	550	200	88	20-30MPH/74		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME: Sherco Power Plant | JOB #: 200806 | MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/30/2008	15:40	P112/P111	160	ck	850	600	428	10MPH/87		
6/30/2008	16:00	P111/P110	137	kk	850	500	427	10MPH/87		
6/30/2008	16:05	P110/P109	116	ck	850	600	428	10MPH/87		
6/30/2008	16:20	P109/P108	92	kk	850	500	427	10MPH/87		
6/30/2008	16:35	P108/P107	34	ck	850	500	428	10MPH/87		
6/30/2008	16:41	P107/P106	35	ck	850	500	428	10MPH/87		
6/30/2008	16:20	P105/P107	5	ck	850	500	428	10MPH/87		
6/30/2008	16:25	P105/P107	30	ck	850	500	428	10MPH/87		
6/30/2008	16:33	P105/P106	35	ck	850	500	428	10MPH/87		
6/30/2008	17:10	P113/P114	175	ck	850	600	428	10MPH/87		
6/30/2008	17:20	P114/P115	168	kk	850	500	427	10MPH/87		
6/30/2008	17:30	P115/P116	95	ck	850	600	428	10MPH/87		
6/30/2008	17:35	P116/P117	73	kk	850	500	427	10MPH/87		
6/30/2008	17:45	P117/P118	50	ck	850	600	428	10MPH/87		
6/30/2008	17:55	P118/P119	21	ck	850	600	428	10MPH/87		
6/30/2008	18:25	P105/P119	16	ck	850	500	428	10MPH/87		
6/30/2008	18:25	P105/P118	4	ck	850	500	428	10MPH/87		
6/30/2008	18:25	P118/P100	17	ck	850	500	428	10MPH/87		
6/30/2008	18:25	P117/P99	13	ck	850	500	428	10MPH/87		
6/30/2008	18:25	P116/P98	19	ck	850	500	428	10MPH/87		
6/30/2008	18:25	P115/P97	19	ck	850	500	428	10MPH/87		
6/30/2008	18:25	P114/P96	19	ck	850	500	428	10MPH/87		
6/30/2008	18:25	P113/P95	17	ck	850	500	428	10MPH/87		

CAAW Systems

PANEL SEAMING FORM

PAGE NO.: 13

PROJECT NAME: Sherco Power Plant | JOB #: 200806 | MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
6/30/2008	15:00	P105/P104	80	kk	850	500	427	10-15MPH/87		
6/30/2008	14:50	P104/P103	81	ck	850	600	428	10-15MPH/87		
6/30/2008	14:45	P103/P102	97	kk	850	500	427	10-15MPH/87		
6/30/2008	14:45	P101/P102	120	ck	850	600	428	10-15MPH/87		
6/30/2008	18:00	P119/P107	5	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P108/P119	7	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P118/P108	24	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P118/P109	91	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P117/P109	22	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P117/P110	9	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P116/P110	21	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P116/P111	11	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P115/P111	24	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P115/P112	11	kk	850	400	427	10-15MPH/87		
6/30/2008	18:00	P114/P112	9	kk	850	400	427	10-15MPH/87		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
7/1/2008	15:23	P120/P101	135	ck	850	600	428	15MPH/87		
7/1/2008	15:30	P121/P120	135	kk	850	550	427	15MPH/87		
7/1/2008	15:45	P121/P122	135	ck	850	600	428	15MPH/87		
7/1/2008	15:55	P122/P123	135	kk	850	550	427	15MPH/87		
7/1/2008	16:20	P125/P123	36	ck	850	600	428	15MPH/87		
7/1/2008	16:25	P124/P123	99	ck	850	600	428	15MPH/87		
7/1/2008	16:12	P124/P125	24	ck	850	500	428	15MPH/87		
7/1/2008	16:20	P125/P126	45	kk	850	550	427	15MPH/87		
7/1/2008	16:20	P124/P126	90	kk	850	550	427	15MPH/87		
7/1/2008	16:42	P126/P127	135	ck	850	600	428	15MPH/87		
7/1/2008	16:40	P127/P128	135	kk	850	550	427	15MPH/87		
7/1/2008	17:07	P128/P130	82	ck	850	600	428	15MPH/87		
7/1/2008	17:19	P128/P129	53	ck	850	600	428	15MPH/87		
7/1/2008	17:00	P129/P130	24	kk	850	450	427	15MPH/87		
7/1/2008	17:15	P130/P131	92	kk	850	550	427	15MPH/87		
7/1/2008	17:15	P129/P131	53	kk	850	550	427	15MPH/87		
7/1/2008	17:23	P131/P132	135	ck	850	600	428	15MPH/87		
7/1/2008	17:30	P132/P133	135	kk	850	550	427	15MPH/87		
7/1/2008	17:50	P133/P134	135	ck	850	600	428	15MPH/87		
7/1/2008	18:00	P134/P135	135	kk	850	550	427	15MPH/87		
7/1/2008	18:15	P135/P136	135	ck	850	600	428	15MPH/87		
7/1/2008	18:30	P136/P138	30	kk	850	550	427	15MPH/87		
7/1/2008	18:30	P136/P137	105	kk	850	550	427	15MPH/87		
7/1/2008	18:35	P139/P138	38	ck	850	600	428	15MPH/87		

CAAW Systems

PANEL SEAMING FORM

PAGE NO.: 15

PROJECT NAME: Sherco Power Plant | JOB #: 200806 | MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
7/1/2008	18:40	P139/P137	97	ck	850	600	428	15MPH/87		
7/1/2008	18:25	P138/P137	24	kk	850	450	427	15MPH/87		
7/1/2008	18:50	P139/P140	135	kk	850	550	427	15MPH/87		
7/1/2008	18:55	P140/P141	135	ck	850	600	428	15MPH/87		
7/1/2008	19:10	P141/P142	135	kk	850	550	427	15MPH/87		
6/30/2008	15:30	P98/P101	24	kk	850	400	427	15MPH/87		
6/30/2008	15:30	P99/P101	4	kk	850	400	427	15MPH/87		
6/30/2008	15:30	P99/P102	26	kk	850	400	427	15MPH/87		
6/30/2008	15:30	P100/P103	28	kk	850	400	427	15MPH/87		
6/30/2008	15:30	P100/P104	21	kk	850	400	427	15MPH/87		
6/30/2008	15:30	P100/P105	10	kk	850	400	427	15MPH/87		
6/30/2008	15:30	P100/P102	4	kk	850	400	427	15MPH/87		

CAAW Systems
PANEL SEAMING FORM

PAGE NO.: 16

PROJECT NAME:		Sherco Power Plant			JOB #:	200806		MATERIAL TYPE:		
DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
7/3/2008	14:25	P142/P143	135	kk1	850	600	427	10MPH/83		
7/2/2008	14:30	P143/P144	135	ck	850	600	428	10MPH/83		
7/2/2008	14:54	P144/P145	98	kk2	850	400	138	10MPH/83		
7/2/2008	14:54	P144/P146	37	kk2	850	400	138	10MPH/83		
7/2/2008	14:45	P145/P146	23	kk2	850	400	138	10MPH/83		
7/2/2008	14:50	P145/P147	97	kk1	850	550	427	10MPH/83		
7/2/2008	14:50	P146/P147	38	kk1	850	550	427	10MPH/83		
7/2/2008	14:55	P147/P148	135	ck	850	600	428	10MPH/83		
7/2/2008	15:10	P148/P149	135	kk1	850	550	427	10MPH/83		
7/2/2008	15:20	P149/P150	53	ck	850	600	428	10MPH/83		
7/2/2008	15:35	P149/P151	82	ck	850	600	428	10MPH/83		
7/2/2008	15:15	P150/P151	22	ck	850	450	428	10MPH/83		
7/2/2008	15:23	P150/P152	53	kk2	850	400	138	10MPH/83		
7/2/2008	15:23	P151/P152	82	kk2	850	400	138	10MPH/83		
7/2/2008	15:30	P152/P153	135	kk1	850	550	427	10MPH/83		
7/2/2008	15:45	P153/P154	135	ck	850	600	428	10MPH/83		
7/2/2008	16:10	P154/P155	28	kk1	850	550	427	10MPH/83		
7/2/2008	16:10	P154/P156	107	kk1	850	550	427	10MPH/83		
7/2/2008	16:00	P155/P156	23	kk1	850	450	427	10MPH/83		
7/2/2008	16:00	P155/P157	20	kk2	850	400	138	10MPH/83		
7/2/2008	16:00	P156/P157	115	kk2	850	400	138	10MPH/83		
7/2/2008	16:05	P157/P158	135	ck	850	600	428	10MPH/83		
7/2/2008	16:40	P158/P159	124	kk2	850	400	1138	10MPH/83		
7/3/2008	16:40	P158/P160	11	kk2	850	400	138	10MPH/83		

CAAW Systems

PANEL SEAMING FORM

PAGE NO.: 17

PROJECT NAME: Sherco Power Plant | JOB #: 200806 | MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
7/3/2008	16:50	P159/P160	22	kk	850	450	427	10MPH/83		
7/3/2008	16:25	P159/P161	124	ck	850	600	428	10MPH/83		
7/3/2008	16:25	P160/P161	11	ck	850	600	428	10MPH/83		
7/3/2008	16:30	P161/P162	135	kk	850	550	427	10MPH/83		
7/3/2008	16:45	P162/P163	135	ck	850	600	428	10MPH/83		
7/3/2008	16:50	P163/P164	98	ck	850	600	428	10MPH/83		
7/3/2008	16:50	P163/P165	37	ck	850	600	428	10MPH/83		
7/3/2008	18:00	P164/P165	22	kk	850	450	427	10MPH/83		
7/3/2008	18:05	P166/P165	37	kk	850	550	427	10MPH/83		
7/3/2008	18:05	P166/P164	98	kk	850	550	427	10MPH/83		
7/3/2008	18:13	P166/P167	135	ck	850	600	428	10MPH/83		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME:	Sherco Power Plant				JOB #:	200806		MATERIAL TYPE:		
DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
7/7/2008	10:09	P167/P168	135	ck	850	550	428	10-15MPH/78		
7/7/2008	10:15	P168/P169	85	kk	850	500	427	10-15MPH/78		
7/7/2008	10:15	P168/P170	70	kk	850	500	427	10-15MPH/78		
7/7/2008	10:25	P169/P170	22	kk	850	500	427	10-15MPH/78		
7/8/2008	10:10	P169/P171	85	kk	850	500	427	20MPH/82		
7/8/2008	10:10	P170/P171	70	kk	850	500	427	20MPH/82		
7/8/2008	10:30	P171/P172	135	kk	850	500	427	20MPH/82		
7/8/2008	10:30	P172/P173	135	kk	850	500	427	20MPH/82		
7/8/2008	11:00	P173/P174	135	ck	850	500	428	20MPH/82		
7/8/2008	11:10	P174/P175	135	kk	850	500	427	20MPH/82		
7/8/2008	11:25	P175/P176	135	ck	850	500	428	20MPH/82		
7/8/2008	11:45	P176/P177	70	kk	850	500	427	20MPH/82		
7/8/2008	11:45	P176/P178	65	ck	850	500	428	20MPH/82		
7/8/2008	11:40	P178/P177	22	kk	850	400	427	20MPH/82		
7/8/2008	13:10	P179/P177	70	ck	850	500	428	20MPH/82		
7/8/2008	13:19	P179/P178	65	ck	850	500	428	20MPH/82		
7/8/2008	13:15	P179/P180	135	kk	850	500	427	20MPH/82		
7/8/2008	13:29	P180/P181	135	ck	850	500	428	20MPH/82		
7/8/2008	13:50	P181/P182	70	kk	850	500	427	20MPH/82		
7/8/2008	13:50	P181/P183	65	ck	850	500	428	20MPH/82		
7/8/2008	13:40	P183/P182	22	kk	850	400	427	20MPH/82		
7/9/2008	08:41	P182/P184	70	ck	850	550	428	5-10MPH/80		
7/9/2008	08:41	P183/P184	65	ck	850	550	428	5-10MPH/80		
7/9/2008	08:50	P184/P185	135	kk	850	500	427	5-10MPH/80		

CAAW Systems
PANEL SEAMING FORM

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
7/9/2008	09:00	P185/P186	65	ck	850	550	428	5-10MPH/80		
7/9/2008	09:10	P186/P187	65	kk	850	500	427	5-10MPH/80		
7/9/2008	10:20	P187/P188	34	kk	850	500	427	5-10MPH/80		
7/9/2008	10:20	P187/P189	31	kk	850	500	427	5-10MPH/80		
7/9/2008	10:19	P188/P189	22	ck	850	450	428	5-10MPH/80		
7/9/2008	10:38	P188/P190	34	ck	850	550	428	5-10MPH/80		
7/9/2008	10:38	P189/P190	31	ck	850	550	428	5-10MPH/80		
7/9/2008	10:35	P190/P191	65	kk	850	500	427	5-10MPH/80		
7/9/2008	10:39	P191/P192	65	ck	850	550	428	5-10MPH/80		
7/9/2008	10:50	P192/P193	65	kk	850	500	427	5-10MPH/80		
7/9/2008	10:50	P193/P194	65	ck	850	550	428	5-10MPH/80		
7/9/2008	11:00	P194/P195	8	ck	850	550	428	5-10MPH/80		

CAAW Systems
PANEL SEAMING FORM

PROJECT NAME: Sherco Power Plant | JOB #: 200806 | MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
7/2/2008	09:25	P120/OC	22	vp	550	200	88	20-30MPH/74		
7/2/2008	09:25	P121/OC	22	vp	550	200	88	20-30MPH/74		
7/2/2008	09:25	P122/OC	22	vp	550	200	88	20-30MPH/74		
7/2/2008	09:25	P123/OC	22	vp	550	200	88	20-30MPH/74		
7/2/2008	09:25	P124/OC	22	vp	550	200	88	20-30MPH/74		
7/2/2008	09:09	P126/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	09:09	P127/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	09:09	P128/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	09:09	P129/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	09:09	P131/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	09:09	P132/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	09:09	P133/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	09:09	P134/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	09:09	P15/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	13:10	P136/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	13:10	P137/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	13:10	P139/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	13:10	P140/OC	22	vk	545	245	175	20-30MPH/74		
7/2/2008	13:10	P141/OC	22	vk	545	245	175	20-30MPH/74		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME: Sherco Power Plant | JOB #: 200806 | MATERIAL TYPE:

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
7/5/2008	08:00	P142/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P143/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P144/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P145/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P147/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P148/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P149/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P150/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P152/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P153/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P154/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P155/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:00	P157/OC	22	VP	550	200	88	10MPH/83		
7/5/2008	08:15	P158/OC	22	VK	545	245	76	10MPH/83		
7/5/2008	08:15	P159/OC	22	VK	545	245	76	10MPH/83		
7/5/2008	08:15	P161/OC	22	VK	545	245	76	10MPH/83		
7/5/2008	08:15	P162/OC	22	VK	545	245	76	10MPH/83		
7/5/2008	08:15	P163/OC	22	VK	545	245	76	10MPH/83		
7/5/2008	08:15	P164/OC	22	VK	545	245	76	10MPH/83		
7/5/2008	08:15	P166/OC	22	VK	545	245	76	10MPH/83		

CAAW Systems

PANEL SEAMING FORM

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP	SET SPEED	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
7/9/2008	13:30	P185->P167/OC	352	vk	545	245	175	10-15MPH/86		
7/10/2008	07:45	P185/OC	92	vk	545	245	175	5-10MPH/74		
7/10/2008	08:00	P186->P192/OC	154	vp	500	200	88	5-10MPH/74		
7/10/2008	08:00	P193/POC	22	vp	500	200	88	5-10MPH/74		
7/10/2008	08:00	P194/OC	65	vp	500	200	88	5-10MPH/74		
7/10/2008	08:00	P195/OC	6	vp	500	200	88	5-10MPH/74		

CAAW Systems

PANEL SEAMING FORM

PAGE NO.: 1

PROJECT NAME:		Sherco Pond (3 upper weir flap)			JOB #:	200806		MATERIAL TYPE:		
DATE	TIME	SEAM NO.	SEAM LENGTH (FT)	SEAMER INITIALS	SET TEMP/ BARRET	SET SPEED/ PREHEAT	MACHINE NUMBER	WEATHER WIND / TEMP (MPH / ºF)	BEGINNING SAMPLE TEST RESULT	ENDING SAMPLE TEST RESULT
8/11/2008	14:20	P6-P7	39	KX	850	5.5	333		PASS	PASS
8/11/2008	14:10	P5-P6	61	KX	850	5.5	333		PASS	PASS
8/11/2008	14:16	P1-P5	91	SX	850	5	737		PASS	PASS
8/11/2008	13:55	P1-P2	99	KX	850	5.5	333		PASS	PASS
8/11/2008	13:45	P2-P3	99	SX	850	5	737		PASS	PASS
8/11/2008	13:45	P3-P4	99	PX	850	5	69		PASS	PASS
8/11/2008	14:10	P4-P8	99	PX	850	5	69		PASS	PASS
8/11/2008	14:20	P8-P9	89	PX	850	5	69		PASS	PASS
8/11/2008	14:40	P9-P10	65	PX	850	5	69		PASS	PASS
8/11/2008	14:32	P10-P11	42	SX	850	5	737		PASS	PASS
8/11/2008	14:27	P11-P12	24	SX	850	5	737		PASS	PASS
8/11/2008	15:00	P7-OC	48	AM	500	500	46		11-Aug	VT OK
8/11/2008	15:24	P6-OC	32	AM	500	500	46		11-Aug	VT OK
8/11/2008	15:39	P5-OC	38	AM	500	500	46		11-Aug	VT OK
8/11/2008	15:02	P1-OC	27	PX	500	400	286		11-Aug	VT OK
8/11/2008	15:26	P2-OC	22	PX	500	400	286		11-Aug	VT OK
8/11/2008	15:35	P3-OC	22	PX	500	400	286		11-Aug	VT OK
8/11/2008	15:48	P4-OC	22	PX	500	400	286		11-Aug	VT OK
8/11/2008	15:56	P8-OC	29	PX	500	400	286		11-Aug	VT OK
8/11/2008	16:09	P9-OC	31	PX	500	400	286		11-Aug	VT OK
8/11/2008	16:24	P10-OC	30	PX	500	400	286		11-Aug	VT OK
8/11/2008	16:37	P11-OC	27	PX	500	400	286		11-Aug	VT OK
8/11/2008	16:48	P12-OC	25	PX	500	400	286		11-Aug	VT OK

Non-Destructive Testing Reports

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	60 Mil. HDPE Text

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST TIME START	AIR PRESSURE TEST TIME END	AIR PRESSURE TEST PRESSURE START	AIR PRESSURE TEST PRESSURE END	P/F	VACUUM TEST P / F	COMMENTS
6/20/2008	139	P1/P2	ss	15:27	15:32	30	29	P		
6/20/2008	17	P2/P3	ss	15:30	15:35	30	29	P		
6/20/2008	122	P2/P3	ss	15:32	15:37	30	29	P		
6/20/2008	67	P3/P4	ss	17:00	17:05	30	30	P		
6/20/2008	11	P3/P5	ss	08:02	8:07	30	30	P		
6/20/2008	79	P4/P6	ss	17:01	17:06	30	30	P		
6/20/2008	142	P6/P7	ss	17:08	17:13	30	30	P		
6/20/2008	25	P4/P5	ss	17:11	17:16	30	30	P		
6/20/2008	63	P6/P5	ss	17:24	17:29	30	30	P		
6/21/2008	11	P3/P5	ss	07:54	7:59	30	30	P		
6/21/2008	16	P3/P5	ss	07:48	7:53	30	30	P		
6/21/2008	30	P3/P5	ss	07:41	7:46	30	30	P		
6/21/2008	17	P7/P8	ss	07:24	7:29	30	30	P		
6/21/2008	10	P7/P8	ss	07:17	7:22	30	30	P		
6/21/2008	11	P7/P8	ss	07:32	7:37	30	30	P		
6/21/2008	5	P7/P8	ss	07:31	7:36	30	30	P		
6/21/2008	42	P7/P8	ss	07:01	7:06	30	30	P		
6/21/2008	45	P7/P8	ss	18:06	18:11	30	27	P		
6/21/2008	140	P8/P9	ss	08:38	8:43	30	30	P		
6/21/2008	101	P9/P10	ss	08:39	8:44	30	30	P		
6/21/2008	92	P10/P11	ss	08:58	9:03	30	30	P		
6/21/2008	38	P11/P12	ss	09:01	9:06	30	30	P		
6/21/2008	11	P12/P13	ss	09:08	9:13	30	29	P		
6/21/2008	10	P12/P13	ss	09:09	9:14	30	30	P		
6/21/2008	19	P13/P14	ss	09:40	9:45	30	30	P		
6/21/2008	27	P14/P11	ss	09:41	9:46	30	30	P		
6/21/2008	38	P14/P15	ss	09:56	10:01	30	30	P		
6/21/2008	10	P15/P10	ss	09:57	10:02	30	29	P		
6/21/2008	11	P15/P18	ss	10:00	10:05	30	29	P		
6/21/2008	15	P18/P10	ss	10:04	10:09	30	29	P		
6/21/2008	10	P9/P18	ss	10:11	10:16	30	30	P		
6/21/2008	7	P18/P16	ss	10:10	10:15	30	30	P		
6/21/2008	57	P16/P15	ss	10:07	10:12	30	30	P		
6/21/2008	20	P16/P9	ss	10:17	10:22	30	28	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	60 Mil. HDPE Text

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST TIME START	TIME END	PRESSURE START	PRESSURE END	P/F	VACUUM TEST P / F	COMMENTS
6/21/2008	81	P16/P17	ss	10:20	10:25	30	30	P		
6/21/2008	13	P17/P19	ss	10:21	10:26	30	30	P		
6/21/2008	42	P17/P19	ss	10:26	10:31	30	30	P		
6/21/2008	75	P20/P21	ss	15:17	15:22	30	30	P		
6/21/2008	51	P21/P22	ss	15:18	15:23	30	29	P		
6/21/2008	29	P22/P23A	ss	15:22	15:27	30	29	P		
6/21/2008	11	P23A/P23B	ss	15:46	15:51	30	28	P		
6/23/2008	15	P26/P10	ss	08:08	8:13	30	29	P		
6/23/2008	6	P26/P9	ss	08:09	8:14	30	28	P		
6/23/2008	14	P27/P9	ss	08:30	8:35	30	28	P		
6/23/2008	6	P8/P27	ss	08:53	8:58	30	30	P		
6/23/2008	15	P28/P8	ss	08:36	8:41	30	30	P		
6/23/2008	8	P29/P7	ss	09:01	9:06	30	28	P		
6/23/2008	14	P29/P7	ss	09:14	9:19	30	29	P		
6/23/2008	8	P6/P29	ss	09:17	9:22	30	30	P		
6/23/2008	12	P6/P31	ss	09:39	9:43	30	30	P		
6/23/2008	8	P4/P31	ss	09:37	9:42	30	30	P		
6/23/2008	13	P4/P32	ss	09:33	9:38	30	30	P		
6/23/2008	8	P3/P32	ss	09:27	9:32	30	28	P		
6/23/2008	13	P3/P33	ss	09:46	9:51	30	30	P		
6/23/2008	7	P2/P33	ss	09:48	9:53	30	30	P		
6/23/2008	9	P2/P40	ss	10:07	10:12	30	30	P		
6/23/2008	22	P1/P44	ss	10:01	10:06	30	28	P		
6/23/2008	13	P41/P40	ss	10:05	10:10	30	30	P		
6/23/2008	14	P40/P39	ss	10:00	10:05	30	29	P		
6/23/2008	25	P33/P39	ss	09:47	9:52	30	30	P		
6/23/2008	13	P33/P38	ss	10:29	10:34	30	30	P		
6/23/2008	16	P38/P32	ss	10:36	10:41	30	30	P		
6/23/2008	28	P37/P32	ss	10:40	10:45	30	30	P		
6/23/2008	31	P36/P31	ss	10:46	10:51	30	29	P		
6/23/2008	11	P31/P35	ss	10:48	10:53	30	30	P		
6/23/2008	15	P30/P35	ss	10:54	10:59	30	30	P		
6/23/2008	21	P34/P30	ss	10:57	11:02	30	30	P		
6/23/2008	10	P34/P20	ss	11:01	11:06	30	29	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	60 Mil. HDPE Text

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST					VACUUM TEST	COMMENTS
				TIME		PRESSURE				
				START	END	START	END	P/F	P / F	
6/23/2008	6	P20/P30	ss	8:37	8:42	30	30	P		
6/23/2008	10	P28/P20	ss	08:05	8:10	30	30	P		
6/23/2008	5	P20/P28	ss	08:04	8:09	30	29	P		
6/23/2008	7	P21/P28	ss	07:55	8:00	30	29	P		
6/23/2008	22	P21/P27	ss	07:52	7:57	30	30	P		
6/23/2008	18	P22/P26	ss	07:36	7:41	30	30	P		
6/23/2008	22	P25/P23	ss	07:43	7:53	30	30	P		
6/23/2008	26	P24/P25	ss	07:42	7:47	30	29	P		
6/23/2008	74	P26/P25	ss	07:35	7:40	30	30	P		
6/23/2008	97	P26/P27	ss	07:51	7:56	30	30	P		
6/23/2008	115	P27/P28	ss	07:54	7:59	30	30	P		
6/23/2008	16	P29/P28	ss	09:06	9:11	30	30	P		
6/23/2008	43	P29/P28	ss	09:03	9:08	30	30	P		
6/23/2008	24	P29/P30	ss	09:10	9:15	30	29	P		
6/23/2008	63	P28/P30	ss	08:48	8:53	30	29	P		
6/23/2008	45	P31/P30	ss	09:04	9:09	30	30	P		
6/23/2008	55	P31/P29	ss	09:12	9:17	30	30	P		
6/23/2008	63	P31/P32	ss	09:36	9:41	30	27	P		
6/23/2008	27	P32/P33	ss	09:25	9:30	30	30	P		
6/23/2008	21	P38/P39	ss	09:57	10:02	30	30	P		
6/23/2008	43	P38/P37	ss	10:11	10:16	30	29	P		
6/23/2008	65	P37/P36	ss	10:14	10:19	30	29	P		
6/23/2008	88	P36/P35	ss	10:16	10:21	30	28	P		
6/23/2008	106	P34/P35	ss	10:19	10:24	30	30	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	60 Mil. HDPE Text

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST TIME START	TIME END	PRESSURE START	PRESSURE END	P/F	VACUUM TEST P / F	COMMENTS
6/24/2008	25	P42/P43	ss	8:20	8:25	30	30	P		
6/24/2008	49	P43/P44	ss	08:22	8:27	30	30	P		
6/24/2008	27	P44/P45	ss	08:40	8:45	30	30	P		
6/24/2008	23	P45/P46	ss	08:45	8:50	30	30	P		
6/25/2008	96	P20/P47	ss	07:24	7:29	30	30	P		
6/25/2008	16	P47/P48	ss	07:27	7:32	30	30	P		
6/25/2008	6	P47/P48	ss	07:28	7:33	30	30	P		
6/25/2008	24	P48/P49	ss	07:33	7:38	30	28	P		
6/25/2008	33	P48/P49	ss	07:43	7:48	30	30	P		
6/25/2008	33	P48/P49	ss	07:49	7:54	30	30	P		
6/25/2008	15	P48/P50	ss	07:45	7:50	30	30	P		
6/25/2008	81	P49/P50	ss	07:47	7:52	30	30	P		
6/25/2008	8	P50/P51	ss	07:53	7:58	30	29	P		
6/25/2008	88	P50/P51	ss	07:52	7:57	30	30	P		
6/25/2008	96	P51/P52	ss	08:00	8:05	30	30	P		
6/25/2008	96	P52/P53	ss	08:31	8:36	30	30	P		
6/25/2008	43	P53/P54	ss	08:35	8:40	30	29	P		
6/25/2008	53	P53/P55	ss	08:44	8:49	30	30	P		
6/25/2008	26	P54/P55	ss	08:43	8:48	30	30	P		
6/25/2008	30	P54/P56	ss	08:39	8:43	30	29	P		
6/25/2008	66	P55/P56	ss	08:45	8:50	30	29	P		
6/25/2008	96	P56/P57	ss	08:48	8:53	30	29	P		
6/25/2008	96	P57/P58	ss	08:49	8:54	30	30	P		
6/25/2008	96	P58/P59	ss	08:50	8:55	30	30	P		
6/25/2008	60	P59/P60	ss	08:55	9:00	30	29	P		
6/25/2008	36	P59/P61	ss	09:08	9:13	30	30	P		
6/25/2008	24	P60/P61	ss	09:06	9:11	30	30	P		
6/25/2008	51	P60/P62	ss	08:59	9:54	30	30	P		
6/25/2008	45	P61/P62	ss	09:02	9:07	30	29	P		
6/25/2008	96	P62/P63	ss	09:00	9;05	30	30	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST					VACUUM TEST	COMMENTS
				TIME		PRESSURE				
				START	END	START	END	P/F	P / F	
6/25/2008	7	P63/P64	ss	15:02	15:07	30	29	P		
6/25/2008	86	P63/P64	ss	15:22	15:27	30	30	P		
6/25/2008	96	P64/P65	ss	14:55	15:00	30	30	P		
6/25/2008	69	P66/P65	ss	14:56	15:01	30	29	P		
6/25/2008	27	P65/P67	ss	08:13	8:18	30	29	P		
6/25/2008	24	P66/P67	ss	08:12	8:17	30	29	P		
6/25/2008	57	P66/P68	ss	07:58	8:03	30	30	P		
6/25/2008	39	P67/P68	ss	08:15	8:20	30	30	P		
6/25/2008	96	P68/P29	ss	08:00	8:05	30	30	P		
6/25/2008	96	P69/P70	ss	08:02	8:07	30	29	P		
6/25/2008	96	P70/P71	ss	08:05	8:10	30	29	P		
6/25/2008	82	P71/P72	ss	08:09	8:14	30	30	P		
6/25/2008	14	P71/PP73	ss	09:05	9:10	30	30	P		
6/25/2008	22	P72/P73	ss	09:04	9:09	30	30	P		
6/25/2008	14	P73/P74	ss	09:03	9:08	30	29	P		
6/25/2008	82	P74/P72	ss	08:22	8:27	30	30	P		
6/25/2008	96	P74/P75	ss	08:25	8:30	30	30	P		
6/25/2008	96	P75/P76	ss	08:26	8:31	30	30	P		
6/25/2008	96	P76/P77	ss	08:28	8:33	30	30	P		
6/25/2008	96	P77/P78	ss	08:31	8:36	30	30	P		
6/25/2008	96	P78/P79	ss	08:33	8:38	30	30	P		
6/25/2008	96	P79/P80	ss	08:35	8:40	30	29	P		
6/25/2008	96	P80/P81	ss	08:39	8:44	30	29	P		
6/25/2008	96	P81/P82	ss	08:40	8:45	30	30	P		
6/25/2008	96	P82/P83	ss	08:42	8:47	30	30	P		
6/25/2008	96	P83/P84	ss	08:44	8:49	30	29	P		
6/25/2008	96	P84/P85	ss	08:46	8:51	30	30	P		
6/25/2008	96	P85/P86	ss	08:48	8:53	30	29	P		
6/25/2008	96	P86/P87	ss	08:52	8:57	30	30	P		
6/25/2008	96	P87/P88	ss	08:55	9:00	30	29	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST					VACUUM TEST	COMMENTS
				TIME		PRESSURE				
				START	END	START	END	P/F	P / F	
6/26/2008	96	P88/P89	ss	8:55	9:00	30	29	P		
6/26/2008	96	P89/P90	ss	15:31	15:36	30	30	P		
6/26/2008	96	P90/P91	ss	15:32	15:37	30	30	P		
6/26/2008	96	P91/P92	ss	15:59	16:04	30	30	P		
6/26/2008	96	P92/P93	ss	16:00	16:05	30	30	P		
6/26/2008	30	P93/P94	ss	16:10	16:15	30	30	P		
6/26/2008	66	P93/P95	ss	16:29	16:34	30	30	P		
6/26/2008	24	P94/P95	ss	16:20	16:25	30	30	P		
6/26/2008	19	P96/P94	ss	16:11	16:16	30	30	P		
6/26/2008	76	P96/P95	ss	16:19	16:24	30	30	P		
6/26/2008	96	P96/P97	ss	16:12	16:17	30	30	P		
6/26/2008	96	P97/P98	ss	16:13	16:18	30	30	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST					VACUUM TEST	COMMENTS
				TIME		PRESSURE				
				START	END	START	END	P/F	P / F	
7/1/2008	17	P113/P95	ss	8:54	8:59	30	30	P		
7/1/2008	175	P113/P114	ss	08:55	9:00	30	30	P		
7/1/2008	19	P114/P96	ss	08:56	9:01	30	30	P		
7/1/2008	168	P114/P115	ss	09:03	9:08	30	30	P		
7/1/2008	19	P115/P97	ss	09:04	9:09	30	30	P		
7/1/2008	95	P115/P116	ss	09:06	9:11	30	30	P		
7/1/2008	19	P116/P98	ss	09:13	9:18	30	28	P		
7/1/2008	73	P116/P117	ss	09:17	9:22	30	30	P		
7/1/2008	13	P117/P99	ss	09:14	9:19	30	30	P		
7/1/2008	50	P117/P118	ss	09:26	9:31	30	30	P		
7/1/2008	17	P118/P100	ss	09:28	9:33	30	30	P		
7/1/2008	21	P118/P119	ss	09:36	9:41	30	30	P		
7/1/2008	4	P118/P105	ss	09:37	9:42	30	30	P		
7/1/2008	16	P119/P105	ss	09:43	9:48	30	30	P		
7/1/2008	30	P105/P107	ss	09:44	9:49	30	29	P		
7/1/2008	5	P107/P106	ss	09:52	9:57	30	30	P		
7/1/2008	35	P106/P105	ss	09:51	9:56	30	29	P		
7/1/2008	35	P106/P108	ss	10:03	10:08	30	30	P		
7/1/2008	34	P107/P108	ss	09:56	10:01	30	30	P		
7/1/2008	7	P119/P108	ss	10:04	10:09	30	30	P		
7/1/2008	24	P118/P108	ss	10:12	10:17	30	29	P		
7/1/2008	92	P108/P109	ss	10:11	10:16	30	30	P		
7/1/2008	9	P109/P118	ss	10:19	10:24	30	30	P		
7/1/2008	22	P117/P109	ss	10:20	10:25	30	30	P		
7/1/2008	116	P109/P110	ss	10:25	10:30	30	30	P		
7/1/2008	9	P110/P117	ss	10:26	10:31	30	30	P		
7/1/2008	24	P116/P110	ss	10:36	10:41	30	30	P		
7/1/2008	72	P110/P111	ss	10:35	10:40	30	30	P		
7/1/2008	61	P110/P111	ss	10:45	10:50	30	30	P		
7/1/2008	11	P116/P111	ss	10:47	10:52	30	30	P		
7/1/2008	160	P112/P111	ss	10:59	11:04	30	30	P		
7/1/2008	24	P111/P115	ss	11:00	11:05	30	30	P		
7/1/2008	11	P112/P115	ss	11:08	11:13	30	30	P		
7/1/2008	9	P112/P114	ss	11:09	11:14	30	30	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #: 200806	MATERIAL TYPE:

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST					VACUUM TEST	COMMENTS
				TIME		PRESSURE				
				START	END	START	END	P/F	P / F	
7/2/2008	135	P120/P101	ss	7:57	8:02	30	30	P		
7/2/2008	135	P120/P121	ss	07:58	8:03	30	30	P		
7/2/2008	135	P121/P122	ss	07:59	8:04	30	30	P		
7/2/2008	135	P122/P123	ss	08:18	8:23	30	30	P		
7/2/2008	99	P123/P124	ss	08:09	8:14	30	30	P		
7/2/2008	90	P124/P126	ss	08:10	8:15	30	28	P		
7/2/2008	135	P126/P127	ss	08:22	8:27	30	30	P		
7/2/2008	135	P127/P128	ss	08:23	8:28	30	30	P		
7/2/2008	53	P128/P129	ss	08:24	8:29	30	30	P		
7/2/2008	43	P129/P131	ss	08:28	8:33	30	30	P		
7/2/2008	135	P131/P132	ss	08:29	8:34	30	30	P		
7/2/2008	135	P132/P133	ss	08:30	8:35	30	30	P		
7/2/2008	135	P133/P134	ss	08:36	8:41	30	30	P		
7/2/2008	135	P134/P135	ss	08:38	8:43	30	30	P		
7/2/2008	62	P135/P136	ss	08:39	8:44	30	30	P		
7/2/2008	105	P136/P137	ss	08:43	8:48	30	30	P		
7/2/2008	97	P137/P139	ss	08:46	8:51	30	30	P		
7/2/2008	135	P139/P140	ss	08:52	8:57	30	29	P		
7/2/2008	135	P140/P141	ss	08:55	9:00	30	30	P		
7/2/2008	135	P141/P142	ss	08:56	9:01	30	30	P		
7/2/2008	38	P139/P138	ss	09:05	9:10	30	30	P		
7/2/2008	23	P137/P138	ss	09:07	9:12	30	30	P		
7/2/2008	30	P136/P138	ss	09:08	9:13	30	30	P		
7/2/2008	66	P135/P136	ss	09:15	9:20	30	30	P		
7/2/2008	92	P131/P130	ss	09:21	9:26	30	30	P		
7/2/2008	82	P130/P128	ss	09:25	9:30	30	30	P		
7/2/2008	24	P130/P129	ss	09:22	9:27	30	30	P		
7/2/2008	45	P125/P126	ss	09:32	9:37	30	30	P		
7/2/2008	36	P125/P123	ss	09:34	9:39	30	30	P		
7/2/2008	24	P124/P125	ss	09:33	9:38	30	30	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST TIME START	TIME END	PRESSURE START	PRESSURE END	P/F	VACUUM TEST P / F	COMMENTS
7/5/2008	135	P142/P143	ss	6:56	7:01	30	30	P		
7/5/2008	135	P143/P144	ss	06:57	7:02	30	30	P		
7/5/2008	98	P144/P145	ss	06:58	7:03	30	30	P		
7/5/2008	37	P144/P146	ss	08:26	8:31	30	30	P		
7/5/2008	23	P145/P146	ss	08:25	8:30	30	30	P		
7/5/2008	97	P145/P147	ss	07:07	7:12	30	30	P		
7/5/2008	38	P146/P147	ss	08:23	8:28	30	30	P		
7/5/2008	135	P147/P148	ss	07:08	7:13	30	30	P		
7/5/2008	135	P148/P149	ss	07:09	7:14	30	30	P		
7/5/2008	53	P149/P150	ss	07:16	7:21	30	30	P		
7/5/2008	82	P149/P151	ss	08:16	8:21	30	30	P		
7/5/2008	22	P151/P150	ss	08:15	8:20	30	30	P		
7/5/2008	53	P150/P152	ss	07:17	8:22	30	28	P		
7/5/2008	82	P151/P152	ss	08:14	8:19	30	29	P		
7/5/2008	135	P152/P153	ss	07:21	7:26	30	30	P		
7/5/2008	135	P153/P154	ss	07:24	7:29	30	30	P		
7/5/2008	28	P154/P155	ss	07:27	7:32	30	30	P		
7/5/2008	107	P154/P156	ss	08:08	8:13	30	30	P		
7/5/2008	23	P155/P156	ss	08:05	8:10	30	29	P		
7/5/2008	20	P157/P155	ss	07:29	7:34	30	30	P		
7/5/2008	115	P157/P156	ss	08:07	8:12	30	30	P		
7/5/2008	135	P157/P158	ss	07:36	7:41	30	28	P		
7/5/2008	124	P158/P159	ss	07:37	7:42	30	30	P		
7/5/2008	22	P158/P160	ss	08:36	8:41	30	30	P		
7/5/2008	11	P159/P160	ss	08:35	8:40	30	30	P		
7/5/2008	124	P159/P161	ss	07:39	7:44	30	30	P		
7/5/2008	11	P160/P161	ss	08:38	8:43	30	30	P		
7/5/2008	135	P161/P162	ss	07:45	7:50	30	30	P		
7/5/2008	135	P162/P163	ss	07:46	7:51	30	30	P		
7/5/2008	98	P163/P164	ss	07:47	7:52	30	29	P		
7/5/2008	37	P163/P165	ss	08:45	8:50	30	30	P		
7/5/2008	22	P164/P165	ss	08:46	8:51	30	30	P		
7/5/2008	37	P166/P165	ss	08:47	8:52	30	30	P		
7/5/2008	67	P166/P167	ss	07:50	7:51	30	30	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST					VACUUM TEST	COMMENTS
				TIME		PRESSURE				
				START	END	START	END	P/F	P / F	
7/5/2008	24	P166/P164	ss	8:51	8:56	30	29	P		
7/1/2008	80	P105/P104	ss	14:05	14:10	30	28	P		
7/1/2008	10	P100/P105	ss	14:06	14:11	30	30	P		
7/1/2008	21	P100/P104	ss	14:13	14:18	30	30	P		
7/1/2008	81	P104/P103	ss	14:14	14:19	30	30	P		
7/1/2008	97	P103/P102	ss	14:19	14:24	30	30	P		
7/1/2008	28	P103/P100	ss	14:18	14:23	30	30	P		
7/1/2008	56	P100/P99	ss	14:25	14:30	30	30	P		
7/1/2008	4	P100/P102	ss	14:24	14:29	30	30	P		
7/1/2008	26	P99/P102	ss	14:30	14:35	30	30	P		
7/1/2008	120	P101/P102	ss	14:31	14:36	30	30	P		
7/1/2008	4	P101/P99	ss	14:39	14:44	30	30	P		
7/1/2008	78	P99/P98	ss	14:37	14:42	30	29	P		
7/1/2008	16	P101/P98	ss	14:44	14:49	30	28	P		
7/9/2008	65	P193/P194	ss	13:09	13:14	30	30	P		
7/9/2008	8	P194/P195	ss	13:10	13:15	30	30	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Power Plant	JOB #:	200806	MATERIAL TYPE:	

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST TIME START	AIR PRESSURE TEST TIME END	AIR PRESSURE TEST PRESSURE START	AIR PRESSURE TEST PRESSURE END	P/F	VACUUM TEST P / F	COMMENTS
7/9/2008	135	P167/P168	ss	8:17	8:22	30	30	P		
7/9/2008	85	P168/P169	ss	07:36	7:41	30	30	P		
7/9/2008	70	P168/P170	ss	07:38	7:43	30	30	P		
7/9/2008	22	P169/P170	ss	07:37	7:42	30	28	P		
7/9/2008	85	P171/P169	ss	07:35	7:40	30	28	P		
7/9/2008	70	P170/P171	ss	07:32	7:37	30	30	P		
7/9/2008	135	P171/P172	ss	08:18	8:23	30	30	P		
7/9/2008	135	P172/P173	ss	08:19	8:24	30	30	P		
7/9/2008	135	P173/P174	ss	08:20	8:25	30	30	P		
7/9/2008	135	P174/P175	ss	08:21	8:26	30	28	P		
7/9/2008	135	P175/P176	ss	08:26	8:31	30	30	P		
7/9/2008	70	P176/P177	ss	08:27	8:32	30	30	P		
7/9/2008	65	P176/P178	ss	09:20	9:25	30	30	P		
7/9/2008	22	P177/P178	ss	09:23	9:28	30	28	P		
7/9/2008	70	P177/P179	ss	09:24	9:29	30	30	P		
7/9/2008	65	P178/P179	ss	09:25	9:30	30	30	P		
7/9/2008	135	P179/P180	ss	09:43	9:48	30	30	P		
7/9/2008	135	P180/P181	ss	09:44	9:49	30	30	P		
7/9/2008	70	P181/P182	ss	09:51	9:56	30	30	P		
7/9/2008	65	P181/P183	ss	09:54	9:59	30	30	P		
7/9/2008	22	P182/P183	ss	09:52	9:57	30	29	P		
7/9/2008	70	P181/P182	ss	09:55	10:00	30	30	P		
7/9/2008	65	P184/P183	ss	09:56	10:01	30	28	P		
7/9/2008	135	P184/P185	ss	09:58	10:03	30	30	P		
7/9/2008	65	P185/P186	ss	12:54	12:59	30	28	P		
7/9/2008	65	P186/P187	ss	12:56	13:01	30	28	P		
7/9/2008	34	P187/P188	ss	12:57	13:02	30	30	P		
7/9/2008	31	P187/P189	ss	13:13	13:18	30	30	P		
7/9/2008	22	P188/P189	ss	13:14	13:19	30	27	P		
7/9/2008	34	P188/P190	ss	12:58	13:03	30	28	P		
7/9/2008	31	P189/P190	ss	13:15	13:20	30	28	P		
7/9/2008	65	P190/P191	ss	12:59	13:04	30	30	P		
7/9/2008	65	P191/P192	ss	13:00	13:05	30	28	P		
7/9/2008	65	P192/P193	ss	13:08	13:13	30	30	P		

CAAW Systems

NON-DESTRUCTIVE TESTING FORM

PROJECT NAME:	Sherco Pond (3 upper weir flap)	JOB #:	200806	MATERIAL TYPE:	

DATE TESTED	SEAM LENGTH TESTED	SEAM #	TESTER INITIALS	AIR PRESSURE TEST					VACUUM TEST	COMMENTS
				TIME		PRESSURE				
				START	END	START	END	P/F	P / F	
8/11/2008	39	P6-P7	SX	15:11	15:16	30	30	P		ENTIRE SEAM
8/11/2008	61	P5-P6	SX	15:10	15:15	30	30	P		ENTIRE SEAM
8/11/2008	91	P1-P5	SX	14:46	14:51	30	30	P		ENTIRE SEAM
8/11/2008	99	P1-P2	SX	14:47	14:52	30	30	P		ENTIRE SEAM
8/11/2008	99	P2-P3	SX	14:48	14:53	30	30	P		ENTIRE SEAM
8/11/2008	99	P3-P4	SX	14:49	14:54	30	30	P		ENTIRE SEAM
8/11/2008	99	P4-P8	SX	15:00	15:05	30	30	P		ENTIRE SEAM
8/11/2008	89	P8-P9	SX	15:01	15:06	30	30	P		ENTIRE SEAM
8/11/2008	65	P9-P10	SX	15:01	15:06	30	29	P		ENTIRE SEAM
8/11/2008	42	P10-P11	SX	15:02	15:07	30	30	P		ENTIRE SEAM
8/11/2008	24	P11-P12	SX	15:07	15:12	30	30	P		ENTIRE SEAM

Destructive Testing Reports

CAAW Systems

DESTRUCTIVE TESTING REPORT FORM

PROJECT NAME: Sherco Power Plant					JOB NUMBER: 200806											MATERIAL TYPE:
TENSIOMETER ID: 0					EXTRUSION	FUSION	FIELD WELD VALUES									
SAMPLE I.D. (DT#)	SEAM NO.	QC INT	MACH NO.	SEAMER INT	BARREL/ PREHEAT	WEDGE/ SET SPEED	PEEL (PPI)					SHEAR (PPI)			P/F	LOCATION OF DESTRUCTIVE TEST
DS1	P2/P3	ss	138	kk	B:	W: 850	157	148	145	138	136	160	165	187	P	SEOS 0'->66'
					P:	S: 500	139	127	131	1411	141	160	174			
DS2	P7/P8	ss	138	kk	B:	W: 850									F	EEOS 0'->26'
					P:	S: 500										
DS2A1	P7/P8	ss	138	kk	B:	W: 850									F	EEOS 0'->9'
					P:	S: 500										
DS2B1	P7/P8	ss	138	kk	B:	W: 850									F	EEOS 0'->46'
					P:	S: 500										
DS2A2	P10/P9	ss	138	kk	B:	W: 850	110	113	110	112	106	147	149	127	P	WEOS 0'->10'
					P:	S: 500	115	106	119	115	112	141	128			
DS2B2	P7/P8	ss	138	kk	B:	W: 850									F	EEOS 0'->84'
					P:	S: 500										
DS2B3	P7/P8	ss	138	kk	B:	W: 850									F	WEOS 0'->5'
					P:	S: 500										
DS2B4	P6/P5	ss	138	kk	B:	W: 850	108	116	106	106	117	131	134	135	P	EEOS 0'->10'
					P:	S: 500	108	107	108	106	107	141	139			
DS3	P16/P17	ss	428	ck	B:	W: 850	134	106	136	112	106	143	152	148	P	SEOS 0'->30'
					P:	S: 550	129	125	124	101	129	152	147			
DS4	P22/P21	ss	138	kk	B:	W: 850	104	109	116	113	116	149	137	135	P	SEOS 0'->21'
					P:	S: 600	109	113	131	112	115	144	136			
DS5	P29/P31	ss	428	ck	B:	W: 850	115	123	127	120	106	148	142	151	P	WEOS 0'->9'
					P:	S: 600	120	124	123	103	124	151	148			
DS6	P1/P41	ss	138	kk	B:	W: 850									F	SEOS 0'->12'
					P:	S: 400										
DS6B	P32/P4	ss	138	kk	B:	W: 850	157	148	145	138	136	160	165	181	P	SEOS 0'->66'
					P:	S: 400	139	127	131	141	141	160	174			

CAAW Systems

DESTRUCTIVE TESTING REPORT FORM

PROJECT NAME:	Sherco Power Plant	JOB NUMBER:	200806	MATERIAL TYPE:
TENSIOMETER ID:	0			

SAMPLE I.D. (DT#)	SEAM NO.	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	LOCATION OF DESTRUCTIVE TEST
DS7	P13/OC	ss	88	vp	B: 550	W:	104	87	96	103	100	144	140	126	P	EEOS 0'->18'
					P: 200	S:						140	131			
DS8	P47/OC	ss	88	vp	B: 550	W:									F	WEOS 0'->3'
					P: 200	S:										
DS8A	P48/OC	ss	88	vp	B: 550	W:	112	111	116	123	86	140	141	147	P	EEOS 0'->10'
					P: 200	S:						140	136			
DS8B	P47/OC	ss	88	vp	B: 550	W:	105	95	111	106	87	148	140	139	P	EEOS 0'->3'
					P: 200	S:						140	140			
DS9	P49/P47	ss	138	kk	B:	W: 850									F	NEOS 0'->19'
					P:	S: 500										
DS9A	P49/P47	ss	138	kk	B:	W: 850									F	NEOS 0'->29'
					P:	S: 500										
DS9B	P49/P47	ss	138	kk	B:	W: 850									F	NEOS 0'->10'
					P:	S: 500										
DS9A2	P49/P47	ss	138	kk	B:	W: 850									F	NEOS 0'->39'
					P:	S: 500										
DS9B2	P48/P49	ss	138	kk	B:	W: 850									F	SEOS 0'->10'
					P:	S: 500										
DS9A3	P47/P49	ss	138	kk	B:	W: 850									F	SEOS 0'->5'
					P:	S: 500										
DS9A4	P50/P51	ss	138	kk	B:	W: 850									F	NEOS 0'->10'
					P:	S: 500										
DS9A5	P50/P51	ss	138	kk	B:	W: 850									F	NEOS 0'->21'
					P:	S: 500										
DS9A6	P50/P51	ss	138	kk	B:	W: 850	137	142	134	125	123	162	152	162	P	NEOS 0'->33'
					P:	S: 500	130	125	131	125	130	166	159			

CAAW Systems
DESTRUCTIVE TESTING REPORT FORM

PROJECT NAME: Sherco Power Plant | **JOB NUMBER:** 200806 | **MATERIAL TYPE:**

TENSIOMETER ID: 0

SAMPLE I.D. (DT#)	SEAM NO.	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	LOCATION OF DESTRUCTIVE TEST
DS10	P54/P56	ss	138	kk	B:	W: 850	110	1111	109	119	122	144	144	140	P	SEOS 0'->3'
					P:	S: 500	104	F	125	112	121	137	147			
DS11	P62/P63	ss	428	ck	B:	W: 850	119	98	130	113	114	136	134	142	P	SEOS 0'->31'
					P:	S: 550	110	115	121	115	117	134	142			
DS12	P68/P69	ss	138	hn	B:	W: 850									F	SEOS 0'->40'
					P:	S: 500										
DS12A	P68/P69	ss	138	hn	B:	W: 850									F	SEOS 0'->30'
					P:	S: 500										
DS12B	P68/P69	ss	138	hn	B:	W: 850									F	SEOS 0'->50'
					P:	S: 500										
DS12A2	P70/P71	ss	138	hn	B:	W: 850									F	NEOS 0'->10'
					P:	S: 500										
DS12B2	P69/P68	ss	138	hn	B:	W: 850									F	SEOS 0'->60'
					P:	S: 500										
DS12A3	P70/P71	ss	138	hn	B:	W: 850									F	NEOS 0'->25'
					P:	S: 500										
DS12B3	P67/P65	ss	138	hn	B:	W: 850									F	SEOS 0'-10'
					P:	S: 500										
DS12A4	P70/P71	ss	138	hn	B:	W: 850									F	NEOS 0'->35'
					P:	S: 500										
DS12B4	P67/P65	ss	138	hn	B:	W: 850	110	116	F	120	110	165	164	149	P	SEOS 0'->20'
					P:	S: 500	115	130	F	121	125	165	163			
DS12A5	P70/P71	ss	138	hn	B:	W: 850	118	117	112	112	111	159	153	154	P	NEOS 0'->45'
					P:	S: 500	119	118	128	F	123	164	163			
DS13	P74/P75	ss	428	ck	B:	W: 850	117	113	125	125	129	172	156	173	P	SEOS 0'->13'
					P:	S: 550	137	128	127	113	135	160	163			

CAAW Systems

DESTRUCTIVE TESTING REPORT FORM

PROJECT NAME: Sherco Power Plant **JOB NUMBER:** 200806 **MATERIAL TYPE:**

TENSIOMETER ID: 0

SAMPLE I.D. (DT#)	SEAM NO.	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	LOCATION OF DESTRUCTIVE TEST
DS14	P79/P80	ss	138	hn	B:	W: 850									F	NEOS 0'->20'
					P:	S: 500										
DS14A	P79/P80	ss	138	hn	B:	W: 850									F	NEOS 0'->30'
					P:	S: 500										
DS14B	P79/P80	ss	138	hn	B:	W: 850	121	119	127	116	118	149	154	144	P	NEOS 0'->10'
					P:	S: 500	109	116	116	116	111	141	149			
DS14A2	P79/P80	ss	138	hn	B:	W: 850	124	121	123	119	119	156	193	151	P	NEOS 0'->40'
					P:	S: 500	123	114	114	F	120	161	147			
DS15	P85/P84	ss	428	ck	B:	W: 850	139	135	130	141	134	169	159	163	P	NEOS 0'->44'
					P:	S: 550	145	124	128	128	124	172	161			
DS16	P89/P90	ss	138	hn	B:	W: 850	127	122	129	117	128	172	161	170	P	SEOS 0'->44'
					P:	S: 650	124	118	121	121	120	172	165			
DS17	P74/0C	ss	76	vk	B: 545	W:	91	90	102	128	95	166	161	167	P	WEOS 0'->10'
					P: 245	S:						172	159			
DS18	P95/P96	ss	428	ck	B:	W: 850	121	114	124	123	118	164	173	161	P	NEOS 0'->12'
					P:	S: 500	139	135	127	119	115	176	163			
DS19	P96/OC	ss	88	vp	B: 550	W:	142	108	133	129	107	170	170	171	P	EEOS 0'->5'
					P: 200	S:						152	163			
DS20	P102/P103	ss	427	kk	B:	W: 850	134	123	117	119	112	152	144	140	P	EEOS 0'->37'
					P:	S: 500	134	125	130	127	125	156	147			
DS21	P111/P112	ss	428	ck	B:	W: 850	128	116	127	114	105	143	138	139	P	EEOS 0'->44'
					P:	S: 600	121	134	133	117	130	148	141			
DS22	P114/P115	ss	427	kk	B:	W: 850	124	118	126	130	124	144	137	141	P	NEOS 0'->55'
					P:	S: 500	124	118	108	119	121	148	139			
DS23	P118/P119	ss	428	ck	B:	W: 850	112	104	121	113	112	139	135	130	P	NEOS 0'->11'
					P:	S: 600	111	126	124	117	118	135	131			

CAAW Systems
DESTRUCTIVE TESTING REPORT FORM

PROJECT NAME:	Sherco Power Plant	JOB NUMBER:	200806	MATERIAL TYPE:	
TENSIOMETER ID:	0				

SAMPLE I.D. (DT#)	SEAM NO.	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	LOCATION OF DESTRUCTIVE TEST
DS24	P121/P122	ss	428	ck	B:	W: 850	133	115	134	128	132	146	140	158	P	EEOS 0'->40'
					P:	S: 600	122	118	132	134	114	152	140			
DS25	P124/P126	ss	427	kk	B:	W: 850	112	131	118	126	116	151	140	143	P	EEOS 0'->50'
					P:	S: 550	126	120	126	117	123	155	144			
DS26	P131/P132	ss	428	ck	B:	W: 850	132	140	138	139	133	157	147	154	P	EEOS 0'->82'
					P:	S: 600	127	129	136	128	137	164	145			
DS27	P134/P135	ss	427	kk	B:	W: 850	136	111	124	120	118	147	139	151	P	WEOS 0'->50'
					P:	S: 550	129	128	123	121	125	143	156			
DS28	P140/P141	ss	428	ck	B:	W: 850	126	122	126	134	137	147	138	142	P	WEOS 0'->33'
					P:	S: 600	139	133	139	134	130	150	137			
DS29	P140/0C	ss	175	vk	B: 545	W:	121	127	133	109	106	149	129	148	P	NEOS 0'->3'
					P: 245	S:						170	145			
DS30	P145/P144	ss	138	kk2	B:	W: 850	124	116	124	107	116	144	137	141	P	EEOS 0'->70'
					P:	S: 400	139	114	116	111	110	147	139			
DS31	P154/P153	ss	428	ck	B:	W: 850	138	131	141	116	123	143	146	148	P	EEOS 0'->36'
					P:	S: 600	137	124	129	133	121	134	137			
DS32	P148/P149	ss	427	kk1	B:	W: 850	124	114	124	117	121	145	152	136	P	WEOS 0'->35'
					P:	S: 550	136	113	127	129	124	135	143			
DS33	P160/P159	ss	427	kk1	B:	W: 850	133	124	134	130	120	134	139	138	P	SEOS 0'->4'
					P:	S: 450	134	123	138	118	114	128	136			
DS34	P161/P162	ss	427	kk1	B:	W: 850	119	117	119	115	119	139	136	146	P	EEOS 0'->47'
					P:	S: 550	125	118	121	115	114	147	143			
DS35	P166/P167	ss	428	ck	B:	W: 850	131	130	128	130	130	146	153	144	P	WEOS 0'->37'
					P:	S: 600	133	126	131	125	119	137	144			
DS36	P191/P192	ss	428	ck	B:	W: 850	137	128	135	151	146	190	188	185	P	WEOS 0'->48'
					P:	S: 550	155	147	156	133	153	190	180			

CAAW Systems
DESTRUCTIVE TESTING REPORT FORM

PROJECT NAME: Sherco Power Plant **JOB NUMBER:** 200806 **MATERIAL TYPE:**

TENSIOMETER ID: 0

SAMPLE I.D. (DT#)	SEAM NO.	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	LOCATION OF DESTRUCTIVE TEST
DS37	P185/P184	ss	427	kk	B:	W: 850	124	129	140	147	129	191	182	185	P	WEOS 0'->40'
					P:	S: 500	150	150	149	164	148	180	187			
DS38	P179/P177	ss	428	ck	B:	W: 850	156	146	153	142	141	184	174	178	P	WEOS 0'->38'
					P:	S: 500	146	137	157	153	156	183	176			
DS39	P175/P174	ss	427	kk	B:	W: 850	154	131	124	152	130	165	178	167	P	WEOS 0'->70'
					P:	S: 500	131	129	139	127	139	175	169			
DS40	P171/P172	ss	427	kk	B:	W: 850	145	119	136	135	128	168	178	167	P	EEOS 0'->36'
					P:	S: 500	131	120	134	126	138	175	169			
DS41	P181/OC	ss	175	vk	B: 545	W:	110	108	87	106	90	162	162	155	P	SEOS 0'->10'
					P: 245	S:						160	157			
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										

CAAW Systems

DESTRUCTIVE TESTING REPORT FORM

PROJECT NAME: Sherco Pond (3 upper weir flap) **JOB NUMBER:** 200806 **MATERIAL TYPE:**

TENSIOMETER ID: T-020/05

SAMPLE I.D. (DT#)	SEAM NO.	QC INT	MACH NO.	SEAMER INT	EXTRUSION BARREL/ PREHEAT	FUSION WEDGE/ SET SPEED	FIELD WELD VALUES PEEL (PPI)					SHEAR (PPI)			P/F	LOCATION OF DESTRUCTIVE TEST
DT-42	P1-P2	AK	333	KX	B:	W: 850	139	129	144	133	139	155	153		P	56' FROM ANCHORTREND
					P:	S: 5.5	135	138	138	138	139	153	153	154		
DT-43	P8-P9	AK	69	PX	B:	W: 850	127	135	138	138	139	160	158		P	31' FROM ANCHORTREND
					P:	S: 5	127	127	126	127	123	158	159	158		
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										
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					P:	S:										
					B:	W:										
					P:	S:										
					B:	W:										
					P:	S:										

Geomembrane Repair Reports

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P13/P12		R1	VP	88	6/23/2008	AS	PATCH 4X2	6/23/2008	INT OF P13-P12-OC	P
P13/P12		R2	VK	76	6/23/2008	AS	PATCH 1X2	6/23/2008	NWEOS 0'->10'	P
P14/P13		R3	VK	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P14-P13-P12	P
P14/P15		R4	VK	76	6/23/2008	AS	PATCH 5X2	6/23/2008	SEOS 0'	P
	P10	R5	VK	76	6/23/2008	AS	PATCH 3X3	6/23/2008	EEOP 0'->5'	P
P18/P10		R6	VK	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P18-P10-P15	P
P15/P16		R7	VK	76	6/23/2008	AS	PATCH 3X3	6/23/2008	INT OF P15-P16-P18	P
P10/P9		R8	VK	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P18-P9-P10	P
P18/P9		R9	VK	76	6/23/2008	AS	PATCH 2X2	6/23/2008	I NT OF P18-P9-P16	P
P16/P17		R10	VK	76	6/23/2008	AS	PATCH 4X6	6/23/2008	I NT OF P16-P17-P9	P
P7/P8		R11	VK	76	6/23/2008	AS	PATCH 1X2	6/23/2008	EEOS 0'->17'	P
P7/P8		R12	VK	76	6/23/2008	AS	PATCH 2X6	6/23/2008	EEOS 0'->26' (DS2)	P
P7/P8		R13	VK	76	6/23/2008	AS	PATCH 2X10	6/23/2008	EEOS 0'->48'	P
P7/P8		R14	VK	76	6/23/2008	AS	PATCH 2X2	6/23/2008	WEOS 0'->45'	P
P4/P5		R15	VK	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P4-P5-P6	P
P3/P4		R16	VK	76	6/23/2008	AS	PATCH 2X4	6/23/2008	INT OF P3-P4-P5	P
P3/P5		R17	VK	76	6/23/2008	AS	PATCH 2X1	6/23/2008	WEOS 0'->11'	P
P3/P5		R18	VK	76	6/23/2008	AS	PATCH 1X1	6/23/2008	WEOS 0'->22'	P
P3/P5		R19	VK	76	6/23/2008	AS	PATCH 1X1	6/23/2008	WEOS 0'->38'	P
P2/P3		R20	VK	76	6/23/2008	AS	PATCH 2X4	6/23/2008	EEOS 0'->62' (DS1)	P
P2/P3		R21	VK	76	6/23/2008	AS	PATCH 2X3	6/23/2008	WEOS 0'->17'	P
	P16	R22	VK	76	6/23/2008	AS	PATCH 1X1	6/23/2008	NEOP 0'	P
P16/P15		R23	VK	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P15-P16-OC	P
	P14	R24	VP	88	6/23/2008	AS	PATCH 1X1	6/23/2008	NEOP 0'	P
P14/P13		R25	VP	88	6/23/2008	AS	PATCH 2X2	6/23/2008	INT P14-P13-OC	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P12/P11		R26	vp	88	6/23/2008	as	PATCH 1X1	6/23/2008	INT OF P12-P11-OC	P
P10/P9		R27	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P10-P9-P26	P
P26/P27		R28	vk	76	6/23/2008	as	PATCH2X2	6/23/2008	INT OF P27-P26-P9	P
P9/P8		R29	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P9-P8-P27	P
P27/P28		R30	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P27-P28-P8	P
P8/P7		R31	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P7-P8-28	P
P29/P28		R32	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P29-P28-P7	P
P29/P28		R33	vk	76	6/23/2008	as	PATCH 4X2	6/23/2008	EEOS 0'->16'	P
P30/P28		R34	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P30-P28-P29	P
P7/P6		R35	vk	76	6/23/2008	as	PATCH 1X2	6/23/2008	INT OF P7-P6-P29	P
P29/P31		R36	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P29-P31-P6	P
P29/P31		R37	vk	76	6/23/2008	as	PATCH 2X4	6/23/2008	WEOS 0'->9'(DS5)	P
P31/P30		R38	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P30-P31-P29	P
P6/P4		R39	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P6-P4-P31	P
P32/P31		R40	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P32-P31-P4	P
P4/P3		R41	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P32-P4-P3	P
P33/P32		R42	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P33-P32-P3	P
P2/P3		R43	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P2-P3-P33	P
P39/P33		R44	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P33-P39-P40-P2	P
P1/P2		R45	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P1-P2-P40-P41	P
P41/P1		R46	vk	76	6/23/2008	as	PATCH 2X6	6/23/2008	SEOS 0'->12'(DS6)	P
P39/P38		R47	vk	76	6/23/2008	as	PATCH 3X3	6/23/2008	INT OF P39-P38-P32	P
P33/P32		R48	vk	76	6/23/2008	as	PATCH 2X3	6/23/2008	INT P33-P32-P39	P
P38/P37		R49	vk	76	6/23/2008	as	PATCH 2X2	6/23/2008	INT OF P38-P37-P32	P
P37/P36		R50	vk	76	6/23/2008	as	PATCH 3X7	6/23/2008	INT OF P37-P36-P32-P31	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant | **JOB #:** 200806 | **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P35/P36		R51	vk	76	6/23/2008	AS	PATCH 2X3	6/23/2008	INT OF P36-P31-P35	P
P30/P31		R52	vk	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P31-P30-P35	P
P35/P34		R53	vk	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P35-P34-P30	P
P34/P20		R54	vk	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT P34-P20-P28	P
P28/P30		R55	vk	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P28-P30-P34	P
P28/P20		R56	vk	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P28-P20-P27	P
P20/P21		R57	vk	76	6/23/2008	AS	PATCH 2X2	6/23/2008	INT OF P20-P21-P27	P
P28/P27		R58	vk	76	6/23/2008	AS	PATCH 2X2	6/23/2008	WEOS 0'	P
P21/P22		R59	vk	76	6/23/2008	AS	PATCH 2X3	6/23/2008	SEOS 0'->21'(DS4)	P
P21/P22		R60	vk	76	6/23/2008	AS	PATCH 2X10	6/23/2008	SEE0S 0'	P
P26/P25		R61	vk	76	6/23/2008	AS	PATCH 2X4	6/23/2008	WEOS 0'	P
P24/P25		R62	vp	88	6/23/2008	AS	PATCH 2X12	6/23/2008	WEOS 0'	P
	P22	R63	vp	88	6/23/2008	AS	PATCH 1X1	6/23/2008	NEOP 0'	P
	P23B	R64	vp	88	6/23/2008	AS	PATCH 1X1	6/23/2008	NEOP 0'	P
	P24	R65	vp	88	6/23/2008	AS	PATCH 1X1	6/23/2008	EEOP 0'	P
P7/P8		R66	vk	76	6/23/2008	AS	CAP 2X140'	6/23/2008	WHOLE SEAM	P
	P1->P4	R67	vk	76	6/24/2008	AS	CAP 2X80	6/24/2008	WEST END OF THE PANELS	P
P46/P24		R68	vp	88	6/24/2008	AS	EXT 10'	6/24/2008	SEOP 0'	P
P45/P24		R69	vp	88	6/24/2008	AS	EXT 9'	6/24/2008	SEOP 0'	P
P45/P24		R70	vp	88	6/24/2008	AS	EXT 24'	6/24/2008	SEOP 0'	P
P45/P25		R71	vp	88	6/24/2008	AS	EXT 10'	6/24/2008	SEOP 0'	P
P44/P25		R72	vp	88	6/24/2008	AS	EXT 6'	6/24/2008	SWEOP 0'	P
P46/P23B		R73	vp	88	6/24/2008	AS	EXT 6'	6/24/2008	WEOP 0'	P
P46/OC		R74	vp	88	6/24/2008	AS	EXT 12'	6/24/2008	SEOP 0'	P
P44/P11		R75	vp	88	6/24/2008	AS	EXT 27'	6/24/2008	SEOP 0'	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P43/P11		R76	vp	88	6/24/2008	as	PATCH 2X2	6/24/2008	SEOS 0'	P
P43/P42		R77	vp	88	6/24/2008	as	EXT 21'	6/24/2008	SEOP 0'	P
P42/P12		R78	vp	88	6/24/2008	as	PATCH 3X7	6/24/2008	SEOP 0'	P
	P42	R79	vp	88	6/24/2008	as	EXT 4'	6/24/2008	EEOP 0'	P
P42/OC		R80	vp	88	6/24/2008	as	EXT 11'	6/24/2008	NEOP 0'	P
	P19	R81	vp	88	6/23/2008	as	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P17	R82	vp	88	6/23/2008	as	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P16	R83	vp	88	6/23/2008	as	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P15	R84	vp	88	6/23/2008	as	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P14	R85	vp	88	6/23/2008	as	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P13	R86	vp	88	6/23/2008	as	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P12	R87	vp	88	6/23/2008	as	EXT 25'	6/23/2008	NEOP (EXT TO OC)	P
	P11	R88	vp	88	6/23/2008	as	EXT 35'	6/23/2008	NEOP (EXT TO OC)	P
	P21	R89	vp	88	6/23/2008	as	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P22	R90	vp	88	6/23/2008	as	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P23A	R91	vp	88	6/23/2008	as	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P23B	R92	vp	88	6/23/2008	as	EXT 6'	6/23/2008	NEOP (EXT TO OC)	P
	P24	R93	vp	88	6/23/2008	AS	EXT 22'	6/23/2008	NEOP (EXT TO OC)	P
	P25	R94	vp	88	6/23/2008	AS	EXT 35'	6/23/2008	NEOP (EXT TO OC)	P
P48/P50		R95	vp	88	6/26/2008	AS	PATCH 1X2	6/25/2008	INT OF P48-P49-P50	P
P48/P47		R96	vp	88	6/26/2008	AS	PATCH 1X2	6/25/2008	NEOS 0'->6'	P
P48/P47		R97	vp	88	6/26/2008	AS	BEAD 4"	6/25/2008	NEOS 0'->9'	P
P48/P47		R98	vp	88	6/26/2008	AS	BEAD 4"	6/25/2008	NEOP 0'	P
	P20	R99	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P47	R100	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant | **JOB #:** 200806 | **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
	P48	R101	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P50	R102	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P51	R103	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P52	R104	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P53	R105	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P54	R106	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P56	R107	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P57	R108	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P58	R109	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P59	R110	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
	P60	R111	vp	88	6/26/2008	as	EXT 22'	6/25/2008	NEOP (EXT TO OC)	P
P47/P49		R112	vp	88	6/26/2008	as	CAP 69X2	6/25/2008	WHOLE SEAM	P
P47/P48		R113	vp	88	6/26/2008	as	CAP 2X28	6/25/2008	WHOLE SEAM	P
P50/P51		R114	vp	88	6/26/2008	as	CAP 2X33	6/25/2008	NEOS 0'->33'	P
	P48	R115	vp	88	6/26/2008	as	CAP 2X22	6/25/2008	NEOP 0'	P
	P47	R116	vp	88	6/26/2008	as	CAP 2X22	6/25/2008	NEOP 0'	P
P54/P53		R117	vp	88	6/26/2008	as	PATCH 2X2	6/25/2008	INT OF P54-P53-P55	P
P54/P56		R118	vp	88	6/26/2008	as	PATCH 2X2	6/25/2008	INT OF P54-P56-P55	
P54/P56		R119	vp	88	6/26/2008	as	PATCH 2X3	6/25/2008	SEOS 0'->3' (DS10)	
P59/P60		R120	vp	88	6/26/2008	as	PATCH 2X2	6/25/2008	INT OF P59-P60-P61	
P60/P62		R121	vp	88	6/26/2008	as	PATCH 2X2	6/25/2008	INT OF P60-P61-P62	
	P60	R122	vp	88	6/26/2008	as	PATCH 1X1	6/25/2008	NEOP 0'->1'	
P62/P63		R123	vp	88	6/26/2008	as	PATCH 2X3	6/25/2008	SEOS 0'->31' (DS11)	
	P62	R124	vp	88	6/26/2008	as	EXT 15'	6/25/2008	NEOP (EXT TO OC)	
	P62	R125	kk	88	6/26/2008	as	EXT 6'	6/25/2008	NEOP (EXT TO OC)	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant | **JOB #:** 200806 | **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P62/P63		R126	kk	88	6/26/2008	as	PATCH 1X2	6/25/2008	INT OF P62-P63-OC	P
P63/P64		R127	kk	88	6/27/2008	as	PATCH 2X3	6/25/2008	NEOS 0'->10'	P
	P63	R128	kk	88	6/27/2008	as	EXT 22'	6/26/2008	NEOP (EXT TO OC)	P
	P64	R129	kk	88	6/27/2008	as	EXT 22'	6/26/2008	NEOP (EXT TO OC)	P
	P65	R130	vk	76	6/27/2008	as	EXT 22'	6/26/2008	NEOP (EXT TO OC)	P
P66/P65		R131	vk	76	6/27/2008	as	PATCH 2X2	6/27/2008	INT OF P66-P6-P65	P
P66/P68		R132	vk	76	6/27/2008	as	PATCH 2X2	6/27/2008	INT OF P66-P68-P67	P
P68/P69		R133	vk	76	6/27/2008	as	PATCH 2X4	6/27/2008	SEOS 0'->40' (DS12)	P
	P66	R134	kk	88	6/27/2008	as	EXT 22'	6/26/2008	NEOP (EXT TO OC)	P
	P68	R135	kk	88	6/27/2008	as	EXT 22'	6/26/2008	NEOP (EXT TO OC)	P
	P69	R136	kk	88	6/27/2008	as	EXT 22'	6/26/2008	NEOP (EXT TO OC)	P
P67/P65		R137	vp	88	6/30/2008	as	CAP 2X27	6/30/2008	INT OF P67-P65-P66	P
P66/P68		R138	vp	88	6/30/2008	as	CAP 2X10	6/26/2008	INT OF P66-P67-P68	P
	P65	R139	vp	88	6/30/2008	as	BEAD 4"	6/26/2008	NEOP 0'->6'	P
P68/P69		R140	vp	88	6/30/2008	as	CAP 2X96	6/27/2008	NEOS 0'	P
P70/P71		R141	vp	88	6/30/2008	as	PATCH 1X1	6/30/2008	INT OF P70-P71-OC	P
P70/P71		R142	vp	88	6/30/2008	as	CAP 2X47	6/30/2008	NEOS 0'	P
	P74	R143	vp	88	6/27/2008	as	EXT 4"	6/27/2008	NEOS 0'->40'	P
P73/P75		R144	vk	76	6/27/2008	as	PATCH 2X2	6/27/2008	INT OF P73-P74-P75	P
P73/P72		R145	vk	76	6/27/2008	as	PATCH 2X2	6/27/2008	INT OF P73-P74-P72	P
P75/P74		R146	vk	76	6/27/2008	as	PATCH 2X3	6/27/2008	DS13 SEOS 0'->13'	P
P78/OC		R147	vk	76	6/27/2008	as	PATCH 1X1	6/27/2008	WEOS 0'->8'	P
P79/80		R148	vp	88	6/27/2008	as	CAP 2X47	6/27/2008	NEOS 0'	P
P85/P84		R149	vk	76	6/27/2008	as	PATCH 2X3	6/27/2008	DS15 NEOS 0'->44'	P
	P85	R150	kk	88	6/27/2008	as	PATCH 1X1	6/27/2008	NEOP 0'->1'	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
	P87	R151	kk	88	6/27/2008	as	PATCH 1X1	6/27/2008	NEOP 0'->1'	P
	P88	R152	kk	88	6/27/2008	as	PATCH 1X1	6/27/2008	NEOP 0'->1'	P
P89/P90		R153	vk	76	6/27/2008	as	PATCH 2X3	6/27/2008	DS16	P
P85/P86		R154	vk	76	6/27/2008	as	BEAD 1'	6/27/2008	NEOS 0'->55'	P
P89/P90		R155	vk	76	6/27/2008	as	PATCH 2X2	6/27/2008	SEOS 0'->5'	P
P91/P92		R156	vk	76	6/27/2008	as	PATCH 2X2	6/27/2008	SEOS 0'->5'	P
P94/P93		R157	vp	88	6/30/2008	vp	PATCH 2X2	6/27/2008	INT OF P94-P95-P93	P
P94/P96		R158	vp	88	6/30/2008	vp	PATCH 2X2	6/27/2008	INT OF P94-P95-P96	P
P95/P96		R159	vp	88	6/30/2008	vp	PATCH 2X3	6/27/2008	DS18 NEOS 0'->12'	P
	P71-P84	R160	vk	76	6/30/2008	as	EXT 286'	6/27/2008	NEOP (EXT TO OC)	P
	P85-P88	R161	kk	88	6/30/2008	as	EXT 88'	6/27/2008	NEOP (EXT TO OC)	P
	P89-P90	R162	vp	88	6/30/2008	as	EXT 44'	6/27/2008	NEOP (EXT TO OC)	P
	P91-P97	R163	kk	88	6/30/2008	as	EXT 132'	6/27/2008	NEOP (EXT TO OC)	P
P114/P115		R164	vp	88	7/2/2008	as	PATCH 1X1	7/1/2008	INT OF P114-P115-P112	P
P112/P111		R165	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	INT OF P111-P112-P115	P
P115/P116		R166	vp	88	7/2/2008	as	PATCH 1X1	7/1/2008	INT OF P115-P116-P111	P
P111/P110		R167	vp	88	7/2/2008	as	PATCH 1X1	7/1/2008	INT OF P111-P110-P116	P
P116/P117		R168	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	INT OF P117-P116-P110	P
P110/P109		R169	vp	88	7/2/2008	as	PATCH 2X1	7/1/2008	INT OF P110-P109-P117	P
P118/P117		R170	vp	88	7/2/2008	as	PATCH 3X3	7/1/2008	INT OF P118-P117-P109	P
P109/P108		R171	vp	88	7/2/2008	as	PATCH 2X1	7/1/2008	INT OF P109-P108-P118	P
P119/P118		R172	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	INT OF P119-P118-P108	P
P108/P107		R173	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	INT OF P107-P108-P119	P
P107/P105		R174	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	INT OF P107-P105-P119	P
P108/P106		R175	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	INT OF P107-P108-P106	P

CAAW Systems
GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P106/P105		R176	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	INT OF P105-P106-P107	P
P105/P119		R177	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	INT OF P105-P118-P119	P
P105/P100		R178	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	INT OF P100-P105-P118	P
P100/P99		R179	vp	88	7/2/2008	as	PATCH 2X10	7/1/2008	INT OF P100-P99-P118-P117	P
P100/P99		R180	vp	88	7/2/2008	as	PATCH 2X2	7/1/2008	SEOS 0'->7'	P
P99/P98		R181	vp	88	7/2/2008	as	PATCH 2X4	7/1/2008	INT OF P99-P98-P117-P116	P
P115/P116		R182	vp	88	7/2/2008	as	PATCH 2X4	7/1/2008	INT OF P115-P116-P97-P98	P
P115/P114		R183	vp	88	7/2/2008	as	PATCH 2X4	7/1/2008	INT OF P114-P115P97-P96	P
P114/P113		R184	vp	88	7/2/2008	as	PATCH 2X4	7/1/2008	INT OF P114-P113-P96-P95	P
P113/P95		R185	vp	88	7/2/2008	as	PATCH 3X4	7/1/2008	EEOS 0'	P
P95/P93		R186	vp	88	7/2/2008	as	PATCH 1X1	7/1/2008	SEOS 0'->5'	P
	P110	R187	vp	88	7/2/2008	as	PATCH 7X5; 8" BOOT	7/1/2008	EEOP 0'->65'	P
P110/P111		R188	vp	88	7/2/2008	as	PATCH 2X5	7/1/2008	SEOS 0'->63'	P
	P97	R189	vp	88	7/2/2008	as	PATCH 2X2		NEOP 0'->1'	P
P97/P98		R190	vp	88	7/2/2008	as	PATCH 2X2		INT OF P97-P98-OC	P
P98/P101		R191	vp	88	7/2/2008	as	PATCH 2X4		INT OF P98-P101-OC	P
P102/P101		R192	vp	88	7/2/2008	as	PATCH 1X2		INT OF P101-P102-P99	P
P99/P100		R193	vp	88	7/2/2008	as	PATCH 2X2		INT OF P99-P100-P102	P
P102/P103		R194	vp	88	7/2/2008	as	PATCH 2X1		INT OF P102-P103-P100	P
P102/P103		R195	vp	88	7/2/2008	as	PATCH 2X3		EEOS 0'->37' (DS20)	P
P104/P103		R196	vp	88	7/2/2008	as	PATCH 2X2		INT OF P104-P105-P100	P
P104/P105		R197	vp	88	7/2/2008	as	PATCH 1X1		INT OF P104-P103-P100	P
P111/P112		R198	vp	88	7/2/2008	as	PATCH 2X3		EEOS 0'->44' (DS21)	P
P114/P115		R199	vp	88	7/2/2008	as	PATCH 2X3		NEOS 0'->55' (DS22)	P
P118/P119		R200	vp	88	7/2/2008	as	PATCH 2X3	7/2/2008	NEOS 0'->11' (DS23)	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P102/P103		R201	vp	88	7/2/2008	as	PATCH 2X3	7/2/2008	EEOS 0'->11'	P
P97/P98		R202	vp	88	7/2/2008	as	PATCH 2X2	7/2/2008	INT OF P97-P98-OC	P
P121/P122		R203	vp	88	7/2/2008	as	PATCH 2X2		INT OF P121-P122-OC	P
P121/P122		R204	vp	88	7/2/2008	as	PATCH 2X3		DS24 EEOS 0'->40'	P
P122/P123		R205	vp	88	7/2/2008	as	PATCH 1X2		INT OF P122-P123-OC	P
P123/P124		R206	vp	88	7/2/2008	as	PATCH 2X2		INT OF P123-P124-P125	P
P124/P126		R207	vp	88	7/2/2008	as	PATCH 2X3		INT OF P124-P125-P126	P
P124/P126		R208	vp	88	7/2/2008	as	PATCH 2X2		DS25 EEOS 0'->25'	P
P124/P126		R209	vp	88	7/2/2008	as	PATCH 1X1		INT OF 124-P126-OC	P
P128/OC		R210	vp	88	7/2/2008	as	PATCH 2X2		NEOS 0'->8'	P
P128/P129		R211	vp	88	7/2/2008	as	PATCH 2X2		INT OF P128-P129-P130	P
P129/P131		R212	vp	88	7/2/2008	as	PATCH 2X3		INT OF P129-P130-P131	P
P131/P132		R213	vp	88	7/2/2008	as	PATCH 5X5		DS26 EEOS 0'->50'	P
	OC	R214	vk	175	7/2/2008	as	PATCH 1X2		4' EAST OF P134	P
P128/P130		R215	vp	88	7/2/2008	as	PATCH 1X1		WEOS 0'->5'	P
P128P127		R216	vp	88	7/2/2008	as	PATCH 1X1		WEOS 0'->5'	P
P126/P127		R217	vp	88	7/2/2008	as	PATCH 1X4		WEOS 0'->5'	P
P122/P123		R218	vp	88	7/2/2008	as	PATCH 1X1		WEOS 0'->5'	P
P120/P121		R219	vp	88	7/2/2008	as	PATCH 1X1		WEOS 0'->5'	P
P134/P135		R220	vp	88	7/2/2008	as	PATCH 2X3		DS27 WEOS 0'->50'	P
P135/P136		R221	vp	88	7/2/2008	as	PATCH 2X7		WEOS 0'->65'	P
	P136	R222	vp	88	7/2/2008	as	PATCH 7X5; 8" BOOT		WEOP 0'->65'	P
P136/OC		R223	vk	175	7/2/2008	as	PATCH 2X2		SEOS 0'->3'	P
P136/OC		R224	vk	175	7/2/2008	as	PATCH 2X2		NEOS 0'->6'	P
P137/P136		R225	vp	88	7/2/2008	as	PATCH 2X2		INT OF P136-P137-P138	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P137/P139		R226	vp	88	7/2/2008	as	PATCH 2X	7/5/2008	INT OF P137-P138-P139	P
P140/OC		R227	vk	175	7/2/2008	as	PATCH 2X1	7/5/2008	NEOS 0'->10'	P
P145/P144		R228	vk	175	7/2/2008	as	PATCH 2X3	7/5/2008	EEOS 0'->70' (DS30)	P
P145/P147		R229	vk	175	7/2/2008	as	PATCH 2X2	7/5/2008	INT OF P145-P146-P147	P
P148/P149		R230	vk	175	7/2/2008	as	PATCH 2X2	7/5/2008	WEOS 0'->35' (DS32)	P
P150/P149		R231	vk	175	7/2/2008	as	PATCH 2X3	7/5/2008	INT OF P150-P151-P149	P
P150/P152		R232	vk	175	7/2/2008	as	PATCH 2X2	7/5/2008	INT OF P151-P150-P152	P
P153/P154		R233	vk	76	7/5/2008	as	PATCH 2X2	7/5/2008	EEOS 0'->36' (DS31)	P
P155/P154		R234	vk	76	7/5/2008	as	PATCH 2X2	7/5/2008	INT OF P154-P155-P156	P
P155/P157		R235	vk	76	7/5/2008	as	PATCH 2X2	7/5/2008	INT OF P157-P155-P156	P
P158/P160		R236	vk	76	7/5/2008	as	PATCH 2X2	7/5/2008	INT OF P158-P159-P160	P
P161/P160		R237	vk	76	7/5/2008	as	PATCH 2X3	7/5/2008	INT OF P160-P161-P159	P
P159/P160		R238	vk	76	7/5/2008	as	PATCH 2X3	7/5/2008	SEOS 0'->4' (DS33)	P
P161/P162		R239	vk	76	7/5/2008	as	PATCH 2X3	7/5/2008	EEOS 0'->47' (DS34)	P
P140/P141		R240	vp	88	7/5/2008	as	PATCH 2X3	7/5/2008	WEOS 0'->33' (DS28)	P
P140/OC		R241	vp	88	7/5/2008	as	PATCH 2X3	7/5/2008	NEOS 0'->3' (DS29)	P
P150/OC		R242	vp	88	7/5/2008	as	PATCH 2X2	7/5/2008	SEOS 0'-11'	P
	P153	R243	vp	88	7/5/2008	as	BEAD 4"	7/5/2008	EEOP 0'->5'	P
P158/OC		R244	vk	76	7/5/2008	as	PATCH 1X8	7/5/2008	NEOS 0'->5'	P
P161/OC		R245	vk	76	7/5/2008	as	PATCH 1X1	7/5/2008	SEOS 0'->10'	P
P162/OC		R246	vk	76	7/5/2008	as	PATCH 1X2	7/5/2008	SEOS 0'->10'	P
P163/OC		R247	vk	76	7/5/2008	as	PATCH 1X2	7/5/2008	SEOS 0'->11'	P
P164/OC		R248	vk	76	7/5/2008	as	PATCH 1X1	7/5/2008	SEOS 0'->10'	P
P164/P166		R249	vk	76	7/5/2008	as	PATCH 1X1	7/5/2008	INT OF P164-P166-OC	P
	P164	R250	vp	88	7/5/2008	as	PATCH 10X6; 8" BOOT	7/5/2008	WEOP 0'->28'	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P165/P166		R251	vk	76	7/5/2008	as	PATCH 2X2	7/5/2008	INT OF P164-P165-P166	P
P164/P163		R252	vk	175	7/5/2008	as	PATCH 2X3	7/5/2008	INT OF P164-P165-P163	P
P160/P158		R253	vk	175	7/5/2008	as	PATCH 3X2	7/5/2008	WEOS 0'->3'	P
	P185	R254	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP 0'->1'	P
	P184	R255	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP 0'->2'	P
	P182	R256	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP O'->2'	P
	P181	R257	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP 0'->4'	P
P181/OC		R258	vk	175	7/10/2008	as	PATCH 2X1	7/9/2008	SEOS 0'->4'	P
	P177	R259	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP 0'->4'	P
	P176	R260	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP 0'->3'	P
	P175	R261	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP 0'->3'	P
	P173	R262	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP 0'->3'	P
	P172	R263	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP 0'->2'	P
	P169	R264	vk	175	7/10/2008	as	PATCH 2X2	7/9/2008	EEOP 0'->3'	P
P167/P166		R265	vk	175	7/10/2008	as	PATCH 2X3	7/9/2008	INT OF P167-P166-OC	P
	P190	R266	vp	88	7/10/2008	as	PATCH 20X7; 18" BOOT	7/9/2008	WEOP 0'->27'	P
	P192	R267	vp	88	7/10/2008	as	PATCH 10X10; 8" BOOT	7/9/2008	EEOP 0'->8'	P
P168/P170		R268	vk	76	7/10/2008	as	PATCH 2X2	7/10/2008	INT OF P168-P170-P169	P
P170/P171		R269	vk	76	7/10/2008	as	PATCH 2X2	7/10/2008	INT OF P171-P170-P169	P
P171/P172		R270	vk	76	7/10/2008	as	PATCH 2X3	7/10/2008	EEOS 0'->36' (DS40)	P
P175/P174		R271	vk	76	7/10/2008	as	PATCH 2X3	7/10/2008	WEOS 0'->50'(DS39)	P
P176/P178		R272	vk	76	7/10/2008	as	PATCH 2X2	7/10/2008	INT OF P176-P178-P177	P
P178/P179		R273	vk	76	7/10/2008	as	PATCH 2X2	7/10/2008	INT OF P178-P179-P177	P
P177/P179		R274	vk	76	7/10/2008	as	PATCH 2X3	7/10/2008	DS38 WEOS 0'->38'	P
P181/P183		R275	vk	76	7/10/2008	as	PATCH 2X3	7/10/2008	INT OF P181-P182-P183	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P183/P184		R276	vk	76	7/10/2008	as	PATCH 2X3	7/10/2008	INT OF P183-P184-P182	P
P184/P185		R277	vk	76	7/10/2008	as	PATCH 2X3	7/10/2008	WEOS 0'->40' (DS37)	P
P187/P189		R278	vp	88	7/10/2008	as	PATCH 2X2	7/10/2008	INT OF P187-P188-P189	P
P189/P190		R279	vp	88	7/10/2008	as	PATCH 2X2	7/10/2008	INT OF P188-P189-P190	P
P191/P192		R280	vp	88	7/10/2008	as	PATCH 2X2	7/10/2008	WEOS 0'->40' (DS36)	P
P183/P181		R281	vk	76	7/10/2008	as	PATCH 2X3	7/10/2008	WEOS 0'->4'	P
P178/P176		R282	vk	76	7/10/2008	as	PATCH 2X3	7/10/2008	WEOS 0'->3'	P
P175/P174		R283	vk	76	7/10/2008	as	PATCH 2X8	7/10/2008	WEOS 0'->5'	P
P172/P171		R284	vk	76	7/10/2008	as	PATCH 2X3	7/10/2008	WEOS 0'->3'	P

CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Power Plant Pond 3N | JOB #: 0 | MATERIAL TYPE:

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	*LOCTION OF REPAIR	V BOX PASS
n/a	n/a	301	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	302	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	303	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	304	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	305	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	306	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	307	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	308	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	309	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	310	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	311	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	312	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	313	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	314	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	315	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p
n/a	n/a	316	ss	88	7/29/2008	ss	1x1 patch	7/29/2008	Leak Location Suvery test port patch	p

*Location of the patches are unknown since the cover material was in place and only a small area of liner was exposed to allow a patch to be made at the Leak Location Suverys 16 test port locations. See LLS Survey for more info on locations.

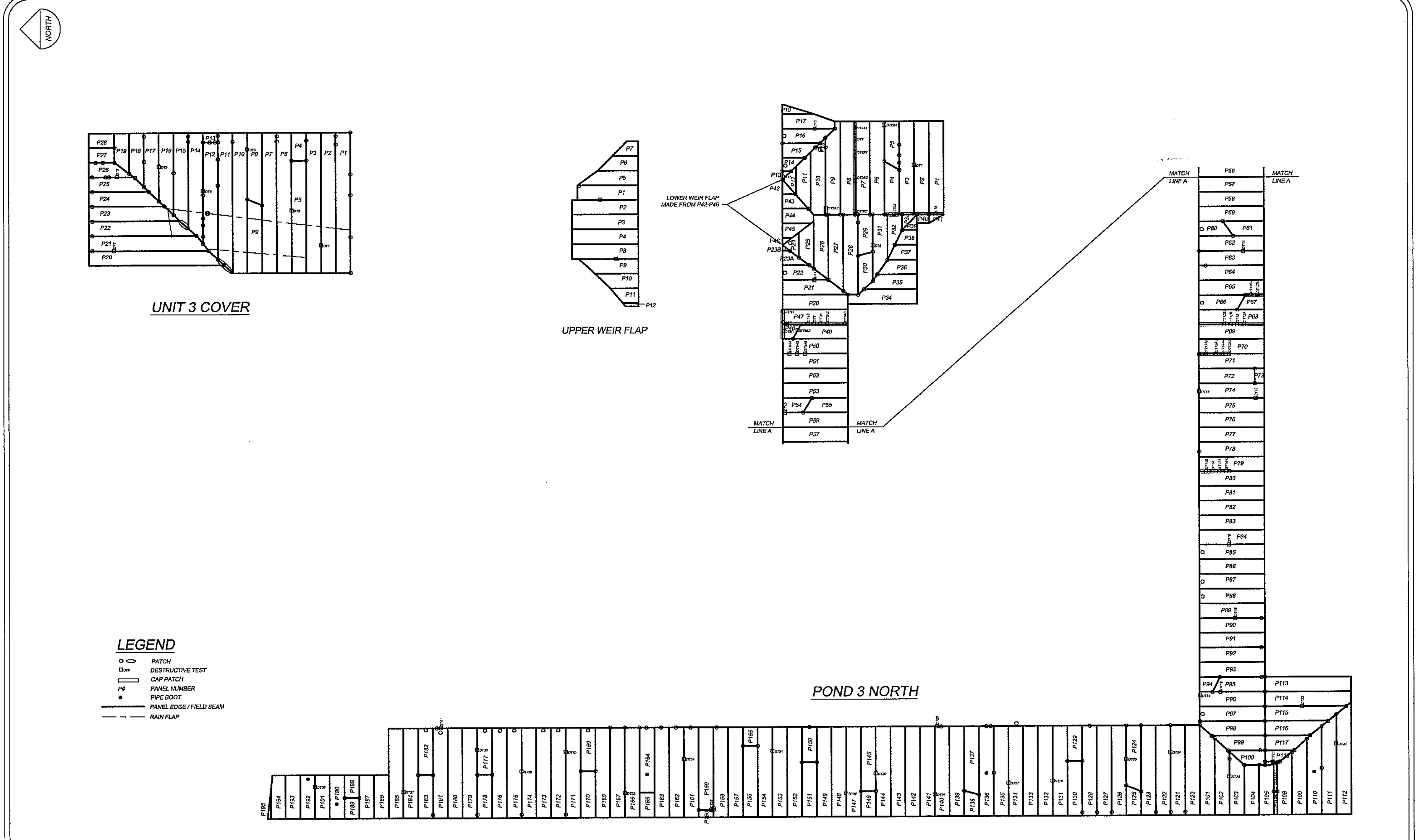
CAAW Systems

GEOMEMBRANE REPAIR REPORT

PROJECT NAME: Sherco Pond (3 upper weir flap) **JOB #:** 200806 **MATERIAL TYPE:**

FIELD SEAM	PANEL NO.	REPAIR NO.	REPAIR CREW	MACH NO.	TEST DATE	TESTER INIT.	REPAIR TYPE AND SIZE (Patch, Bead, Ext Weld, Cap, DT, Boot, etc.)	REPAIR DATE	LOCTION OF REPAIR	V BOX PASS
P1-P5		286	AM	46	8/11/2008	KX	PATCH 2X4	8/11/2008	91' FROM ANCHORTREND	PASS
P1-P2		287	AM	46	8/11/2008	KX	DT-42 1X4	8/11/2008	56' FROM ANCHORTREND	PASS
P8-P9		288	AM	46	8/11/2008	KX	DT-43 1X4	8/11/2008	31' FROM ANCHORTREND	PASS
	7	289	AM	46	8/11/2008	KX	EXT WELD 48'	8/11/2008	P7 AND OLD CELL	PASS
	6	290	AM	46	8/11/2008	KX	EXT WELD 32'	8/11/2008	P6 AND OLD CELL	PASS
	5	291	AM	46	8/11/2008	KX	EXT WELD 38'	8/11/2008	P5 AND OLD CELL	PASS
	1	292	PX	286	8/11/2008	KX	EXT WELD 27'	8/11/2008	P1 AND OLD CELL	PASS
	2	293	PX	286	8/11/2008	KX	EXT WELD 22'	8/11/2008	P2 AND OLD CELL	PASS
	3	294	PX	286	8/11/2008	KX	EXT WELD 22'	8/11/2008	P3 AND OLD CELL	PASS
	4	295	PX	286	8/11/2008	KX	EXT WELD 22'	8/11/2008	P4 AND OLD CELL	PASS
	8	296	PX	286	8/11/2008	KX	EXT WELD 29'	8/11/2008	P8 AND OLD CELL	PASS
	9	297	PX	286	8/11/2008	KX	EXT WELD 31'	8/11/2008	P9 AND OLD CELL	PASS
	10	298	PX	286	8/11/2008	KX	EXT WELD 30'	8/11/2008	P10 AND OLD CELL	PASS
	11	299	PX	286	8/11/2008	KX	EXT WELD 27'	8/11/2008	P11 AND OLD CELL	PASS
	12	300	PX	286	8/11/2008	KX	EXT WELD 25'	8/11/2008	P12 AND OLD CELL	PASS

As-Built Geomembrane Panel Layout Drawing



DRAWN BY M.A.			
SCALE 1"-60'			
JOB #			
DATE 8-22-08	#	REVISIONS	DATE

"You create it, we'll contain it"

ccowsystems.com
Clean Air And Water Systems, LLC
123 ELM STREET
PO BOX 337
DOUSMAN, WI 53118
262-965-4360
FAX: 262-965-4369

PROJECT NAME: SHERBURNE COUNTY GENERATING PLANT 2008 ASH CONTRUCTION PROJECTS

DRAWING NAME: AS-BUILT 40 MIL LLDPE TEXTURED AND 60 MIL HDPE TEXTURED PANEL LAYOUTS

LOCATION: BECKER, MN

DRAWING NUMBER: AB-1

FILENAME: SHERCO 2008

Warranty

GSE®

PRO RATA LIMITED MATERIAL WARRANTY
FOR GSE LINING TECHNOLOGY, INC.
Geomembrane Products
(U.S.A.)

Date:	10/22/2008	Warranty No.:	**524350**
Purchaser Name:	Xcel Energy Services Inc.	Project No.:	524350
Address:	414 Nicollet Mall	Effective Date:	9/18/2008
City, State:	Minneapolis, MN 55401	Project Name:	Sherburne County Gen. Station
Product Type/Description:	GSE HDT Geomembrane	Project Address:	414 Nicollet Mall, Minneapolis, MN 55401

GSE Lining Technology, Inc. ("GSE") warrants each GSE product described above to be free from material manufacturing defects (as described by the contract's material specifications) and to be able to withstand normal weathering for a period of twenty (20) years from the date of sale. This limited warranty does not include damages or defects in the GSE product resulting from acts of God, casualty or catastrophe, including but not limited to: earthquakes, floods, piercing hail, tornadoes or force majeure. The term "normal use" does not include, among other things, the exposure of GSE's product to harmful chemicals, abuse by machinery, equipment or people; improper site preparation or placement of cover materials; excessive pressures or stresses from any source. This warranty is intended for commercial use only and is not in effect for the consumer as defined in the Magnuson-Moss Warranty Act.

Should defects or premature loss of use within the scope of this warranty occur, GSE will, at its option, repair or replace the GSE product on a pro rata basis at the current price in such manner as to charge the Purchaser only for that portion of the warranted life which has elapsed since the purchase of the product. GSE shall have the right to inspect and determine the cause of the alleged defect in the product and to take appropriate steps to repair or replace the product if a defect exists that is covered under this warranty.

Any claim for any alleged breach of this warranty must be made in writing, by certified mail or courier, to GSE Lining Technology Co., 19103 Gundle Road, Houston, TX 77073, with the words "Warranty Claim" clearly marked on the face of the envelope, within ten (10) days of Purchaser becoming aware of the alleged defect. Should the required notice not be given, the defect and all warranties are waived by the Purchaser, and Purchaser shall not have rights under this warranty. GSE shall not be obligated to perform any inspection or obligated to perform any repair or replacement under this warranty until the area is made available free from all obstructions, water, dirt, sludge, residuals and liquids of any kind. If after inspection it is determined that there is no claim under this warranty, Purchaser shall reimburse GSE for its costs associated with the site inspection.

In the event the exclusive remedy provided herein fails in its essential purpose, and in that event only, the Purchaser shall be entitled to a return of the purchase price for so much of the product as GSE determines to have violated the warranty provided herein. GSE shall not be liable for direct, indirect, special, consequential or incidental damages resulting from a breach of this warranty including, but not limited to: damages for loss of production, lost profits, personal injury or property damage. GSE shall not be obligated to reimburse Purchaser for any repairs, replacement, modifications or alterations made by Purchaser to GSE's product, unless GSE specifically authorized, in writing, said repairs, replacements, modifications or alterations in advance. GSE liability under this warranty shall in no event exceed the replacement cost of the product sold to the Purchaser for the particular installation in which it failed.

GSE neither assumes nor authorizes any person other than an officer of GSE to assume for it any other or additional liability in connection with the GSE product made on the basis of the Limited Warranty. **GSE MAKES NO WARRANTY OF ANY KIND OTHER THAN THAT GIVEN HEREIN AND HEREBY DISCLAIMS ALL WARRANTIES, INCLUDING BOTH EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, AND BY ACCEPTING DELIVERY OF THE PRODUCT, PURCHASER WAIVES ALL OTHER POSSIBLE WARRANTIES. GSE's WARRANTY BECOMES AN OBLIGATION OF GSE TO PERFORM UNDER THE WARRANTY ONLY UPON RECEIPT OF FINAL PAYMENT.**

This warranty is extended to the Purchaser and is non-transferable and non-assignable, i.e. there are no third-party beneficiaries to this warranty.

Appendix K

Electronic Leak Location Test Reports

Electrical Leak Location Testing Report
Technical Specifications (Section 02775) for Electrical Leak Location Surveying

Electrical Leak Location Testing Report

November 12, 2008

Mr. Travis Peterson, PMP
Construction Manager
Xcel Energy
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Dear Mr. Peterson:

RE: Final Leak Location Report for the Pond 3N Vertical Expansion Project

Enclosed is the final report for the electrical leak location test conducted on the Pond 3N Vertical Expansion Project by Foth Infrastructure and Environment, LLC. Foth has made the suggested edits to the report, as appropriate, as were provided in your September 25, 2008 correspondence. We have also included electronic files of data as was required.

Foth appreciates working with Xcel Energy and we look forward to providing electrical leak location testing in the future. Please contact me at 651-288-8595 if you have any questions.

Sincerely,

Foth Infrastructure & Environment, LLC

Curtis L. Hartog, P.E.
Senior Technical Consultant

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October 30, 2008

Mr. Travis Peterson
Xcel Energy
Sherburne County Generating Plant
13999 Industrial Blvd.
Becker, MN 55308

Dear Mr. Peterson:

RE: Electrical Leak Location Survey Report; Sherburne County Generating Plant Pond No. 3N Vertical Expansion Project

Introduction

This electrical leak location survey report is being provided in accordance with ASTM D7007, "Standard Practices for Electrical Methods for Locating Leaks in Geomembranes Covered with Water or Earth Materials." The electrical leak location survey was conducted at the Sherburne County Generating Plant Pond 3N Vertical Expansion Project between July 17 and August 12, 2008, by Jason Haugen a certified leak location technician and assisted by Karl Kehren of Foth IE.

Survey Site Description

The survey area consisted of approximately 8.75-acres of sand-covered geomembrane underlain by a geosynthetic clay liner (GCL). The surveyed area will be used as a vertical expansion of an existing scrubber solids pond for Xcel Energy's Sherco Facility. The surveyed area also included a weir area and a lower and upper flap.

Climatic Conditions

During the survey, the climate was generally warm and typical of mid summer temperatures. There was a heavy rain event on July 25, 2008 producing approximately 1 to 2-inches in a short burst.

Cover Material Description

The material over the geomembrane consisted of a 2-foot sand drainage layer. The material was generally moist, with increasing moisture at depth, and provided sufficient moisture content to conduct the survey. The cover material was isolated from the outside of the cell by exposing an edge of geomembrane around the perimeter of the project area.

Type of Geomembrane

The geomembrane tested for leaks during this survey consisted of a 60-mil high density polyethylene (HDPE) geomembrane. The geomembrane was installed by Clean Air and Water Systems, LLC.

Liner System Layering

The liner system tested at this project consisted of (from top to bottom) a 2-foot thick sand layer, a 60-mil HDPE geomembrane and a geosynthetic clay liner (GCL) manufactured by GSE.

Description of Leak Location Method

The leak location method used was according to ASTM D7007 for earth material covered geomembranes. Generally, a calibration test is conducted before and after each day's survey. The calibration test determines the appropriate grid spacing to conduct the survey. The grid is then established across the project area as appropriate. This can be accomplished by using measuring tapes spaced at the grid intervals or stakes and string lines. With the grid established, measurements of the signal are observed at the grid points. Grid point observations that indicate a potential leak are further tested (usually inside the grid) to better identify the leak. Each potential leak is labeled and flagged by the leak location technician in the field for further investigation conducted by the contractor. If required, repaired areas are re-tested to verify that the leak was repaired.

Survey Methodology

For this project, the grid spacing was established by calibration testing to be between 3 and 10 feet. Calibration test results are provided in Attachment 2. Grid size is based on how far from an actual hole does the instrument detect the hole. Tests are conducted from north to south (to establish the N-S grid spacing) and east to west (to establish the E-W grid spacing). Therefore, some of the grids were square (meaning equal instrument sensitivity in both directions) and some were rectangle (meaning in one direction the instrument was more sensitive in detecting the hole). Also, as part of calibration, a noise reading was recorded. The noise reading (used to establish the maximum grid) is recorded when the electrical signal is "off" to record ambient background in the sand.

Standard dipole equipment was used for the electrical leak location test. Dipole equipment consists of an electrical source and a probe with two dipoles that detects changes in voltage in the sand. The dipoles are spaced approximately 3 feet apart and are connected to a meter that displays the voltage detected.

When the grid was established, the leak location instrument was used to measure readings at each grid point. Where grid point readings were indicative of a potential leak, further readings were taken inside the suspected grid to establish a more precise location of the potential leak. The project area is divided into 12 test areas (see attachment 1). Each test area represents a new set of conditions or a new survey day.

A field map is included as Attachment 1. Attachment 2 includes calibration test results logged in the field with the instrument. Attachment 3 includes results of measured potential field before a hole is repaired and after it is repaired. When a leak was identified, the potential leak was labeled and marked in the field with a flag. The leak was then documented on the field map (see Attachment 1).

Calibration Tests

Calibration tests were conducted at the beginning and end of each work day. Calibration of the leak test equipment was conducted according to ASTM D7007 (Annex A4 for an actual leak). The calibration tests determined the grid spacing distance at 3 to 10 feet. There was negligible background noise at the site but was measured to be between 4 mV and 12 mV. The actual signal obtained from the instrument was significantly larger than the noise ratio. The "R" value defined in ASTM D7007 is determined by the formula R=(S+N/N). Since the noise value was small compared to the signal, all calibration tests indicated an "R" value greater than 3 for any survey performed. The field technician used judgment in setting the grid spacing to confirm leaks could be detected. The calibration tests were performed on an actual hole placed in the liner with a ¼-inch drill bit. A total of 9 calibration holes were used during the project. Calibration was performed for both north to south and east to west orientations. Typically calibration began 24 feet away from the hole and continued 24 feet past the hole. Each of the signal readings was recorded to confirm calibration. This data is provided in Attachment 2.

Location of Potential Leaks Detected

One leak or imperfection leak was identified for this project (Hole #1). The nature of the leak appeared to be a thin spot about 1-inch in size in the 60-mil HDPE geomembrane. A total of three owner placed holes were placed in the project area. The owner placed holes were hidden from the leak location technicians. These intentional leaks (Intlk-1, 2 and 3) were 1-inch in diameter. Intlk-1 and Intlk-3 were 1-inch leaks penetrating both the geomembrane and the GCL. Intlk-2 was a 1-inch leak penetrating the geomembrane only. Leaks Intlk-1 and Intlk-3 were located using the leak location equipment. Intlk-2 was not located until the GCL was sufficiently wetted. Several areas during the course of the project were identified as potential leaks, but when investigated by uncovering the area and doing a visual examination and a vacuum box test no other leaks were identified. The intentional leaks, Hole #1 and calibration holes are located on a map and are included as Attachment 1. All holes were repaired on August 12, 2008 by Clean Air and Water Systems, LLC, the original installer of the geomembrane. Photographs showing calibration holes and damage identified are provided as Attachment 4.

A summary of the causes of damage to the geomembrane is included as Attachment 5. After a hole was electrically isolated, a second electrical leak location survey was taken around the hole to verify that there were no additional holes in the vicinity of the repaired hole. Attachment 3 shows the readings taken around the calibration holes, hole 1, and the intentionally placed holes.

Questions about the leak location survey, techniques, and outcomes should be directed to Curtis L. Hartog, P.E. at 651-288-8595.

Sincerely,

Foth Infrastructure and Environment, LLC.

Jason J. Haugen
Leak Location Technician

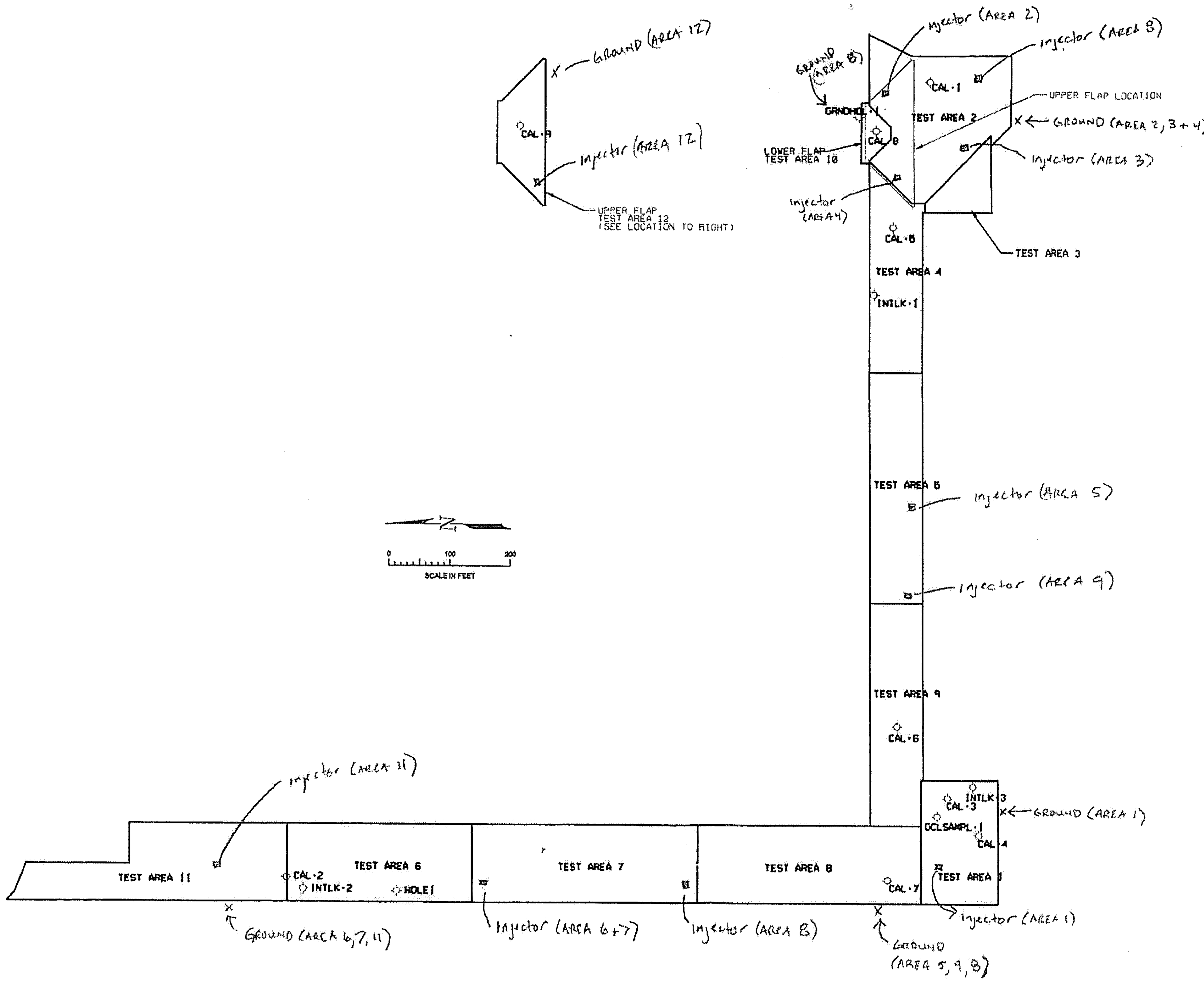
Curtis L. Hartog, P.E.
Senior Technical Consultant

JJH1:CLH1

Attachments

Attachment 1

Field Map



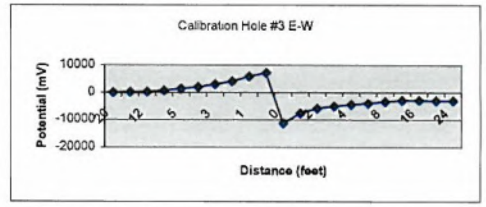
GROUND (AREA 12)
CAL-9
Injector (AREA 12)
UPPER FLAP
TEST AREA 12
(SEE LOCATION TO RIGHT)
Injector (AREA 2)
Injector (AREA 3)
GROUND (AREA 8)
CAL-1
UPPER FLAP LOCATION
GRNDHOL-1
TEST AREA 2
GROUND (AREA 2, 3 + 4)
CAL-8
LOWER FLAP
TEST AREA 10
Injector (AREA 3)
Injector (AREA 4)
TEST AREA 3
CAL-5
TEST AREA 4
INTLK-1
TEST AREA 5
Injector (AREA 5)
0
100
200
SCALE IN FEET
Injector (AREA 9)
TEST AREA 9
CAL-6
Injector (AREA 11)
INTLK-3
CAL-3
GROUND (AREA 1)
OCLSAMPL-1
CAL-4
TEST AREA 11
CAL-2
TEST AREA 6
INTLK-2
HOLE1
TEST AREA 7
TEST AREA 8
CAL-7
TEST AREA 1
GROUND (AREA 6, 7, 11)
Injector (AREA 6+7)
Injector (AREA 8)
GROUND
(AREA 5, 9, 8)
Injector (AREA 1)

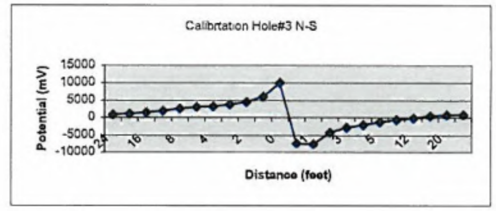
Attachment 2

Calibration Data

Test Area #1 Begin Calibration (Cal Hole #3)

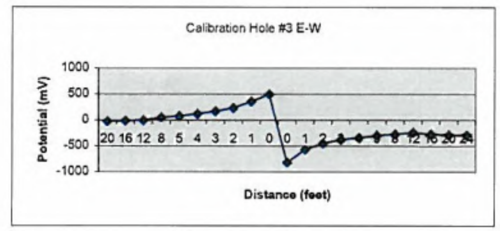
Test Area #1	Distance (ft) E/W	Potential (mV)	Distance (ft) N/S	Potential (mV)	Noise (mV)	Grid	E-W R-Value	N-S R-Value
	24	N/A	24	930	4	8ft x 8ft		3
	20	30	20	1180			735	83
	16	181	16	1600			756	254
	12	354	12	2073			794	543
	8	720	8	2678			1010	806
	5	1533	5	3136			1347	1073
	4	2086	4	3332			1616	1339
	3	3085	3	3868			2016	1651
	2	4110	2	4588			2456	2174
	1	6015	1	6152			3389	3424
	0	7300	0	10150			4611	4375
	0	-11140	0	-7344				
	1	-7538	1	-7538				
	2	-5709	2	-4103				
	3	-4974	3	-2733				
	4	-4372	4	-2018				
	5	-3850	5	-1153				
	8	-3317	8	-542				
	12	-2818	12	-94				
	16	-2840	16	588				
	20	-2906	20	854				
	24	-2968	24	922				

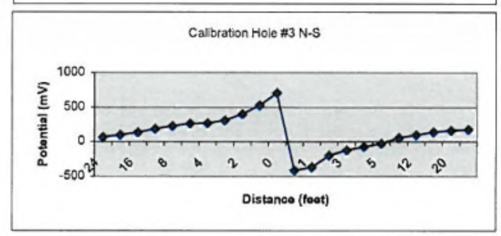




Test Area #1 End Calibration (Cal Hole #3)

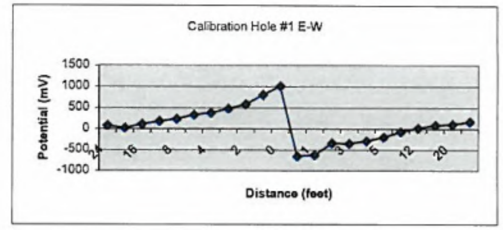
Test Area #1	Distance (ft) E/W	Potential (mV)	Distance (ft) N/S	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	N/A	24	70	4	8ft x 8ft		29
	20	-23	20	101			67	17
	16	-7	16	140			66	2
	12	-5.6	12	188			59	22
	8	53	8	231			82	44
	5	80	5	270			95	74
	4	120	4	274			116	86
	3	170	3	313			137	109
	2	233	2	407			172	152
	1	353	1	530			231	224
	0	498	0	708			329	280
	0	-814	0	-408				
	1	-568	1	-360				
	2	-450	2	-196				
	3	-374	3	-120				
	4	-340	4	-66				
	5	-296	5	-21				
	8	-270	8	60				
	12	-238	12	105				
	16	-268	16	143				
	20	-285	20	165				
	24	-285	24	183				

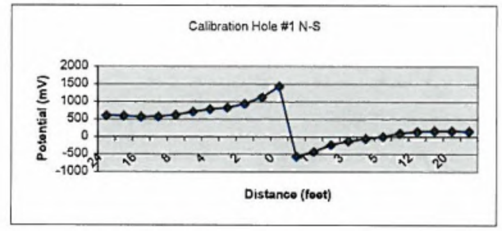




Test Area #2 Begin Calibration (Cal Hole #1)

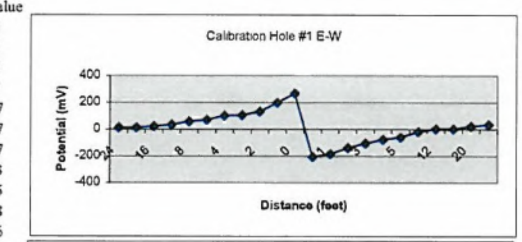
Test Area #2	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	604	24	85	5	8ft x 8ft	88	19
	20	595	20	20			85	19
	16	568	16	111			80	6
	12	575	12	180			85	32
	8	620	8	234			102	61
	5	711	5	335			141	108
	4	786	4	380			167	134
	3	832	3	480			191	166
	2	943	2	580			235	185
	1	1136	1	800			312	285
	0	1448	0	1010			403	334
	0	-560	0	-654				
	1	-421	1	-620				
	2	-225	2	-340				
	3	-116	3	-345				
	4	-46	4	-285				
	5	10	5	-200				
	8	116	8	-65				
	12	157	12	25				
	16	172	16	88				
	20	177	20	110				
	24	170	24	177				

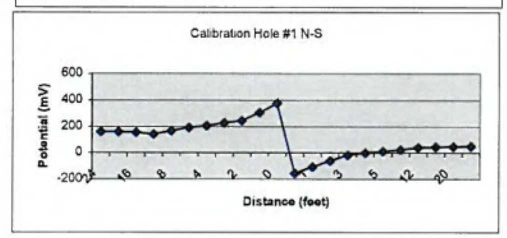




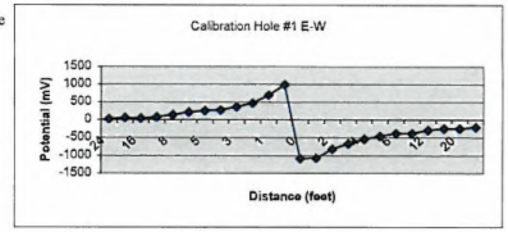
Test Area #2 End Calibration (Cal Hole #1)

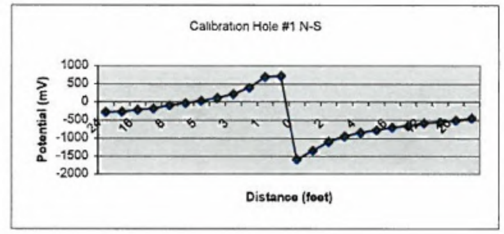
Test Area #2	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	160	24	14	5	8ft x 8ft	23	5
	20	161	20	14			24	3
	16	156	16	23			23	5
	12	141	12	35			21	7
	8	168	8	60			30	17
	5	191	5	70			37	27
	4	205	4	102			42	37
	3	228	3	107			50	43
	2	245	2	134			62	55
	1	308	1	200			84	78
	0	380	0	271			108	96
	0	-155	0	-205				
	1	-106	1	-183				
	2	-60	2	-137				
	3	-18	3	-105				
	4	-1	4	-76				
	5	12	5	-58				
	8	23	8	-18				
	12	41	12	4				
	16	44	16	4				
	20	48	20	22				
	24	51	24	35				



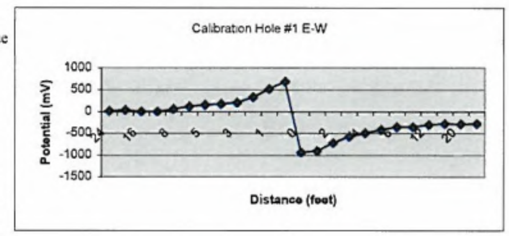


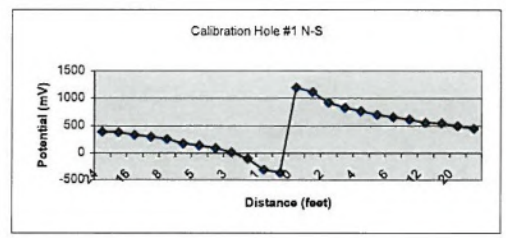
Test Area #3 Begin Calibration (Cal Hole #1)								
Test Area #3	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	-272	24	23	5.5	8ft x 8ft	33	42
	20	-260	20	60			46	55
	16	-214	16	47			63	53
	12	-174	12	77			74	66
	8	-85	8	143			105	95
	6	-22	6	210			125	106
	5	37	5	255			148	130
	4	117	4	271			176	148
	3	222	3	365			212	188
	2	400	2	470			273	234
	1	700	1	700			370	324
	0	720	0	990			419	377
	0	-1580	0	-1080				
	1	-1330	1	-1076				
	2	-1095	2	-814				
	3	-940	3	-662				
	4	-843	4	-536				
	5	-770	5	-453				
	6	-704	6	-369				
	8	-659	8	-374				
	12	-574	12	-281				
	16	-553	16	-237				
	20	-506	20	-237				
	24	-446	24	-202				





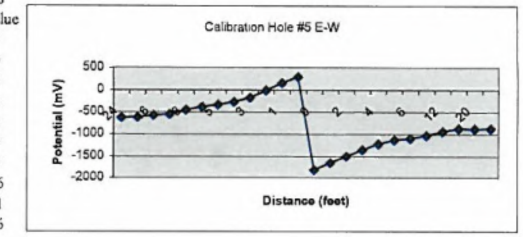
Test Area #3 End Calibration (Cal Hole #1)								
Test Area #3	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	390	24	22	5.5	8ft x 8ft	12	55
	20	382	20	45			22	61
	16	330	16	4.4			41	53
	12	300	12	5.6			48	57
	8	257	8	64			66	76
	6	175	6	123			89	88
	5	142	5	163			102	107
	4	91	4	184			124	124
	3	18	3	210			149	143
	2	-103	2	333			188	192
	1	-306	1	524			260	260
	0	-364	0	696			285	298
	0	1200	0	-937				
	1	1120	1	-900				
	2	924	2	-717				
	3	833	3	-573				
	4	766	4	-490				
	5	700	5	-419				
	6	661	6	-353				
	8	616	8	-350				
	12	558	12	-300				
	16	552	16	-281				
	20	497	20	-287				
	24	450	24	-276				

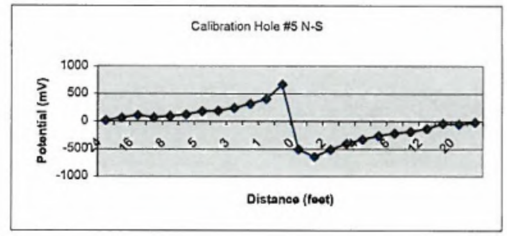




Test Area #4 Begin Calibration (Cal Hole #5)

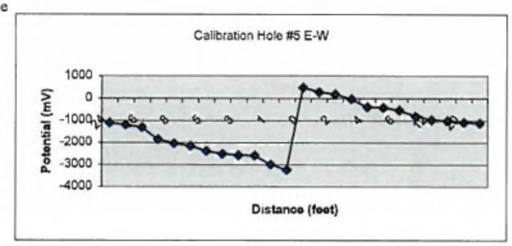
Test Area #4	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	20	24	-630	9	8ft x 8ft	5	28
	20	66	20	-619			14	30
	16	112	16	-576			18	34
	12	70	12	-557			24	44
	8	91	8	-452			32	65
	6	120	6	-385			38	79
	5	181	5	-336			50	89
	4	192	4	-270			58	106
	3	240	3	-175			72	131
	2	312	2	-8			93	166
	1	404	1	161			117	202
	0	666	0	297			131	236
	0	-506	0	-1817				
	1	-640	1	-1650				
	2	-513	2	-1495				
	3	-400	3	-1346				
	4	-323	4	-1213				
	5	-260	5	-1131				
	6	-213	6	-1088				
	8	-188	8	-1027				
	12	-133	12	-940				
	16	-41	16	-871				
	20	-50	20	-884				
	24	-19	24	-873				

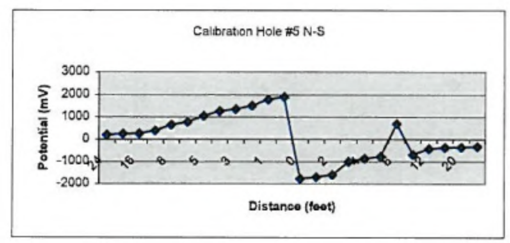




Test Area #4 End Calibration (Cal Hole #5)

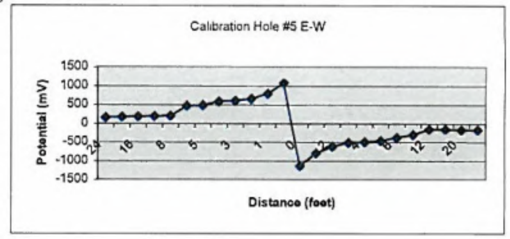
Test Area #4	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	216	24	-1103	9	8ft x 8ft	60	2
	20	257	20	-1190			68	15
	16	272	16	-1296			72	34
	12	393	12	-1841			91	99
	8	664	8	-2032			150	139
	6	791	6	-2143			11	181
	5	1056	5	-2374			203	219
	4	1283	4	-2506			238	238
	3	1367	3	-2560			264	283
	2	1522	2	-2578			345	308
	1	1799	1	-2978			387	365
	0	1903	0	-3230			408	416
	0	-1761	0	503				
	1	-1678	1	301				
	2	-1577	2	189				
	3	-998	3	-23				
	4	-847	4	-377				
	5	-766	5	-412				
	6	699	6	-523				
	8	-679	8	-790				
	12	-416	12	-957				
	16	-365	16	-1002				
	20	-343	20	-1065				
	24	-312	24	-1113				

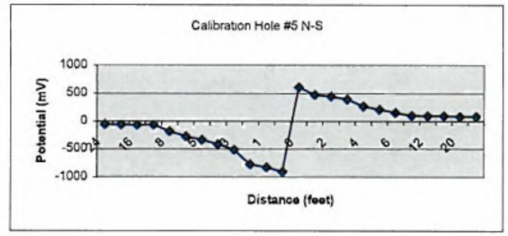




Test Area #5 Begin Calibration (Cal Hole #5)

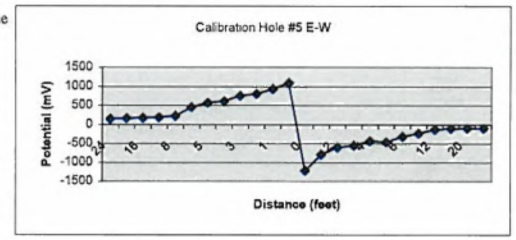
Test Area #5	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	-55	24	165	8	6ft x 6ft	19	42
	20	-59	20	182			20	45
	16	-63	16	196			21	44
	12	-59	12	203			21	45
	8	-182	8	211			37	64
	6	-273	6	476			54	107
	5	-334	5	490			69	119
	4	-412	4	595			87	136
	3	-510	3	613			115	142
	2	-774	2	664			154	161
	1	-823	1	799			164	199
	0	-904	0	1079			191	278
	0	612	0	-1134				
	1	478	1	-787				
	2	446	2	-612				
	3	398	3	-512				
	4	273	4	-488				
	5	211	5	-456				
	6	154	6	-368				
	8	108	8	-292				
	12	102	12	-151				
	16	99	16	-150				
	20	89	20	-166				
	24	89	24	-164				

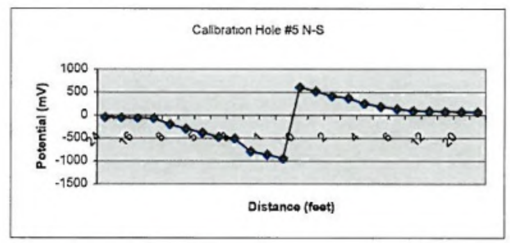




Test Area #5 End Calibration (Cal Hole #5)

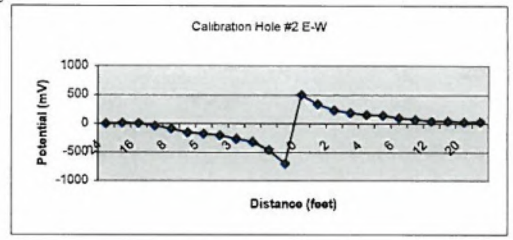
Test Area #5	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	-44	24	158	8	6ft x 6ft	15	32
	20	-49	20	176			17	34
	16	-58	16	181			19	36
	12	-63	12	198			20	41
	8	-198	8	230			38	57
	6	-293	6	459			56	97
	5	-378	5	578			72	130
	4	-472	4	623			92	133
	3	-510	3	765			111	165
	2	-788	2	813			151	178
	1	-856	1	944			173	217
	0	-942	0	1103			195	289
	0	612	0	-1204				
	1	518	1	-780				
	2	413	2	-599				
	3	370	3	-545				
	4	252	4	-430				
	5	193	5	-450				
	6	144	6	-312				
	8	101	8	-221				
	12	91	12	-124				
	16	88	16	-97				
	20	75	20	-90				
	24	70	24	-87				

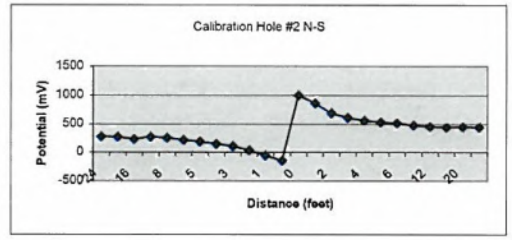




Test Area #6 Begin Calibration (Cal Hole #2)

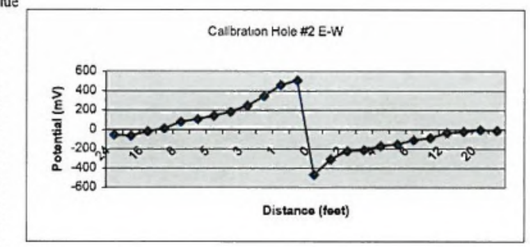
Test Area #6	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	276	24	5	10	4ft x 8ft	17	4
	20	270	20	15.1			19	3
	16	230	16	7.6			22	5
	12	270	12	-35			20	10
	8	250	8	-89			24	18
	6	211	6	-154			31	27
	5	187	5	-177			36	34
	4	147	4	-206			42	38
	3	105	3	-263			51	47
	2	36	2	-315			66	56
	1	-55	1	-454			92	80
	0	-143	0	-694			115	121
	0	1000	0	505				
	1	858	1	340				
	2	686	2	239				
	3	609	3	193				
	4	558	4	160				
	5	532	5	150				
	6	512	6	104				
	8	475	8	77				
	12	455	12	50				
	16	440	16	45				
	20	445	20	31				
	24	440	24	37				

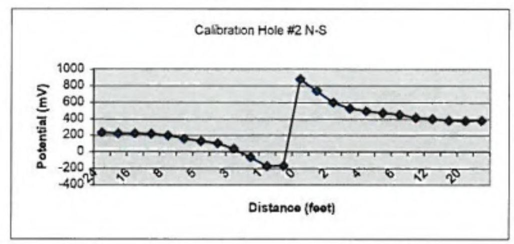




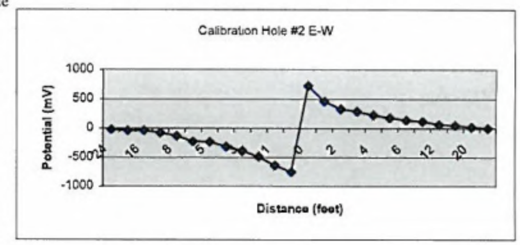
Test Area #6 End Calibration (Cal Hole #2)

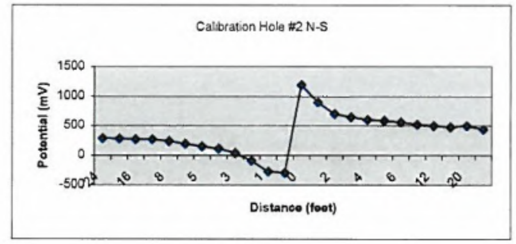
Test Area #6	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	235	24	-56	10	4ft x 8ft	16	5
	20	225	20	-64			17	7
	16	224	16	-17			17	0
	12	220	12	10			19	6
	8	200	8	80			23	18
	6	164	6	108			30	23
	5	131	5	145			36	31
	4	107	4	185			40	37
	3	41	3	245			50	47
	2	-60	2	347			67	58
	1	-170	1	461			92	78
	0	-165	0	508			106	99
	0	884	0	-467				
	1	740	1	-310				
	2	602	2	-224				
	3	530	3	-213				
	4	500	4	-171				
	5	476	5	-155				
	6	458	6	-111				
	8	417	8	-86				
	12	401	12	-36				
	16	383	16	-23				
	20	380	20	-5				
	24	383	24	-11.6				



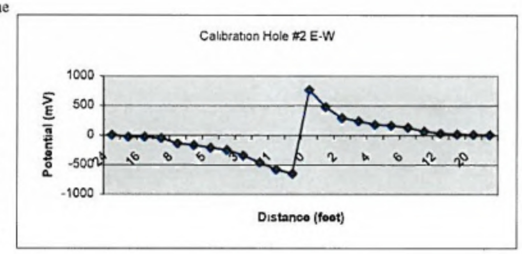


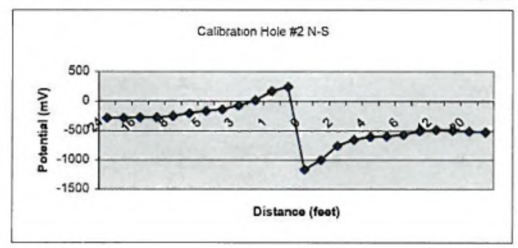
Test Area #7 Begin Calibration (Cal Hole #2)							E-W	N-S
Test Area #7	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	R-Value	R-Value
	24	285	24	-21	7.9	3ft x 8ft	21	4
	20	280	20	-36			29	8
	16	270	16	-36			27	12
	12	273	12	-78			30	19
	8	236	8	-131			37	33
	6	193	6	-231			47	48
	5	152	5	-235			56	54
	4	110	4	-318			64	70
	3	43	3	-390			78	87
	2	-92	2	-488			102	105
	1	-274	1	-640			150	140
	0	-300	0	-756			190	188
	0	1192	0	725				
	1	900	1	460				
	2	704	2	330				
	3	650	3	292				
	4	604	4	230				
	5	590	5	182				
	6	560	6	144				
	8	523	8	118				
	12	501	12	63				
	16	478	16	50				
	20	500	20	23				
	24	441	24	1.6				



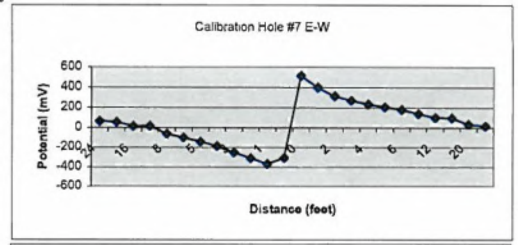


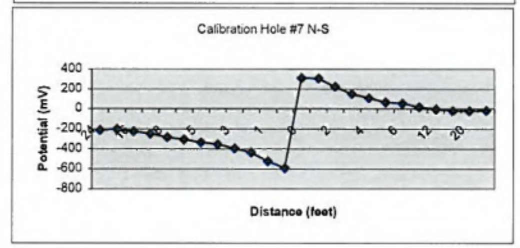
Test Area #7 End Calibration (Cal Hole #2)							E-W	N-S
Test Area #7	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	R-Value	R-Value
	24	-280	24	6.9	7.9	3ft x 8ft	31	1
	20	-280	20	-27			30	6
	16	-270	16	-27			29	7
	12	-270	12	-46			28	11
	8	-250	8	-139			33	27
	6	-200	6	-165			47	39
	5	-160	5	-208			55	49
	4	-136	4	-244			60	55
	3	-68	3	-338			75	74
	2	15	2	-460			98	96
	1	177	1	-577			150	135
	0	247	0	-650			179	180
	0	-1161	0	768				
	1	-998	1	480				
	2	-752	2	294				
	3	-650	3	240				
	4	-600	4	184				
	5	-590	5	168				
	6	-560	6	133				
	8	-505	8	65.6				
	12	-480	12	33.7				
	16	-490	16	21.5				
	20	-507	20	12.4				
	24	-518	24	9.5				



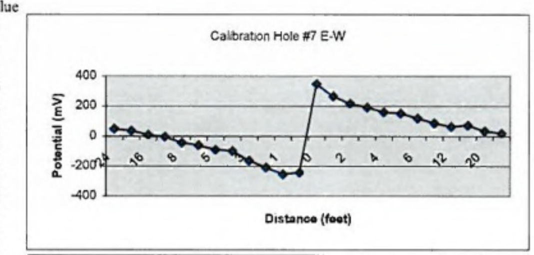


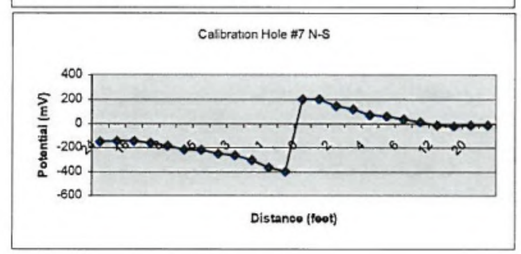
Test Area #8 Begin Calibration (Cal Hole #7)							E-W	N-S
Test Area #8	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	R-Value	R-Value
	24	-211	24	65	8	8ft x 8ft	29	7
	20	-201	20	55			29	4
	16	-223	16	16			31	11
	12	-247	12	17			32	11
	8	-281	8	-63			39	26
	6	-306	6	-102			46	36
	5	-333	5	-143			51	45
	4	-354	4	-187			59	54
	3	-394	3	-252			69	67
	2	-438	2	-310			84	79
	1	-524	1	-367			105	97
	0	-592	0	-307			114	104
	0	313	0	515				
	1	310	1	401				
	2	227	2	316				
	3	153	3	273				
	4	109	4	238				
	5	68	5	209				
	6	56	6	181				
	8	21	8	140				
	12	-3.6	12	100				
	16	-17	16	98				
	20	-19	20	33				
	24	-16	24	16.7				





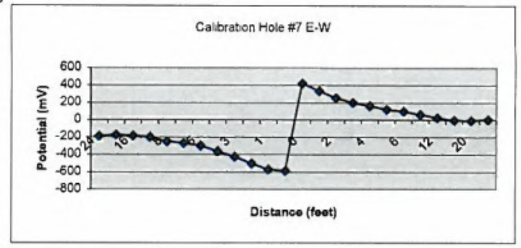
Test Area #8 End Calibration (Cal Hole #7)							E-W	N-S
Test Area #8	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	R-Value	R-Value
	24	-149	24	50	8	8ft x 8ft	18	5
	20	-145	20	37			18	1
	16	-145	16	9			17	9
	12	-161	12	-3.3			20	10
	8	-183	8	-44			26	18
	6	-215	6	-60			33	24
	5	-217	5	-91			36	31
	4	-250	4	-99			42	33
	3	-264	3	-163			49	45
	2	-303	2	-209			58	54
	1	-365	1	-254			72	66
	0	-399	0	-243			76	75
	0	203	0	350				
	1	205	1	267				
	2	149	2	217				
	3	121	3	191				
	4	75	4	160				
	5	62	5	151				
	6	40	6	120				
	8	15	8	88				
	12	-10.4	12	65				
	16	-20	16	74				
	20	-11	20	36				
	24	-10	24	20				

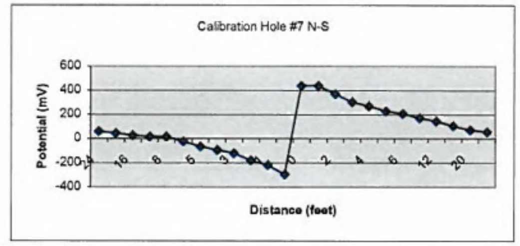




Test Area #9 Begin Calibration (Cal Hole #7)

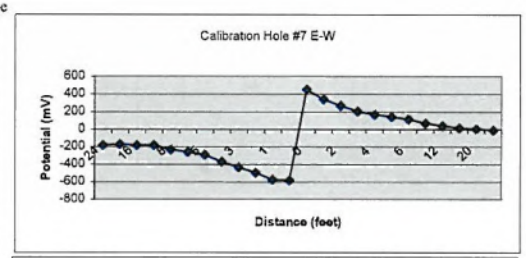
Test Area #9	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	60	24	-189	8	8ft x 8ft	2	25
	20	45	20	-175			4	22
	16	27	16	-183			11	23
	12	16	12	-200			17	29
	8	17	8	-251			20	40
	6	-23	6	-270			30	47
	5	-67	5	-300			38	54
	4	-94	4	-360			47	66
	3	-120	3	-425			54	79
	2	-178	2	-500			70	95
	1	-219	1	-570			83	114
	0	-295	0	-585			93	127
	0	440	0	425				
	1	440	1	335				
	2	371	2	254				
	3	306	3	200				
	4	270	4	160				
	5	230	5	122				
	6	207	6	100				
	8	171	8	62				
	12	146	12	26				
	16	104	16	-3.9				
	20	71	20	-9.4				
	24	56	24	2				

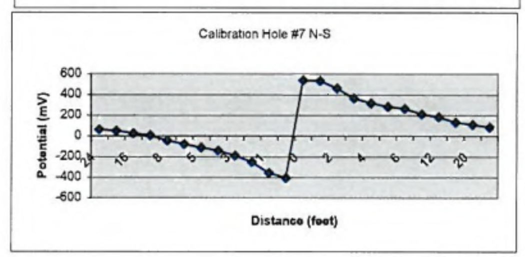




Test Area #9 End Calibration (Cal Hole #7)

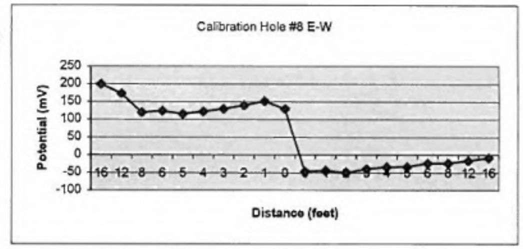
Test Area #9	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	64	24	-180	8	8ft x 8ft	4	23
	20	50	20	-170			9	23
	16	28	16	-180			14	26
	12	6.9	12	-180			23	29
	8	-41	8	-230			33	39
	6	-76	6	-256			44	48
	5	-111	5	-290			50	55
	4	-140	4	-367			58	68
	3	-190	3	-433			70	81
	2	-250	2	-494			90	97
	1	-354	1	-575			112	116
	0	-403	0	-581			119	130
	0	540	0	454				
	1	533	1	341				
	2	463	2	270				
	3	365	3	206				
	4	319	4	170				
	5	284	5	145				
	6	266	6	120				
	8	212	8	70				
	12	185	12	43				
	16	133	16	18.3				
	20	110	20	5.7				
	24	87	24	-7.4				

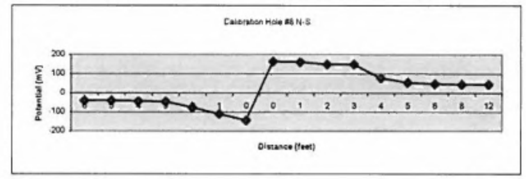




Test Area #10 Begin Calibration (Cal Hole #8)

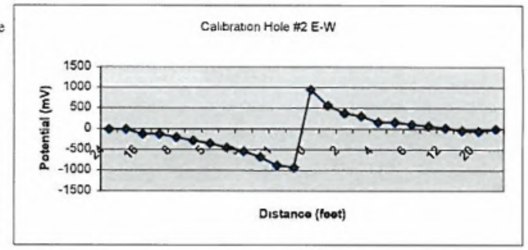
Test Area #10	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	16	outside weir	16	200	11	3ft x 3ft		20
	12	outside weir	12	173				18
	8	outside weir	8	120				14
	6	-39	6	125			9	14
	5	-40	5	116			10	15
	4	-43	4	123			12	15
	3	-45	3	130			19	16
	2	-76	2	140			21	18
	1	-110	1	152			26	19
	0	-143	0	130			29	19
	0	165	0	-47				17
	1	161	1	-44				
	2	149	2	-50				
	3	150	3	-40				
	4	78	4	-34				
	5	54	5	-33				
	6	48	6	-23				
	8	44	8	-23				
	12	44	12	-16.5				
			16	-8.3				

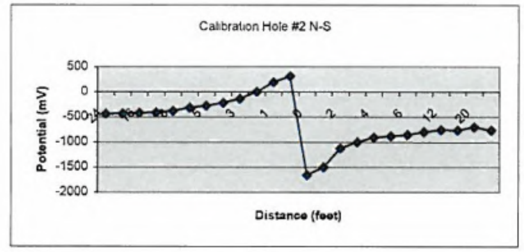




Test Area #11 Begin Calibration (Cal Hole #2)

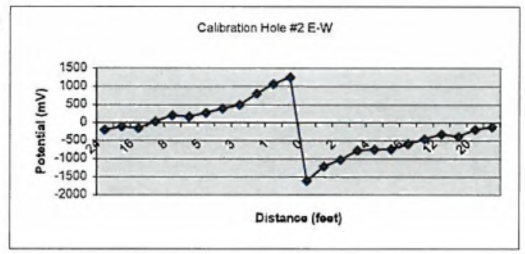
Test Area #11	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	-433	24	-13	8	3ft x 6ft	42	2
	20	-430	20	-9.5			35	7
	16	-418	16	-123			44	11
	12	-409	12	-127			45	19
	8	-376	8	-205			53	35
	6	-316	6	-277			68	49
	5	-275	5	-346			77	64
	4	-220	4	-448			87	77
	3	-137	3	-540			109	106
	2	5.7	2	-679			142	133
	1	196	1	-877			213	181
	0	318	0	-933			248	236
	0	-1655	0	950				
	1	-1500	1	564				
	2	-1120	2	375				
	3	-1000	3	300				
	4	-907	4	160				
	5	-879	5	160				
	6	-853	6	104				
	8	-793	8	63				
	12	-757	12	19				
	16	-763	16	-41				
	20	-700	20	-57				
	24	-760	24	-2.2				

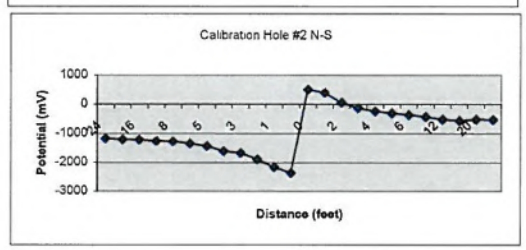




Test Area #11 End Calibration (Cal Hole #2)

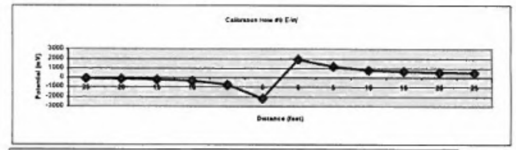
Test Area #11	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	24	-1165	24	-195	8	3ft x 6ft	82	11
	20	-1202	20	-108			88	11
	16	-1203	16	-151			83	30
	12	-1250	12	31			93	45
	8	-1266	8	203			107	83
	6	-1342	6	167			124	95
	5	-1424	5	273			141	127
	4	-1600	4	386			172	142
	3	-1670	3	497			194	159
	2	-1884	2	806			244	230
	1	-2154	1	1077			320	287
	0	-2355	0	1256			358	359
	0	504	0	-1611				
	1	394	1	-1212				
	2	62	2	-1024				
	3	-125	3	-767				
	4	-230	4	-741				
	5	-302	5	-732				
	6	-360	6	-586				
	8	-420	8	-454				
	12	-513	12	-324				
	16	-551	16	-384				
	20	-510	20	-191				
	24	-515	24	-117				

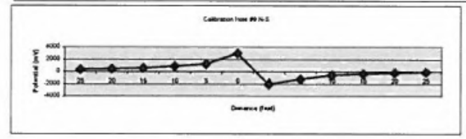




Test Area #12 Begin Calibration (Cal Hole #9)

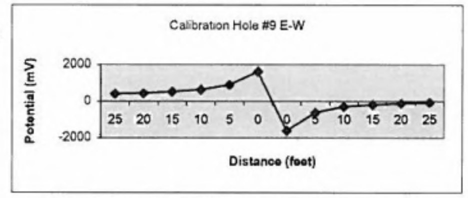
Test Area #12	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	25	384	25	-87	12	10ft x 10ft	42	51
	20	476	20	-136			58	59
	15	546	15	-227			75	76
	10	881	10	-366			124	99
	5	1224	5	-754			205	164
	0	2965	0	-2157			419	343
	0	-2054	0	1942				
	5	-1222	5	1202				
	10	-592	10	804				
	15	-341	15	667				
	20	-206	20	558				
	25	-108	25	512				

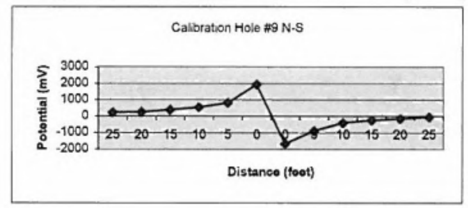




Test Area #12 End Calibration (Cal Hole #9)

Test Area #12	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)	Noise	Grid	E-W R-Value	N-S R-Value
	25	225	25	420	12	8ft x 8ft	25	41
	20	242	20	451			34	47
	15	379	15	541			54	61
	10	547	10	645			81	78
	5	803	5	914			142	128
	0	1933	0	1640			301	271
	0	-1667	0	-1600				
	5	-894	5	-611				
	10	-413	10	-280				
	15	-252	15	-174				
	20	-151	20	-102				
	25	-60	25	-60				





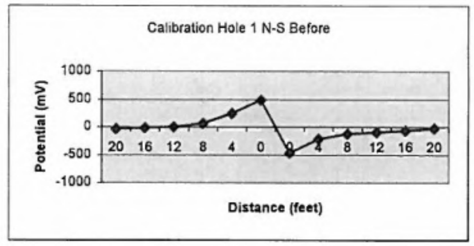
Attachment 3

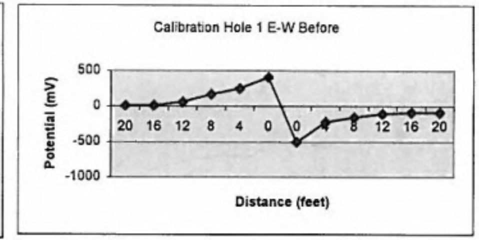
Before/After Leak Location Data

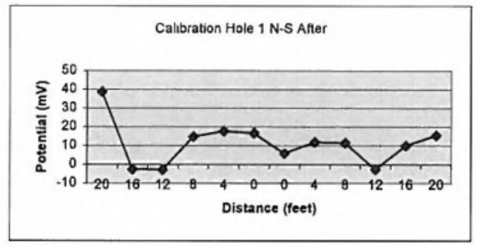
Calibration Hole 1

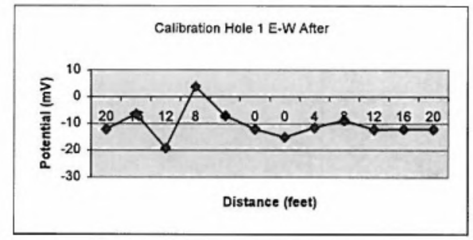
	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
Before Fixed	20	-21	20	20
	16	-7	16	21
	12	13	12	70
	8	75	8	180
	4	253	4	261
	0	500	0	419
	0	-456	0	-499
	4	-205	4	-217
	8	-112	8	-150
	12	-81	12	-98
	16	-50	16	-82
	20	-13	20	-79

	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
After Fixed	20	39	20	-12
	16	-2.3	16	-6.3
	12	-2.5	12	-19
	8	15	8	4
	4	18	4	-7
	0	17	0	-12
	0	6.1	0	-15
	4	12.1	4	-11.4
	8	11.8	8	-8.8
	12	-2.3	12	-12.1
	16	10.2	16	-12
	20	15.8	20	-12





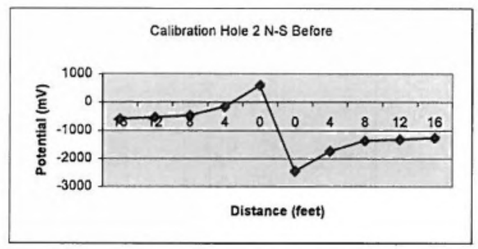


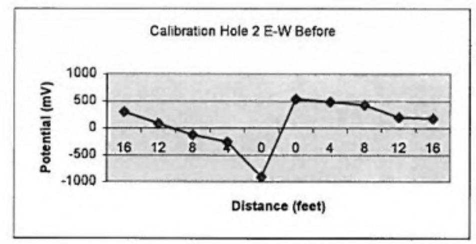


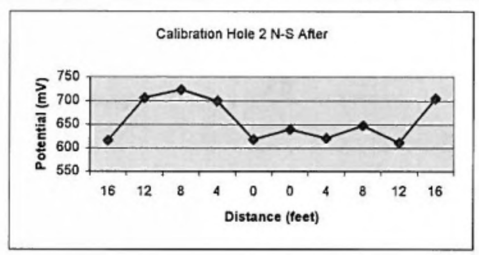
Calibration Hole 2

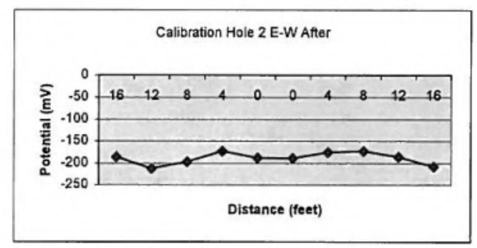
	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
Before Fixed	16	-575	16	310
	12	-524	12	95
	8	-450	8	-119
	4	-146	4	-248
	0	621	0	-905
	0	-2430	0	545
	4	-1720	4	490
	8	-1351	8	430
	12	-1296	12	206
	16	-1247	16	185

	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
After Fixed	16	617	16	-185
	12	708	12	-211
	8	725	8	-196
	4	701	4	-172
	0	619	0	-187
	0	640	0	-188
	4	622	4	-175
	8	648	8	-172
	12	612	12	-185
	16	706	16	-207



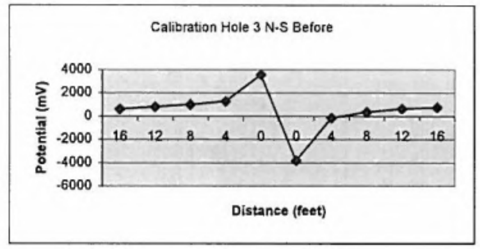


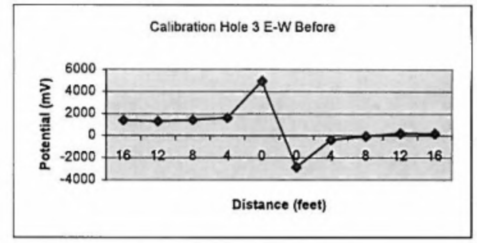


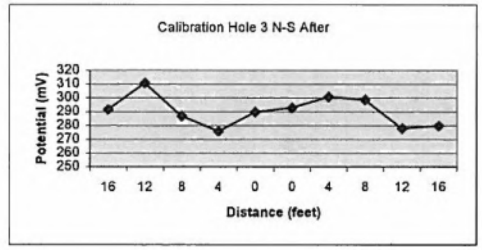


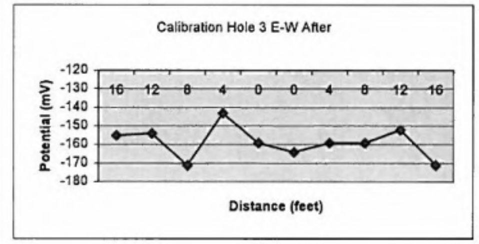
Calibration Hole 3

	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
Before Fixed	16	663	16	1415
	12	860	12	1341
	8	1040	8	1443
	4	1325	4	1660
	0	3620	0	5000
	0	-3801	0	-2800
	4	-114	4	-350
	8	422	8	-17
	12	680	12	220
	16	806	16	203
After Fixed	16	292	16	-155
	12	311	12	-154
	8	287	8	-171
	4	276	4	-143
	0	290	0	-159
	0	293	0	-164
	4	301	4	-159
	8	299	8	-159
	12	278	12	-152
	16	280	16	-171



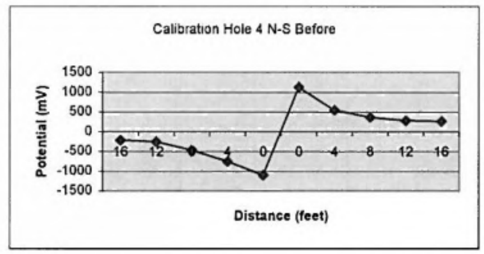


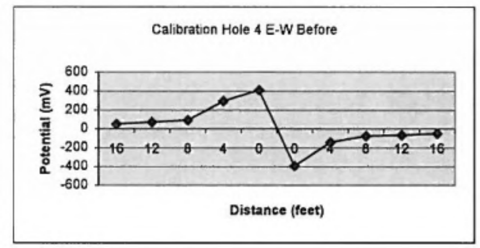


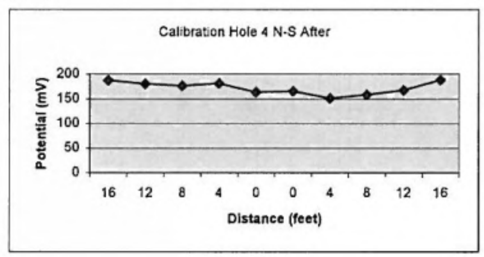


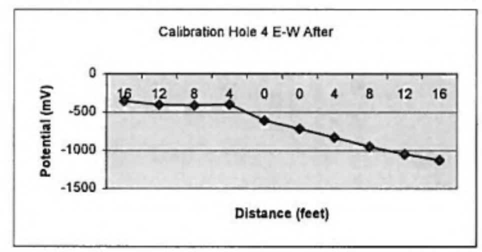
Calibration Hole 4

	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
Before Fixed	16	-205	16	54
	12	-250	12	74
	8	-456	8	95
	4	-745	4	298
	0	-1093	0	412
	0	1134	0	-389
	4	556	4	-138
	8	370	8	-75
	12	290	12	-65
	16	276	16	-49
After Fixed	16	188	16	-350
	12	181	12	-398
	8	177	8	-406
	4	182	4	-395
	0	164	0	-608
	0	166	0	-715
	4	152	4	-829
	8	159	8	-952
	12	168	12	-1048
	16	189	16	-1122



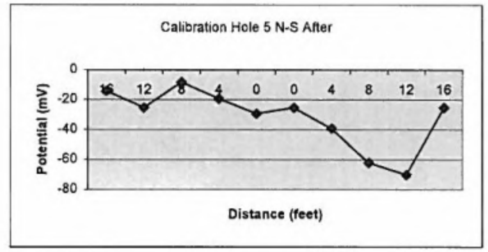


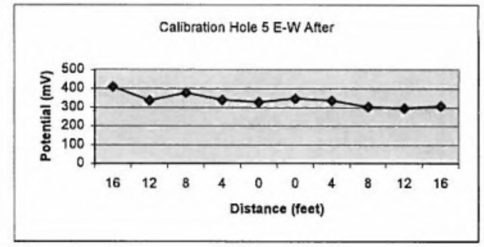




Calibration Hole 5

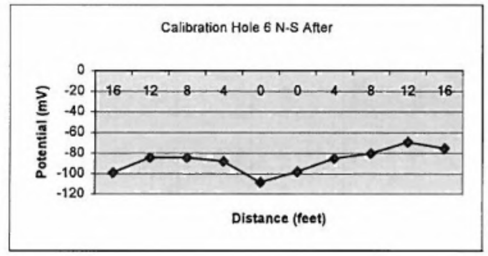
After Fixed	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
	16	-14	16	411
	12	-25	12	339
	8	-8	8	378
	4	-19	4	342
	0	-29	0	330
	0	-25	0	349
	4	-39	4	338
	8	-62	8	304
	12	-70	12	298
	16	-25	16	310

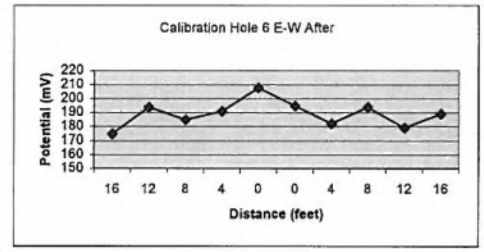




Calibration Hole 6

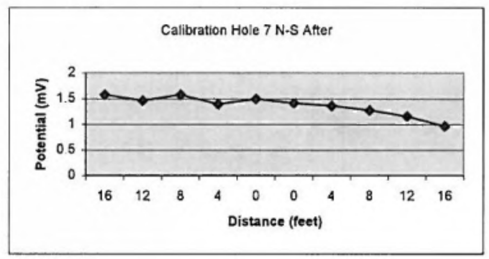
After Patch	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
	16	-99	16	175
	12	-84	12	194
	8	-84	8	185
	4	-88	4	191
	0	-108	0	208
	0	-98	0	195
	4	-85	4	182
	8	-80	8	194
	12	-69	12	179
	16	-75	16	189

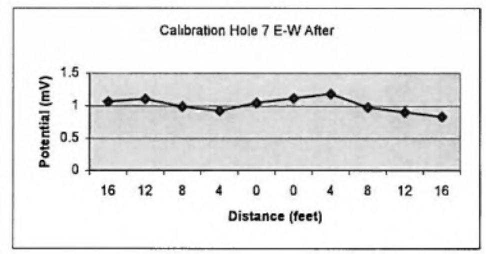




Calibration Hole 7

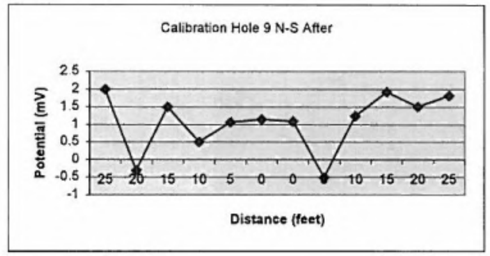
After Patch	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
	16	1.58	16	1.07
	12	1.47	12	1.11
	8	1.58	8	0.99
	4	1.4	4	0.93
	0	1.5	0	1.05
	0	1.42	0	1.12
	4	1.37	4	1.19
	8	1.28	8	0.98
	12	1.16	12	0.91
	16	0.97	16	0.84

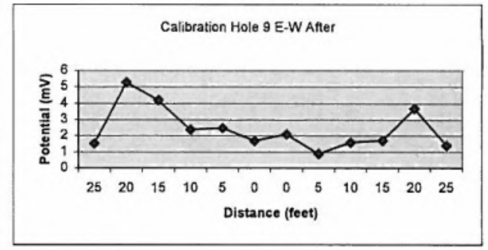




Calibration Hole 9

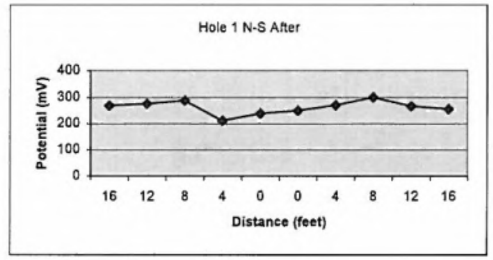
After Patch	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
	25	2	25	1.51
	20	-0.3	20	5.3
	15	1.5	15	4.2
	10	0.5	10	2.4
	5	1.07	5	2.5
	0	1.15	0	1.7
	0	1.1	0	2.1
	5	-0.5	5	0.89
	10	1.25	10	1.6
	15	1.92	15	1.72
	20	1.51	20	3.7
	25	1.82	25	1.4

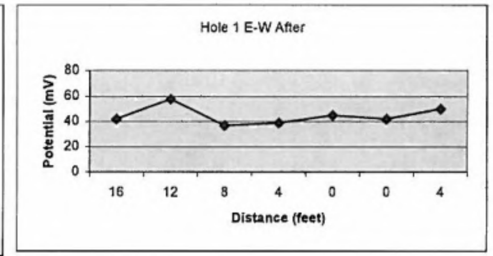




Hole 1

After Patch	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
	16	269	16	42
	12	276	12	58
	8	289	8	37
	4	212	4	39
	0	239	0	45
	0	250	0	42
	4	270	4	50
	8	301	8	outside cell
	12	267	12	outside cell
	16	256	16	outside cell

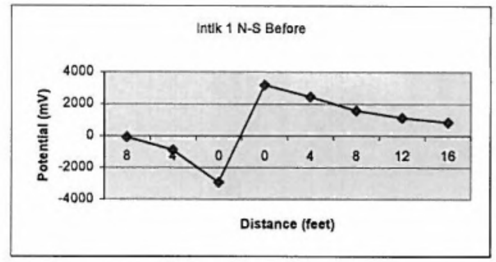


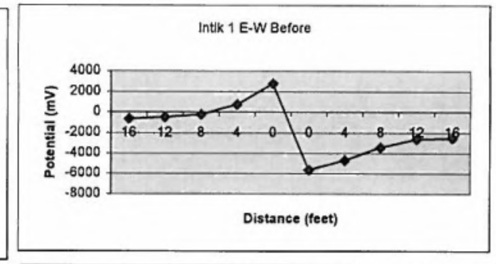


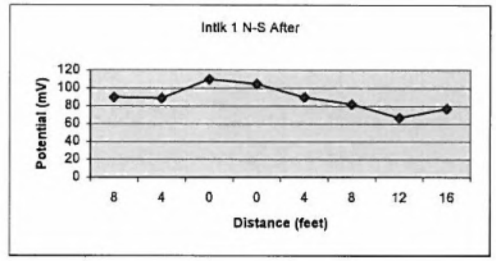
Intlk-1

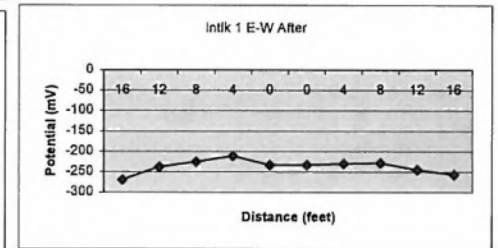
	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
Before Patch	16	outside cell	16	-611
	12	outside cell	12	-450
	8	-60	8	-205
	4	-867	4	760
	0	-2900	0	2805
	0	3200	0	-5600
	4	2456	4	-4670
	8	1598	8	-3400
	12	1153	12	-2600
	16	864	16	-2500

	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
After Patch	16	outside cell	16	-269
	12	outside cell	12	-238
	8	90	8	-225
	4	89	4	-211
	0	110	0	-233
	0	105	0	-233
	4	90	4	-230
	8	82	8	-228
	12	67	12	-245
	16	77	16	-256









Intlk-2

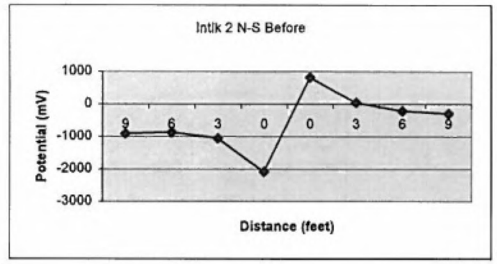
	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
Before Patch	9	-904	9	-114
	6	-870	6	-103
	3	-1052	3	-360
	0	-2081	0	-1428
	0	834	0	1511
	3	55	3	350
	6	-200	6	100
	9	-286	9	136

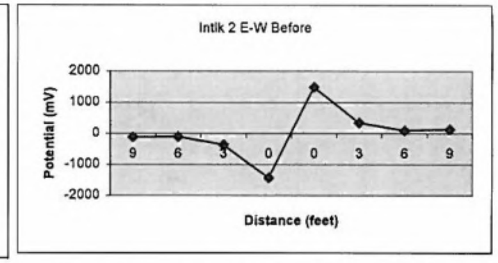
	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
After Patch	16	-580	16	outside cell
	12	-516	12	outside cell
	8	-498	8	-18
	4	-512	4	-29
	0	-585	0	-45
	0	-511	0	-45
	4	-490	4	-78
	8	-502	8	-112
	12	-507	12	-195
	16	-590	16	-212

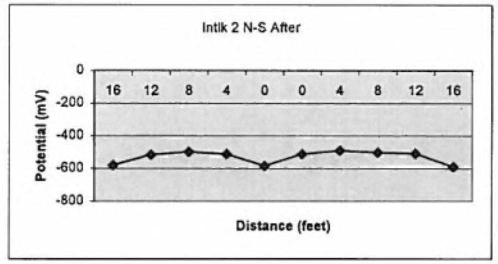
Intlk-3

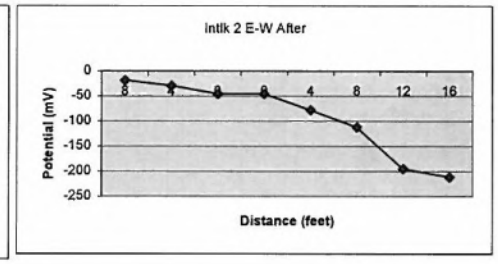
	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
Before Patch	16	1700	16	outside cell
	12	1878	12	outside cell
	8	2380	8	outside cell
	4	3565	4	-1457
	0	8494	0	-6015
	0	-5504	0	9127
	4	-3020	4	3770
	8	-1442	8	2332
	12	-565	12	2144
	16	-41	16	1770

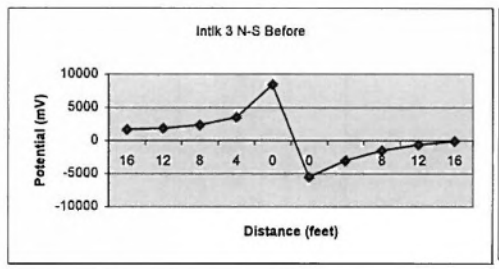
	Distance (ft) N/S	Potential (mV)	Distance (ft) E/W	Potential (mV)
After Patch	16	-730	16	outside cell
	12	-695	12	outside cell
	8	-650	8	outside cell
	4	-680	4	421
	0	-826	0	397
	0	-1088	0	412
	4	-998	4	425
	8	-1019	8	393
	12	-1128	12	339
	16	-1368	16	324

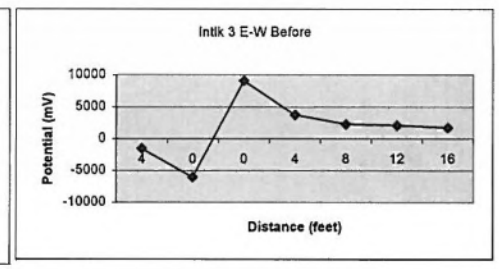


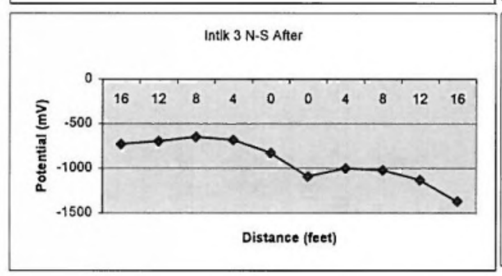


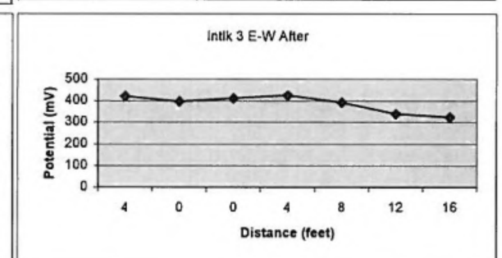












Attachment 4

Photographs

Photo 1: Calibration Hole #1

Photo 2: Calibration Hole #1. Close up View.

Photo 3: Calibration Hole #2

Photo 4: Calibration Hole #3.

Photo 5: Calibration Hole #4

Photo 5: Calibration Hole #5

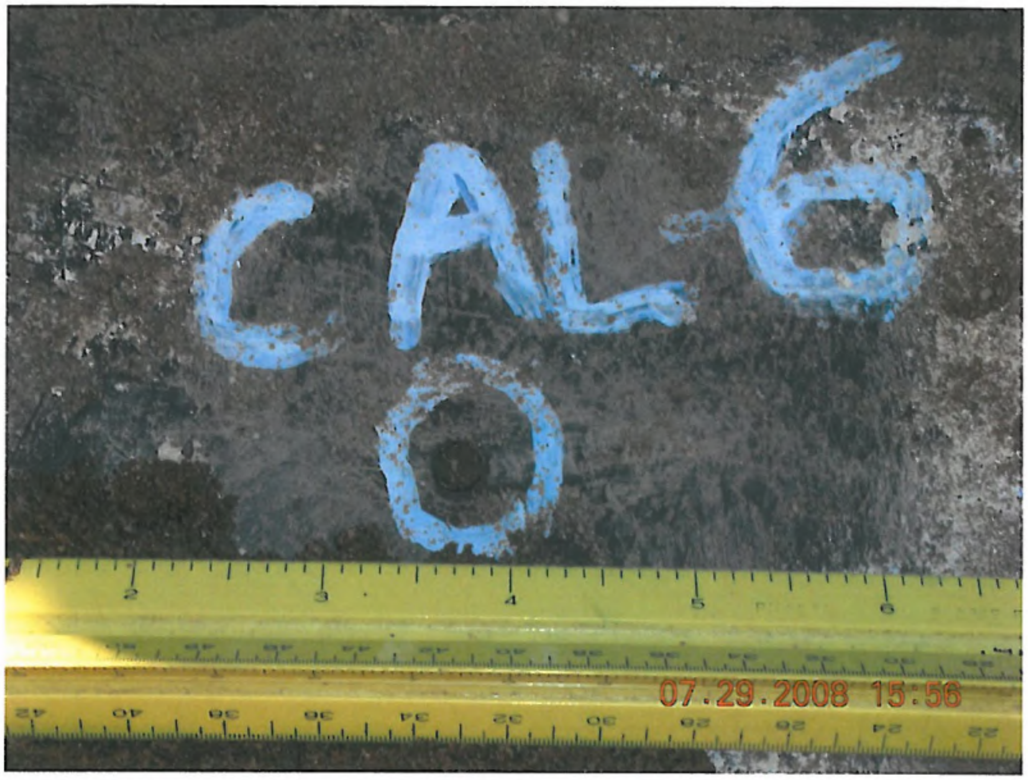


Photo 6: Calibration Hole #6

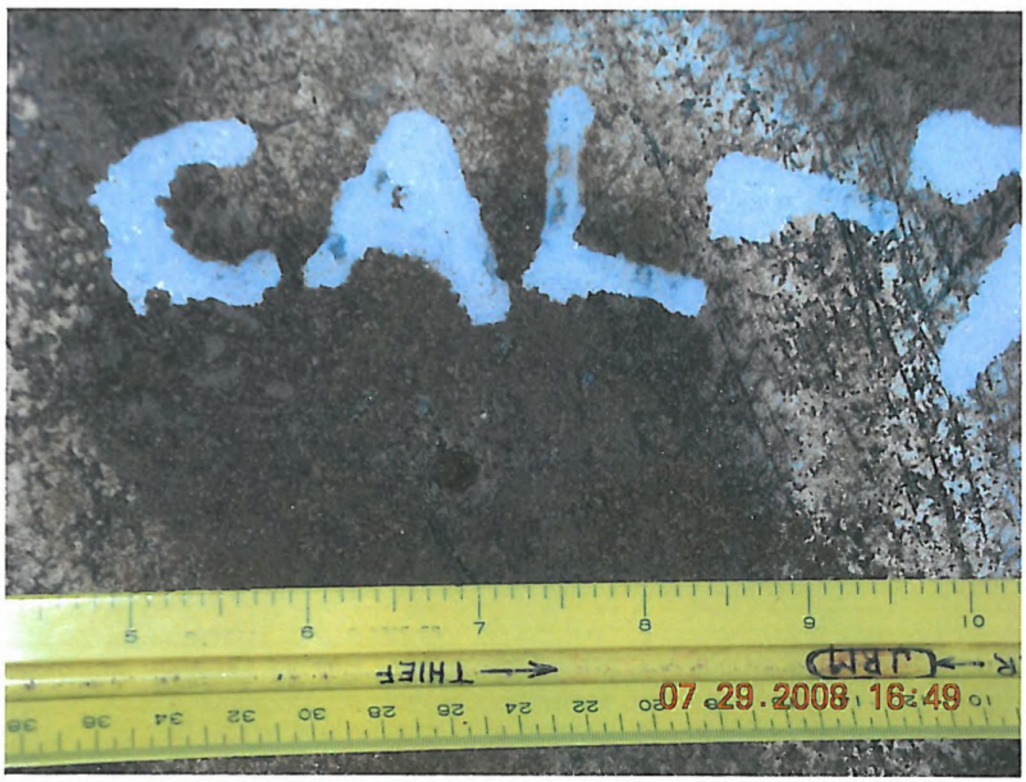


Photo 7: Calibration Hole #7

Photo 8: Calibration Hole #8

Photo 9: Calibration Hole #9

Photo 10: Owner Intentional Leak #1 (penetrating membrane and GCL)

Photo 11: Owner Intentional Leak #2 (1-inch hole through membrane only)

Photograph 12: Owner Intentional Leak #3 (penetrating membrane and GCL)

Photo 13: Hole #1 thin spot in membrane ~ 1- inch

Photo 14: Generator and Power Source

Figure 15: Ground pounded into GCL under membrane

Attachment 5

Summary of Causes of Damage

Hole #	Northing	Easting	Test Area	Comment
Cal #1	863,767.00	2,031,948.40	2	1/4-inch Calibration Hole
Cal #2	864,826.80	2,030,645.10	6	1/4-inch Calibration Hole
Cal #3	863,740.70	2,030,777.70	1	1/4-inch Calibration Hole
Cal #4	863,688.00	2,030,717.60	1	1/4-inch Calibration Hole
Cal #5	863,829.10	2,031,709.30	4	1/4-inch Calibration Hole
Cal #6	863,823.80	2,030,894.80	9	1/4-inch Calibration Hole
Cal #7	863,839.50	2,030,643.70	8	1/4-inch Calibration Hole
Cal #8	863,855.60	2,031,867.70	10	1/4-inch Calibration Hole
Cal #9	25 ft N of top	100 ft W of E side	9	1/4-inch Calibration Hole
Hole #1	864,647.07	2,030,623.30	6	~ 1-inch linear thin spot in liner
Intlk-1	863,859.80	2,031,599.00	4	1-inch Owner placed hole thru geomembrane/gcl
Intlk-2	864,799.70	2,030,626.40	6	1-inch Owner place hole geomembrane only
Intlk-3	863,698.50	2,030,796.50	1	1-inch Owner placed hole thru geomembrane/gcl

Technical Specifications (Section 02775) for Electrical Leak Location Surveying

SECTION 02775
ELECTRICAL LEAK LOCATION SURVEYING OF
SOIL-COVERED GEOMEMBRANE LINER
SHERCO SCRUBBER SOLIDS POND 3N

GENERAL

1.01 SECTION INCLUDES

A. Performing leak detection sensitivity testing using “actual leaks” (see 3.02A of this Specification) placed by the leak-testing Contractor under observation of the Company.

B. Performing phased leak location surveying to detect Company placed holes, and installation/construction related holes for the entire project.

C. Reporting results of leak location surveying.

1.02 BASIS FOR COMPENSATION

A. Compensation for all Work covered under this Section of these Specifications will be included under the lump sum Contract Price bid.

1.03 REFERENCES

A. American Society for Testing and Materials, current edition, hereafter referred to as ASTM.

B. ASTM D7007: Standard Practice for Electrical Methods for Locating Leaks in Geomembranes Covered with Water or Earth Materials (most current edition).

1.04 DEFINITIONS

A. Definitions:
1. Submit for Documentation
   a. Submittal is for the purpose of formal verification that the subject of the submittal conforms to the requirements of the Specifications, for formal documentation of the Work, or both.
   b. No action is required by Company. Company will notify Contractor if deficiencies are identified, however, the Contractor is responsible for ensuring that the subject of the submittal conforms to the requirement of the Specifications.
2. Submit for Review
   a. Submittal is for the purpose of providing opportunity to Company for review and comment on the subject of the submittal.
   b. Company will respond to the submittal either with a list of comments or an indication that it has no comments.
   c. If Company’s comments indicate a deficiency with respect to the requirement of the Specifications, Contractor shall amend the submittal and resubmit. Company will again respond to the re-submittal.
   d. If Company’s comments are in regards to an issue that, based upon the Contract, is at Contractor’s discretion, Contractor shall furnish additional information, provide justification, and otherwise cooperate in addressing and resolving Company’s comments.

1.05 SUBMITTALS

A. Submit for documentation Contractor’s statement of warranty to perform the work to the best of their ability in accordance with the standard of professional practice.

B. Submit for documentation Contractor’s statement of factors that influence leak detection sensitivity and accuracy and which may be adjusted or corrected in the field to improve the accuracy and sensitivity of leak detection.

C. Submit for review Contractor's leak location surveying plan, including equipment, setup requirements, survey grid spacing, data management method, QA/QC plan, crew size, and other pertinent information.

D. Upon receipt of the Company's proposed leak-testing phase schedule, submit for review a detailed schedule for leak location surveying work, including setup, leak detection sensitivity testing, leak detection surveying, data analysis, and reporting.

E. Submit for review an example of Contractor's proposed format for reporting results of the leak location survey.

1.06 SEQUENCING AND SCHEDULING

A. The Company will provide the Contractor a plan for sequencing and scheduling of leak location surveying. The plan will remain subject to change for the duration of the project to accommodate weather, construction progress, and sequencing requirements.

B. Leak location surveying shall be performed in phases. The number and size of phases will be subject to change based upon weather, construction progress, and sequencing requirements.

1.07 JOB CONDITIONS

A. It shall be solely the Contractor's responsibility to review available tests and reports, conduct additional tests, and otherwise determine to its own satisfaction the location and nature of all surface and subsurface features and the soil and water conditions that may be encountered.

B. It shall be solely the Contractor's responsibility to review project construction plans and specifications, sequencing and scheduling plans, and other construction-related information, and determine to its own satisfaction Contractor's ability to perform the required work within the context of the overall construction project.

C. Company's information on site conditions may be reviewed at Company's offices as scheduled with Company.

1.08 WORK BY COMPANY

A. Company will prepare each phase for leak location surveying by placing cover soil over the geomembrane, isolating the cover soil from ground, and applying water and maintaining the moisture content of the cover soil.

B. The Contractor will place "actual leaks" (as defined in ASTM 7007, Annex A) in the liner within the surveying area under observation by the Company for use in performing leak detection sensitivity testing as described in Article 3.02 of this Specification. Company may direct Contractor in placement of holes as described in Article 3.02.

C. Company will place additional holes in the liner within the surveying area for the purposes described in Article 3.03 of this Specification.

D. Company will furnish 110-volt power source for use during leak testing.

E. Company will furnish laborers to install string lines for testing grid, and to remove cover soils from leaks.

F. Company will maintain moisture condition of cover soils prior to and during leak testing.

PRODUCTS

NOT APPLICABLE

EXECUTION

3.01 ACCEPTANCE OF SITE AND SURVEY CONDITIONS

A. Prior to performing sensitivity testing or leak location surveying, Contractor shall notify Company of site conditions or surveying conditions which are within Company's ability to control (such as electrical isolation of cover soil or moisture content of cover soil) and which would inhibit Contractor's ability to locate leaks. Such conditions shall be typical of those under which leak location surveying is generally performed.

B. If, after correction of site and surveying conditions by Company as described in Paragraph 3.01A, Contractor is unable to obtain successful results for sensitivity testing or locating Company-placed holes (as described in Articles 3.02 and 3.03, respectively), then Contractor shall discuss with Company additional modifications to the site and surveying conditions which may produce successful results. Company will make such additional modifications if they are within reason and is able to do so.

3.02 LEAK DETECTION SENSITIVITY TESTING

A. The Contractor shall perform leak detection sensitivity testing using "actual leaks" placed by Contractor under Company observation. These "actual leaks" shall be placed at locations within the test area that represent worst-case site conditions with respect to drainage layer and subgrade moisture content, electrical isolation of the drainage layer from ground, distance from the source electrode to the testing locations and drainage layer thickness. Multiple "actual leaks" shall be placed if required to assess worst-case conditions. Company may direct Contractor where to place "actual leaks" for sensitivity testing. Sensitivity testing shall be performed within the active test area in conformance with the requirements of ASTM D7007, Annex A4, except that no water shall be poured over a partially buried leak.

B. The leak detection distance shall be computed by Contractor to produce an "R" value (as defined by ASTM D7007, Annex A4) greater than 3.0. Contractor shall make adjustments to its surveying equipment and methods as necessary to meet this requirement.

C. Leak detection sensitivity testing shall be conducted, at a minimum, at the beginning and end of each testing period of leak surveying for each set of equipment. Additional sensitivity testing shall be performed if site conditions change during a testing period. If leak detection sensitivity testing reveals an "R" value of 3.0 or less, the area surveyed with that set of equipment in the period since the previous successful leak detection sensitivity test shall be resurveyed at Contractor's expense.

D. Inability by Contractor to successfully complete leak detection sensitivity testing shall be cause for cancellation of the contract for surveying services. Upon cancellation, Contractor will be judged to be in default of the Contract and no payments shall be owed to Contractor.

3.03 COMPANY-PLACED HOLES

A. Additional holes, other than those used for leak detection sensitivity testing, may be placed by Company in the surveying area in order to simulate damage which may occur as a result of placing cover soils over the geomembrane. Such holes will be a minimum size of 1 inch in diameter and the locations will be unmarked. Contractor shall be required to detect these holes as part of routine surveying. Failure to locate Company-placed holes will invalidate the surveying work performed by Contractor on that day. Company will reveal the hole locations to Contractor if Contractor is unable to locate them, and provide Contractor the opportunity to determine the cause of failure to locate the holes, make necessary adjustments to the surveying equipment and methods, and re-survey. Adjustments and resurveys shall be solely at Contractor's expense.

B. Inability by Contractor to detect Company-placed holes during daily survey work, after attempting remedy as described in Article 3.01 and Paragraph 3.03A shall be cause for cancellation of the contract for surveying services. Company will be liable only for the cost of mobilization and area successfully surveyed through the time of cancellation.

3.04 LEAK LOCATION SURVEYING

A. Contractor shall perform the leak location survey procedure in conformance with the surveying plan submitted above and in conformance with ASTM D7007 with the exception noted in Article 3.02.

B. Leak location surveying shall be performed with grid spacing, measurement electrode spacing (for dipole measurements), and distance from the current source electrode not greater than the respective spacing and distance determined from the sensitivity tests.

C. Contractor shall mark detected leak locations with lath, flagging, or similar marking, and shall notify Company for removal of cover soil from the area.

D. Resurveying shall be performed in the areas near leak locations to verify that repairs were adequate and that an additional leak is not present which may have been masked by the detected leak.

E. Periodic leak detection sensitivity testing and re-surveying, if necessary, shall be completed in conformance with ASTM D7007 and as described in Paragraph 3.02C.

3.05 REPORTING

A. Contractor shall field-report to Company summary results of surveying on a daily basis. Daily reports shall include:
   1. The results of beginning and end-of-day leak detection sensitivity tests
   2. A sketch of the area surveyed that day, showing grid lines and surveying limits
   3. A summary of leaks detected and repair/resurvey status

B. Interim written reports with supporting data shall be submitted to Company within one week of completion of leak location surveying within each phase area.

C. A final report shall be submitted within two weeks of completion of the final phase of surveying. The final report shall compile the information from the interim reports and shall contain a description of the leak location methods and procedures, the survey methodology, the liner components and configuration, and cover and subgrade soil types and conditions.

D. Interim and final reports shall contain the following items:
   1. A discussion of the results of leak location sensitivity tests and actions taken in response to the tests.
   2. A map of the phase area showing the limits of the leak location survey, the layout of the surveying grid, the location of the current source electrode, and other pertinent layout information.
   3. A complete description of all leaks found, including location, size, configuration, and photographs of each leak. The report shall clearly distinguish between Company-placed holes and installation/construction-related holes. Company will furnish a tabulation of Company-placed holes for Contractor’s use in preparing the report.
   4. A discussion of Contractor’s success or failure to consistently detect Company-placed holes.

E. The final report shall include as an appendix electronic data files containing plots of leak signals from sensitivity testing, Company-placed holes, and construction-related holes along with maps, grids, and other information necessary to locate each data set within the project limits.

END OF SECTION 02775