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Regulatory Compliance Report

Weston Units 3 & 4 Bottom Ash Basins Retrofit, Closure, and Post Closure Care Plan

Weston Generating Station
Rothschild, Wisconsin

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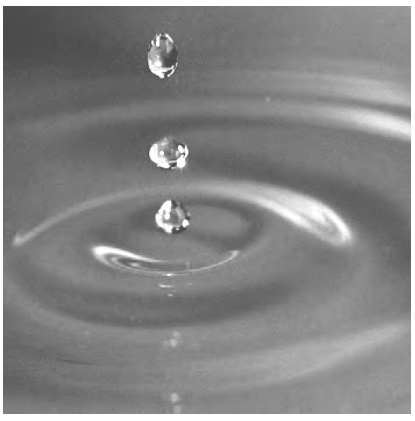

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Table of Contents

1. Introduction 1

2. Site Conditions 3
2.1 Primary Bottom Ash Basins 3
2.2 Secondary Bottom Ash Basins 3
2.3 Subsurface Soil Conditions 4
2.4 Groundwater Conditions 4

3. Regulatory Requirements for Retrofitting 5
3.1 State Regulations 5
3.2 Federal Regulations 6

4. Retrofit Plan 10
4.1 Retrofit Narrative 10
4.2 Planned Retrofit Schedule 12

5. Regulatory Requirements for Closure 13
5.1 State Regulations 13
5.2 Federal Regulations 13

6. Closure Plan 14
6.1 Closure Plan Narrative 14
6.2 Closure Plan Schedule 15

7. Post - Closure Care 16

8. Conclusion 17

Appendix

Appendix A - Weston Units 3 & 4 Bottom Ash Basins, Liner Retrofit, Wisconsin Public Service Corporation, Rothschild, Wisconsin, Drawings 1 to 14, marked preliminary, dated September 12, 2016.

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1. Introduction

The Wisconsin Public Service Corporation (WPSC) owns and operates the Weston Generating Station located at 2501 Morrison Avenue in Rothschild, Wisconsin. The facility is a base load, electrical power station having two coal-fired boilers, a natural gas-fired generating unit, and two peaking units used for the production of electricity. The two coal fired units, Units 3 & 4, have nameplate rated capacities of 325 and 595 MW and were commissioned in 1981 and 2008, respectively. WPSC burns sub-bituminous coal from the Powder River Basin as the primary fuel source in the boilers. As a result, coal combustion residuals (CCR), such as fly ash, bottom ash, and flue gas desulfurization (FGD) material, are generated.

In general, bottom ash from Unit 3 is collected from the boiler and sluiced to a series of redundant treatment basins (i.e., CCR management units). CCR are sluiced to one of two primary settling basins where the CCR quickly settles out and the sluice water flows to the secondary basin. In general, the primary basins are dry and the dewatered bottom ash is removed from the primary basins on a weekly basis using a front-end loader and transported via dump truck to the ash storage pad for future beneficial use. Water from the secondary bottom ash basins is treated for pH and suspended solids, as needed, and pumped to a Tertiary Basin where the water is either reused as carriage water for sluicing bottom ash in a closed-loop system, used as non-potable water for the power plant, or discharged to the Wisconsin River under WPDES Permit No. WI-0042756 through Outfall 002.

The secondary bottom ash basins are designed to provide a residence time for the CCR fines to settle out from the sluice water. To improve residence time and assist in settling the fines, silt curtains are used in the secondary bottom ash basins. In 2005, to increase the rail car capacity of the plant, the secondary bottom ash basins were bisected to facilitate the construction of a rail line. So rather than having north and south secondary bottom ash basins, Weston has Northeast, Northwest, Southeast, and Southwest secondary bottom ash basins. Equalizing underground conduits were installed beneath the rail lines to maintain the water levels of the Northeast and Northwest bottom ash basins and the Southeast and Southwest bottom ash basins. Based on the modifications to the secondary ash basins, Hard Hat Services (Hard Hat Services, 2015) completed an evaluation of the Northeast and Southeast secondary basins and determined that all bottom ash should settle out before ever reaching the west end of the Northeast and Southeast basins. Any CCR that could potentially accumulate in the Northwest or Southwest basins is considered de minimis.

On April 17, 2015, the U.S. Environmental Protection Agency published the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities* to regulate the disposal of coal combustion residuals (CCR) as solid waste under Subtitle D of the Resource Conservation and Recovery Act in the Federal Register. The rule creates a minimum standard for solid waste disposal facilities and solid waste management practices to limit adverse effects on health and/or the environment.

Based on the Rule, the Weston Units 3 & 4 bottom ash basins are regulated under 40 CFR Part 257 Subpart D as an existing unlined CCR surface impoundment. WPSC will be retrofitting the impoundments in accordance with § 257.102 (k) to meet the liner requirements. The bottom ash basins will continue to receive bottom ash until the Unit 3 boiler can be modified, at which time the sluicing of bottom ash will cease and the CCR impoundments will be cleaned and no longer used for the management of CCR. This report discusses the retrofit, closure, and long-term care plans for the Weston Units 3 & 4 bottom ash basins and includes the following sections:

Section 1 Introduction
Section 2 Site Conditions
Section 3 Regulatory Requirements for Retrofitting
Section 4 Retrofit Plan
Section 5 Regulatory Requirements for Closure
Section 6 Closure Plan
Section 7 Post-Closure Care Plan
Section 8 Conclusion

2. Site Conditions

2.1 Primary Bottom Ash Basins

The primary bottom ash basins are designed to separate coarse bottom ash from the sluice water. The basins are designed as two parallel basins where one basin could be taken off line for cleaning while the other remained in service. The basins were designed and constructed with 3 horizontal to 1 vertical (3H:1V) interior and exterior slopes and a minimum crest width of the exterior berms of 10 feet. An interior dike bisects the primary basins. The interior dike was constructed with 3H:1V slopes and a minimum crest width of 6 feet. The floor elevation of the impoundments vary from +1,187 feet at the east end of the basin to a low point at the west toe of +1,183 feet. The crest elevation of the primary basins was designed by Sargent & Lundy to be constructed at elevation +1,193.0 feet on the north, south, and west. There is no containment berm on the east, allowing a front-end loader to periodically remove dewatered bottom ash from the primary basin and transport the material to the ash storage pad. The interior of each basin is lined with a 1-foot-thick compacted sand-bentonite liner system, a 1-foot-thick soil protection layer, and 2 feet of gravel.

Ash sluicing is performed in batches, twice per day for 90 minutes at a flow rate of 1,800 gallons per minute. The ash is pumped to the primary basin and discharges onto the gravel surface. Coarse ash settles out immediately, the water and finer suspended particles flow by gravity to the secondary basin. The primary bottom ash basins are relatively small, approximately 1 acre in size and have an operating depth of 0 to 4 feet. Between sluicing events the primary bottom ash basins drain dry.

2.2 Secondary Bottom Ash Basins

The secondary bottom ash basins are designed to provide residence time for settling bottom ash fines from the sluice water. The basins were designed as two parallel basins where one basin could be taken off line for cleaning while the other remained in service. The basins were designed and constructed with 3 horizontal to 1 vertical (3H:1V) interior and exterior slopes and a minimum crest width of the exteriors berms of 10 feet. An interior dike bisects the secondary basins. The interior dike was constructed with 3H:1V slopes and a minimum crest width of 6 feet. The floor elevation of the impoundments vary from +1,174 feet at the east toe of slope to a low point at the west toe of +1,173 feet. The crest elevation of the secondary basins was designed by Sargent & Lundy to be constructed at elevation +1,182.5 feet. The interior of each basin is lined with a 1-foot-thick compacted sand-bentonite liner system, a 1-foot-thick soil protection layer, and 2 feet of gravel.

In 2005, as part of the Weston Unit 4 construction project, the secondary basins were bisected by a loop railroad line to serve the needs of the plant. Underground conduits installed below the rail lines equalize water elevation in each basin and connect the Northeast and Northwest Basins and

the Southeast and Southwest Basins, respectively. The design and construction of the rail line and secondary basin modifications were completed by Black & Veatch. Based on the modifications to the secondary ash basins, Hard Hat Services (Hard Hat Services, 2015) completed an evaluation of the Northeast and Southeast secondary basins and determined that bottom ash should settle out before ever reaching the west end of the Northeast and Southeast basins. Any CCR that could potentially accumulate in the Northwest or Southwest basins is considered de minimis. So once the four secondary impoundments are cleaned to remove and dispose of all CCR, contaminated soils, and sediments from the basins, and retrofitted with an alternative composite liner system, the Northeast and Southeast basins will be placed back into service as CCR surface impoundments and the Northwest and Southwest basins will be placed back into service to manage only clean water and are not CCR surface impoundments because the engineering modifications completed by Black & Veatch.

2.3 Subsurface Soil Conditions

Geotechnical Report – Wisconsin Public Service Corporation Weston North Unit 4, Rothschild, Wisconsin, January 14, 2004, prepared by Black & Veatch contains soil borings advanced near the secondary bottom ash basin. Black & Veatch advanced the soil borings using hollow-stem augers to the water level and then switched to rotary wash drilling below the water table. Soil samples were reportedly obtained using a split-barrel sampler while performing standard penetration tests (SPT). Soil borings BV-03, BV-04, BV-07, BV-08, and BV-09 were advanced near the secondary basins in support of the basin modifications and were used to define the subsurface soil conditions. In general these borings encountered fill near the surface, underlain by alluvial sand and gravels than can be described as medium dense natural sands with some gravel (SP-SW). Bedrock is a weathered granite and expected to be encountered approximately 85 feet below the ground surface.

2.4 Groundwater Conditions

The Wisconsin River is located west of the secondary bottom ash basins and flows north-south. Based on FEMA Map Number 55073C0631F dated July 22, 2010, the 100-year flood elevation of the Wisconsin River near the secondary ash basins is elevation +1,153.5 feet (NAVD88). The normal pool elevation is estimated to be +1,140.0 feet. Groundwater monitoring wells for the WPSC Weston Landfill #3 (OW-38, OW-43A, OW-43B) are adjacent to the secondary ash pond.

GEI obtained groundwater monitoring well data from the Wisconsin Department of Natural Resources' (WDNR) Groundwater and Environmental Monitoring System (GEMS) Database for the WPSC Weston Landfill #3. Groundwater monitoring wells adjacent to the secondary ash basins are OW-38, OW-43A, and OW-43B. Monitoring wells located north of the basins include OW-28AR, OW-28BR, OW-30A, OW-30B, OW-40A, and OW-40B. The maximum groundwater table elevation recorded, based on the quarterly groundwater monitoring data since 2002, is +1,147 feet in the natural sand soils underlying the impoundments. This results in a minimum groundwater separation from the bottom of liner (minimum elevation +1,169 feet) to groundwater surface of 22 feet.

3. Regulatory Requirements for Retrofitting

The Weston Units 3 & 4 bottom ash basins were constructed and placed into service in 1981 and operate in accordance with WPDES Permit No. WI-0042765. The impoundments are constructed and lined in accordance with the design requirements found in NR 213 - *Lining of Industrial Lagoons and Design of Storage Structures*; however, the existing liner is not in compliance with § 257.71 *Liner Design Criteria for Existing CCR Surface Impoundments*, making the impoundments "unlined" in accordance with the federal regulations. Therefore, the impoundments require retrofitting to be considered "lined." All design modifications, including re-lining the impoundments will require the written approval of the WDNR. The federal regulations are "self-implementing," and §257.102(k) outlines the retrofit design requirements, timeframe, and notification requirements for the impoundment modifications.

3.1 State Regulations

The Weston Units 3 & 4 bottom ash basins are regulated under NR 213 - *Lining of Industrial Lagoons and Design of Storage Structures*. NR 213 regulates the design of industrial lagoons to protect the public health and welfare by restoring, maintaining, and protecting waters of the state and all uses of ground and surface waters by establishing minimum design standards, material requirements, and performance criteria. The existing impoundments meet the general design requirements of NR 213.08. Modifying the base liner system to comply with § 257.72 will require an engineering report, plans, and specifications be submitted to the WDNR for approval prior to initiating construction.

Final abandonment of the impoundments is also regulated at the state level. The requirements for abandoning the impoundments are outlined in NR 213.07.

> **NR 213.07 Abandonment.** Lagoons, storage structures and treatment structures which will no longer be used, shall be properly abandoned within 2 years of the date on which waste material was last stored or treated. A plan outlining the proposed method of abandonment shall be submitted to the department for approval. This plan shall contain a procedure to properly identify the presence and characteristics of any accumulated solid waste and provide appropriate removal, disposal or recycling or treatment alternatives in accordance with applicable solid and hazardous waste laws. All recycling, treatment and disposal shall be conducted so as to protect public health and the environment. Unless otherwise directed by the department, all abandonment plans shall comply with ch. NR 720 for soils that have been contaminated by the contents of the lagoon, storage structure or treatment structure. The plan shall also address site restoration and any landscaping that will prevent accumulation of standing water or runoff. The department may require groundwater monitoring for a period of time after abandonment of the land treatment system to assess groundwater impacts. The design, installation, construction, abandonment and documentation of all monitoring wells shall be in accordance with the requirements of ch. NR 141.

The federal regulations are consistent with the state requirements for final closure of the bottom ash basins.

3.2 Federal Regulations

The Weston Units 3 & 4 bottom ash basins are regulated under 40 CFR Part 257 Subpart D – *Standards for Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments* as an existing CCR surface impoundment.

The rules define the following terms in §257.53 Definitions:

> *CCR unit* means any CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit, or a combination of more than one of these units, based on the context of the paragraph(s) in which it is used. This term includes both new and existing units, unless otherwise specified.
>
> *CCR surface impoundment* means a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids and the unit treats, stores, or disposes of CCR.
>
> *Existing CCR surface impoundment* means a CCR surface impoundment that receives CCR both before and after October 19, 2015, or for which construction commenced prior to October 19, 2015, and receives CCR on or after October 19, 2015. A CCR surface impoundment has commenced construction if the owner or operator has obtained the federal, state, and local approvals or permits necessary to begin physical construction and a continuous on-site, physical construction program had begun prior to October 19, 2015.

Based on the regulations the North and South Primary and Northeast and Southeast secondary basins meet the definition of "Existing CCR Surface Impoundments." The Northwest and Southwest secondary basins, however, are unique. Based on the design modifications made to the secondary basins to accommodate the loop rail track in 2005, bisecting the North and South Secondary Basins into the Northeast and Northwest basins and the Southeast and Southwest basins, respectively, and connecting the bisected basins with two, 24-inch-diameter SDR 11 high-density polyethylene pipes, WPSC was able to construct the loop rail line while maintaining the infrastructure used to manage and treat the ash sluicing water. The end result is two ponds that function as designed (Northeast and Southeast basins) and two ponds that receive water and a de minimus amount of ash, with ash settlement occurring prior to reaching the Northwest and Southwest basins (Hard Hat Services, 2015).

The impoundments are lined with 12 inches of sand-bentonite liner material with a maximum hydraulic conductivity of 1E-07 centimeters per second (cm/s), 12 inches of compacted native soil, and 24 inches of compacted gravel. Based on the liner system design and construction documentation, the basins do not meet the requirements of § 257.71 – *Liner design criteria for existing CCR surface impoundments* and are considered as existing unlined CCR surface impoundments and subject to the requirements of § 257.101(a).

§ 257.101 Closure or retrofit of CCR units.

(a) The owner or operator of an existing unlined CCR surface impoundment, as determined under § 257.71(a), is subject to the requirements of paragraph (a)(1) of this section.

(1) Except as provided by paragraph (a)(3) of this section, if at any time after October 19, 2015 an owner or operator of an existing unlined CCR surface impoundment determines in any sampling event that the concentrations of one or more constituents listed in appendix IV to this part are detected at statistically significant levels above the groundwater protection standard established under § 257.95(h) for such CCR unit, within six months of making such determination, the owner or operator of the existing unlined CCR surface impoundment must cease placing CCR and non-CCR wastestreams into such CCR surface impoundment and either retrofit or close the CCR unit in accordance with the requirements of § 257.102.

(2) An owner or operator of an existing unlined CCR surface impoundment that closes in accordance with paragraph (a)(1) of this section must include a statement in the notification required under § 257.102(g) or (k)(5) that the CCR surface impoundment is closing or retrofitting under the requirements of paragraph (a)(1) of this section.
(3) The timeframe specified in paragraph (a)(1) of this section does not apply if the owner or operator complies with the alternative closure procedures specified in § 257.103.
(4) At any time after the initiation of closure under paragraph (a)(1) of this section, the owner or operator may cease closure activities and initiate a retrofit of the CCR unit in accordance with the requirements of § 257.102(k).

The criteria for conducting the retrofit are outlined in § 257.102(k).

§ 257.102 Criteria for conducting the closure or retrofit of CCR units.

(k) *Criteria to retrofit an existing CCR surface impoundment.*

(1) To retrofit an existing CCR surface impoundment, the owner or operator must:

(i) First remove all CCR, including any contaminated soils and sediments from the CCR unit; and

(ii) Comply with the requirements in § 257.72.

(iii) A CCR surface impoundment undergoing a retrofit remains subject to all other requirements of this subpart, including the requirement to conduct any necessary corrective action.

(2) *Written retrofit plan—*

(i) *Content of the plan.* The owner or operator must prepare a written retrofit plan that describes the steps necessary to retrofit the CCR unit consistent with recognized and generally accepted good engineering practices. The written retrofit plan must include, at a minimum, all of the following information:

(A) A narrative description of the specific measures that will be taken to retrofit the CCR unit in accordance with this section.

(B) A description of the procedures to remove all CCR and contaminated soils and sediments from the CCR unit.

(C) An estimate of the maximum amount of CCR that will be removed as part of the retrofit operation.

(D) An estimate of the largest area of the CCR unit that will be affected by the retrofit operation.

(E) A schedule for completing all activities necessary to satisfy the retrofit criteria in this section, including an estimate of the year in which retrofit activities of the CCR unit will be completed.

(ii) *Timeframes for preparing the initial written retrofit plan.*

(A) No later than 60 days prior to date of initiating retrofit activities, the owner or operator must prepare an initial written retrofit plan consistent with the requirements specified in paragraph (k)(2) of this section. For purposes of this subpart, initiation of retrofit activities has commenced if the owner or operator has ceased placing waste in the unit and completes any of the following actions or activities:

(*1*) Taken any steps necessary to implement the written retrofit plan;

(*2*) Submitted a completed application for any required state or agency permit or permit modification; or

(*3*) Taken any steps necessary to comply with any state or other agency standards that are a prerequisite, or are otherwise applicable, to initiating or completing the retrofit of a CCR unit.

(B) The owner or operator has completed the written retrofit plan when the plan, including the certification required by paragraph (k)(2)(iv) of this section, has been placed in the facility's operating record as required by § 257.105(j)(1).

(iii) *Amendment of a written retrofit plan.*

(A) The owner or operator may amend the initial or any subsequent written retrofit plan at any time.

(B) The owner or operator must amend the written retrofit plan whenever:

(*1*) There is a change in the operation of the CCR unit that would substantially affect the written retrofit plan in effect; or

(*2*) Before or after retrofit activities have commenced, unanticipated events necessitate a revision of the written retrofit plan.

(C) The owner or operator must amend the retrofit plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the revision of an existing written retrofit plan. If a written retrofit plan is revised after retrofit activities have commenced for a CCR unit, the owner or operator must amend the current retrofit plan no later than 30 days following the triggering event.

(iv) The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the activities outlined in the written retrofit plan, including any amendment of the plan, meet the requirements of this section.

(3) *Deadline for completion of activities related to the retrofit of a CCR unit.* Any CCR surface impoundment that is being retrofitted must complete all retrofit activities within the same time frames and procedures specified for the closure of a CCR surface impoundment in § 257.102(f) or, where applicable, § 257.103.

(4) Upon completion, the owner or operator must obtain a certification from a qualified professional engineer verifying that the retrofit activities have been completed in accordance with the retrofit plan specified in paragraph (k)(2) of this section and the requirements of this section.
(5) No later than the date the owner or operator initiates the retrofit of a CCR unit, the owner or operator must prepare a notification of intent to retrofit a CCR unit. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by § 257.105(j)(5).
(6) Within 30 days of completing the retrofit activities specified in paragraph (k)(1) of this section, the owner or operator must prepare a notification of completion of retrofit activities. The notification must include the certification by a qualified professional engineer as required by paragraph (k)(4) of this section. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by § 257.105(j)(6).
(7) At any time after the initiation of a CCR unit retrofit, the owner or operator may cease the retrofit and initiate closure of the CCR unit in accordance with the requirements of § 257.102.
(8) The owner or operator of the CCR unit must comply with the retrofit recordkeeping requirements specified in § 257.105(j), the retrofit notification requirements specified in § 257.106(j), and the retrofit Internet requirements specified in § 257.107(j).

The liner requirements for the retrofitted surface impoundment are outlined in § 257.72.

§ 257.72 Liner design criteria for new CCR surface impoundments and any lateral expansion of a CCR surface impoundment.
(a) New CCR surface impoundments and lateral expansions of existing and new CCR surface impoundments must be designed, constructed, operated, and maintained with either a composite liner or an alternative composite liner that meets the requirements of § 257.70(b) or (c).
(b) Any liner specified in this section must be installed to cover all surrounding earth likely to be in contact with CCR. Dikes shall not be constructed on top of the composite liner.
(c) Prior to construction of the CCR surface impoundment or any lateral expansion of a CCR surface impoundment, the owner or operator must obtain certification from a qualified professional engineer that the design of the composite liner or, if applicable, the design of an alternative composite liner complies with the requirements of this section.
(d) Upon completion, the owner or operator must obtain certification from a qualified professional engineer that the composite liner or if applicable, the alternative composite liner has been constructed in accordance with the requirements of this section.
(e) The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in § 257.105(f), the notification requirements specified in § 257.106(f), and the Internet requirements specified in § 257.107(f).

The specifics on the liner are outlined in § 257.70 (b) and (c).

§ 257.70 Design criteria for new CCR landfills and any lateral expansion of a CCR landfill.
(b) A *composite liner* must consist of two components; the upper component consisting of, at a minimum, a 30-mil geomembrane liner (GM), and the lower component consisting of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1E-07 centimeters per second (cm/sec). GM components consisting of high-density polyethylene (HDPE) must be at least 60-mil thick. The GM or upper liner component must be installed in direct and uniform contact with the compacted soil or lower liner component. The composite liner must be:
(1) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the CCR or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;
(2) Constructed of materials that provide appropriate shear resistance of the upper and lower component interface to prevent sliding of the upper component including on slopes;
(3) Placed upon a foundation or base capable of providing support to the liner and resistance to pressure gradients above and below the liner to prevent failure of the liner due to settlement, compression, or uplift; and
(4) Installed to cover all surrounding earth likely to be in contact with the CCR or leachate.
(c) If the owner or operator elects to install an alternative composite liner, all of the following requirements must be met:
(1) An *alternative composite liner* must consist of two components; the upper component consisting of, at a minimum, a 30-mil GM, and a lower component, that is not a geomembrane, with a liquid flow rate no greater than the liquid flow rate of two feet of compacted soil with a hydraulic conductivity of no more than 1E-07 cm/sec. GM components consisting of high density polyethylene (HDPE) must be at least 60-mil thick. If the lower component of the alternative liner is compacted soil, the GM must be installed in direct and uniform contact with the compacted soil.
(2) The owner or operator must obtain certification from a qualified professional engineer that the liquid flow rate through the lower component of the alternative composite liner is no greater than the liquid flow rate through two feet of compacted soil with a hydraulic conductivity of 1E-07 cm/ sec. The hydraulic conductivity for the two feet of compacted soil used in the

comparison shall be no greater than 1e-07 cm/sec. The hydraulic conductivity of any alternative to the two feet of compacted soil must be determined using recognized and generally accepted methods. The liquid flow rate comparison must be made using Equation 1 of this section, which is derived from Darcy's Law for gravity flow through porous media.

Equation 1:

$$\frac{Q}{A} = q = k\left(\frac{h}{t} + 1\right)$$

Where:

Q = flow rate (cubic centimeters/second);
A = surface area of the liner (squared centimeters);
q = flow rate per unit area (cubic centimeters/second/squared centimeter);
k = hydraulic conductivity of the liner (centimeters/second);
h = hydraulic head above the liner (centimeters); and
t = thickness of the liner (centimeters).

(3) The alternative composite liner must meet the requirements specified in paragraphs (b)(1) through (4) of this section.

4. Retrofit Plan

WSPC plans to retrofit the Weston Units 3 & 4 bottom ash basins with an alternative composite liner system in compliance with § 257.70 (c). Retrofitting the basins requires removal of all CCR, contaminated soils, and sediments from the impoundments; decontaminating all areas affected by releases from the CCR unit; preparation of the subgrade soils; installation of an alternative composite liner system, and reinstallation of the protective soil layers in the North and South Primary Basins; installation of ballast and the silt screens in the Northeast and Southeast Secondary Basins; and installation of ballast in the Northwest and Southwest Secondary Basins. In accordance with § 257.102 (k) this written Retrofit Plan consists of the following: a narrative describing the measure that will be taken to retrofit the CCR units, description of the cleaning procedures, an estimate of the maximum amount of CCR that will be removed as part of the retrofit operation, an estimate of the largest area of the CCR unit that will be affected, a schedule for completing the retrofit, and preliminary construction drawings titled: Weston Units 3 & 4 Bottom Ash Basins, Liner Retrofit, Wisconsin Public Service Corporation, Rothschild, Wisconsin, Drawings 1 to 14 located in the Appendix.

4.1 Retrofit Narrative

The Weston Unit 3 & 4 bottom ash basins consist of a duplicate series of dewatering and settlement basins. The south basins will be taken out of service, dewatered, excavated to remove all CCR and CCR impacted materials including the gravel operation layer and soil protective layers. These materials will be dewatered, processed, and either beneficially used or properly disposed. Once the basins have been dewatered and cleaned, an alternative composite liner system will be installed, and the retrofitted basins will be placed back into service. The north basins will then be taken out of service, cleaned, retrofitted similar to the south basins, and placed back into service.

The state and federal requirements for closing the basins are similar and consistent. The federal rules require the removal and proper disposal of all CCR, contaminated soils, and sediments from the basins. If the basins are permanently closed, the base liner system needs to be removed, the area graded to prevent the ponding of water, and restored. The state requires the owner to properly identify the presence and characteristics of any accumulated solid waste and provide appropriate removal, disposal, recycling, or treatment alternatives in accordance with applicable solid and hazardous waste laws.

Preparation of the basins for retrofitting requires that all CCR, contaminated soils, and sediments above the base liner system be removed and appropriately disposed, recycled, or treated to allow beneficial use. The 2-foot-thick gravel layer and the 1-foot-thick soil layer above the sand-

bentonite liner will be excavated, stockpiled on the adjacent ash storage pad to dewater, and staged for further processing for beneficial use or transported off site for disposal. The excavated gravel will be washed on the storage pad to remove all CCR and soil particles less than the 1/4-inch and reused in the retrofitted primary basins or beneficially used for road construction within the Weston Disposal Site No. 3 (WDS3) Landfill. The dewatered soil will also be beneficially used in the retrofitting of the primary basins or used at the WDS3 Landfill as temporary cover or soil barrier layer material.

In the North and South Primary Basins, an alternative composite liner system will be installed immediately above the existing sand-bentonite liner. The alternative composite liner system will consist of a geosynthetic clay liner (GCL), 60-mil high-density polyethylene (HDPE) geomembrane liner, and 16 ounce/square yard needle-punched non-woven cushion geotextile. Above the geosynthetics, the 1-foot soil protective layer and the 2-foot gravel operating layer will be re-installed. The primary basins will continue to operate as originally designed until the Unit 3 Boiler modifications are complete, at which time the Primary Basins will be permanently closed.

In the Northeast, Southeast, Northwest, and Southwest Secondary Basins, an alternative composite liner system consisting of 3 feet of compacted general fill soil, a GCL, and 60-mil HDPE geomembrane installed in an exposed liner application. Fabric formed concrete will be installed on the access ramps, toe of slope, and silt screen locations to ballast and protect the exposed geomembrane.

Preliminary drawings for Units 3 & 4 Bottom Ash Basins Liner Retrofit project are included in the Appendix.

Based on the existing conditions and the as-built data for the basins, WPSC anticipates excavating approximately 12,000 cubic yards of CCR, gravel, and soil from the primary bottom ash basins and approximately 66,000 cubic yards of CCR, gravel, and soil from the secondary bottom ash basins. The material will be stockpiled and processed on the adjacent ash storage pad for beneficial use or disposal. Upon completion of the retrofitting operation, the entirety of the CCR impoundments at the Weston Generating Station will have been retrofitted with an alternative composite liner system meeting the requirements of § 257.70 (c). Once placed back into service, the North and South Primary Bottom Ash Basins and the Northeast and Southeast Secondary Bottom Ash Basins will continue to manage CCR until the Unit 3 Boiler is modified. Once the boiler modifications are completed all ash sluicing will cease, the Primary Bottom Ash Basins will be permanently closed, and the Secondary Bottom Ash Basins liners will be cleaned to remove all CCR. After cleaning, the basins will be used to manage industrial wastewater from other plant wastewater sources.

4.2 Planned Retrofit Schedule

WPSC is proceeding with the engineering design and permitting necessary to obtain the required permit approvals from the WDNR to retrofit the Weston Units 3 & 4 Bottom Ash Basins. WPSC anticipates having to obtain approval for a Modification to their Industrial Wastewater Storage Basins; a Construction Site Storm Water Permit, and possibly a Construction Site Air Permit Revision, in order to complete the retrofits. The anticipated design, permitting, and construction schedule is as follows:

Item	Scheduled Start
Engineering design to retrofit the ash basins	3rd Quarter 2016
Permit review and conditional approval by WDNR	3rd - 4th Quarter 2016
Bid work to general contractors	4th Quarter 2016
Issue Notice to Proceed to general contractor	1st Quarter 2017
Begin CCR removal and retrofits on South Basins	2nd Quarter 2017
Complete work on South Basins and begin retrofit on North Basins	2nd - 3rd Quarter 2017
Complete work on North Basin	3rd Quarter 2017
Complete construction documentation report and submittal to WDNR	3rd - 4th Quarter 2017

5. Regulatory Requirements for Closure

The final closure of the Weston Units 3 & 4 bottom ash basins are regulated in accordance with NR 213 *Lining of Industrial Lagoons and Design of Storage Structures*. The requirements are outlined in NR 213.07 – *Abandonment*. The federal regulations for closure are in §257.102 – *Criteria for Conducting the Closure or Retrofit of CCR Units*, including the closure requirements, timeframe, and notification requirements for the basins final closure.

5.1 State Regulations

Final abandonment requirements:

> **NR 213.07 Abandonment.** Lagoons, storage structures and treatment structures which will no longer be used, shall be properly abandoned within 2 years of the date on which waste material was last stored or treated. A plan outlining the proposed method of abandonment shall be submitted to the department for approval. This plan shall contain a procedure to properly identify the presence and characteristics of any accumulated solid waste and provide appropriate removal, disposal or recycling or treatment alternatives in accordance with applicable solid and hazardous waste laws. All recycling, treatment and disposal shall be conducted so as to protect public health and the environment. Unless otherwise directed by the department, all abandonment plans shall comply with ch. NR 720 for soils that have been contaminated by the contents of the lagoon, storage structure or treatment structure. The plan shall also address site restoration and any landscaping that will prevent accumulation of standing water or runoff. The department may require groundwater monitoring for a period of time after abandonment of the land treatment system to assess groundwater impacts. The design, installation, construction, abandonment and documentation of all monitoring wells shall be in accordance with the requirements of ch. NR 141.

The federal regulations are consistent with the state requirements for final closure of the bottom ash basins.

5.2 Federal Regulations

Final closure of the Weston Units 3 & 4 bottom ash basins will be by removing all CCR and decontaminating all areas affected by released from the CCR unit. The closure requirements are outlined in § 257.102 (c).

> **§ 257.102 Criteria for conducting the closure or retrofit of CCR units.**
> (c) *Closure by removal of CCR.* An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standard established pursuant to § 257.95(h) for constituents listed in appendix IV to this part.

6. Closure Plan

WPSC is planning to modify the Weston Unit 3 boiler in order to comply with the Effluent Limitation Guidelines and cease sluicing bottom ash. Once the boiler modifications are complete, the primary ash basins will be permanently abandoned in accordance with WDNR rules and closure by removal in accordance with the federal rules. The Northeast and Southeast secondary ash basins will be dewatered, cleaned, and decontaminated to remove all CCR, contaminated soils, and sediments. The secondary basins will then be placed back into service to treat non-CCR industrial wastewater. In accordance with § 257.102 (b) this written Closure Plan consists of the following: a narrative describing the procedures to remove the CCR and decontaminate the CCR unit and a schedule for all activities necessary to satisfy the closure criteria, including an estimate of the year in which all closure activities for the CCR unit will be completed.

6.1 Closure Plan Narrative

Upon ceasing of the bottom ash sluicing operation, the Primary Basins will be excavated to remove all CCR and CCR-impacted materials including the gravel operation and soil protective layers, the alternative composite liner system, and sand-bentonite liner. The soils and liner materials will be dewatered, processed, and either beneficially used or properly disposed. Once the Primary Basins have been excavated and cleaned, a WDNR approved sampling program will be implemented to assess subsurface impacts from the operation of the primary basins. The excavation will be backfilled with clean, off-site soil and graded to prevent the ponding of water.

The Secondary Basins (Northeast and Southeast) will be dewatered and cleaned to remove all CCR, contaminated soils, and sediments. The geomembrane liner will be washed to remove all residual ash and the secondary basins will be placed back into service for the management and treatment of non-CCR wastewater.

When the secondary basins are no longer used to manage industrial wastewater from other plant wastewater sources, the basins will be permanently abandoned in accordance with NR 213.07. The entire base liner system will be removed, including the geomembrane, GCL, general fill soil, and the sand-bentonite liner. The soils and liner materials will be dewatered, processed, and either beneficially used or properly disposed. WPSC will implement a WDNR approved sampling and analysis program to assess subsurface impacts from the operation of the secondary ash basins. The excavation will be backfilled with clean, off-site soil, graded to prevent the ponding of water, and restored.

In accordance with § 257.102 (b)(iv) WPS is required to estimate the maximum inventory of CCR ever on-site over the active life of the CCR Unit. Based on the design and operation of the

impoundments, a conservative estimate of the maximum inventory at any one time would be the volume of the Northeast Secondary Ash Basin at it normal operating elevation, which would be 18,200 cubic yards of CCR.

6.2 Closure Plan Schedule

WPSC is proceeding with the permitting, engineering design, and procurement of equipment to modify the Unit 3 Boiler. The construction schedule is tentatively planned for modifying the bottom ash handling system in 2020. WPSC will begin the engineering design, planning, and permitting for the abandonment of the Primary Basins and cleaning of the Secondary Basins in 2019. WPSC anticipates having to obtain a Modification to the Industrial Wastewater Permit; a Construction Site Storm Water Permit, and possibly a Construction Site Air Permit Revision, in order to complete the abandonment of the Primary Basins and cleaning of the Secondary Ash Basins. The anticipated design, permitting, and construction schedule is as follows:

Item	Scheduled Start
Engineering design to abandon Primary Basins and clean Secondary Ash Basins	2nd - 3rd Quarter 2019
Permit review and conditional approval by WDNR	3rd - 4th Quarter 2019
Bid work to general contractors	1st Quarter 2020
Completion of Unit 3 modifications and permanent cessation of ash sluicing operation	2nd Quarter 2020
Issue Notice to Proceed to general contractor	2nd Quarter 2020
Complete secondary ash basins liner cleaning	3rd Quarter 2020
Complete primary basins abandonments and site restoration	3rd - 4th Quarter 2020
Complete construction documentation report and submittal to WDNR	4th Quarter 2020

7. Post - Closure Care

The WPSC Weston Units 3 & 4 bottom ash basins will be permanently closed in accordance with§ 257.102(c) Closure by Removal of CCR, by removing all CCR, contaminated soils, and sediments and "clean" closing of the basins. The post-closure care requirements applicable to the bottom ash basins are located in § 257.104(2):

§ 257.104 Post-closure care requirements.

(a) *Applicability.*

(2) An owner or operator of a CCR unit that elects to close a CCR unit by removing CCR as provided by § 257.102(c) is not subject to the post-closure care criteria under this section.

In accordance with § 257.104 (2), WPSC is not subject to the post-closure care requirements of the federal rules.

8. Conclusion

The Weston Units 3 & 4 bottom ash basins were designed, permitted, and constructed in accordance with chapter NR 213 *Lining of Industrial Lagoons and Design of Storage Structures* of the Wisconsin Administrative Code. NR 213 regulates the design of industrial lagoons to protect the public health and welfare by restoring, maintaining, and protecting waters of the state and all uses of ground and surface waters by establishing minimum design standards, material requirements, and performance criteria. The US EPA in publishing 40 CFR Part 257 Subpart D - *Disposal of Coal Combustion Residuals from Electric Utilities*; creates a minimum standard for solid waste disposal facilities and solid waste management practices to limit adverse effects on health and/or the environment. For the most part the state and federal rules are consistent; however, the federal rules require a more robust liner system. WPSC will be retrofitting the base liner system of the Weston Unit 3 & 4 bottom ash ponds to comply with the federal rules, and modifying the Unit 3 bottom ash handling system to eliminate ash sluicing in its entirety.

This Retrofit Plan complies with the requirements of § 257.102 (k) to upgrade the base liner system of the Weston Units 3 & 4 bottom ash basins. The Closure Plan complies with the requirements of § 257.102 (b) for the permanent closure of the primary bottom ash basins and cleaning of the secondary bottom ash basins, once sluicing operations cease. Post-closure care as outlined in § 257.104(2), is not required for the Weston Units 3 & 4 bottom ash basins, because the basins will be closed by the removal and proper disposal of all CCR, contaminated soil, and sediments.

The Retrofit, Closure, and Post-Closure Care Plans were completed under the direction of John M. Trast, P.E. I am a licensed professional engineer in the State of Wisconsin in accordance with the requirements of ch. A-E 4, Wisconsin Administrative Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wisconsin Administrative Code; and that, to the best of my knowledge, all information contained in this document is correct and the document was prepared in compliance with all applicable requirements in 40 CFR Part 257 Subpart D.

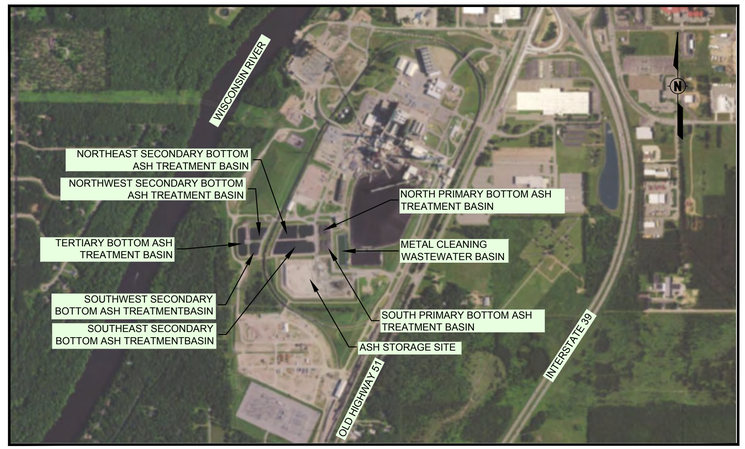
Appendix A

Weston Units 3 & 4 Bottom Ash Basins, Liner Retrofit, Wisconsin Public Service Corporation, Rothschild, Wisconsin, Drawings 1 to 14, marked preliminary, dated September 12, 2016.

WESTON UNITS 3 & 4 BOTTOM ASH BASINS
LINER RETROFIT
WISCONSIN PUBLIC SERVICE CORPORATION
ROTHSCHILD, WISCONSIN
GEI PROJECT NO.: 1609370

Drawing Index

	UNITS 3 & 4 BOTTOM ASH BASINS	
	SHEET	TITLE
	C-1	TITLE SHEET
	C-2	SITE LOCATION
	C-3	EXISTING SITE CONDITIONS
	C-4	SARGENT & LUNDY AND BLACK & VEATCH AS-BUILT GRADES
SOUTH PONDS	C-5	AS-BUILT TOP OF SAND-BENTONITE LAYER - SOUTH PONDS
SOUTH PONDS	C-6	BASE GRADES (LINER GRADES) - SOUTH PONDS
SOUTH PONDS	C-7	PRIMARY BASIN SOIL COVER AND STONE LAYER, SECONDARY BASIN TOP OF FORMED CONCRETE MAT - SOUTH PONDS
NORTH PONDS	C-8	AS-BUILT TOP OF SAND-BENTONITE LAYER - NORTH PONDS
NORTH PONDS	C-9	BASE GRADES (LINER GRADES) - NORTH PONDS
NORTH PONDS	C-10	PRIMARY BASIN SOIL COVER AND STONE LAYER, SECONDARY BASIN TOP OF FORMED CONCRETE MAT - NORTH PONDS
	C-11	CROSS-SECTIONS A-A' & B-B'
	C-12	CROSS-SECTIONS C-C' & D-D'
	C-13	DETAILS
	C-14	DETAILS



Site Map
NOT TO SCALE

PREPARED FOR:

WISCONSIN PUBLIC SERVICE CORPORATION

PREPARED BY:

GEI Consultants
3159 Voyager Drive
Green Bay, Wisconsin 54311
920-455-8200
WWW.GEICONSULTANTS.COM

PRELIMINARY

NO.	DATE	ISSUE/REVISION	APP
1	9/12/2016	FOR CLIENT REVIEW	JXT

DWG. NO. C-1

SHEET NO. 1 of 14

J:\Landfills\WE - Weston CCR Ponds\Liner Retro\dwg\C1_TITLE

SCALE IN FEET

60' 0 60'

LEGEND

- ROAD, NON PAVED
- ROAD, PAVED
- FENCE
- RAILROAD TRACKS
- CULVERT
- STRUCTURE
- POWER POLE
- LIGHT POLE
- MH MANHOLE
- CP 1008 SURVEY CONTROL MONUMENT
- CB CATCH BASIN ROUND (CB)
- MW MONITORING WELL (MW)
- UNDERGROUND PIPE (APPROXIMATE)

NOTES:

1. THE BASE MAP WAS DEVELOPED FROM "GRADING, ROADWORK, & DRAINAGE", WESTON GENERATING STATION, UNIT 3, WISCONSIN PUBLIC SERVICE CORPORATION, BY SARGENT & LUNDY ENGINEERS IN 1980 AND "GRADING & DRAINAGE-SITE", WISCONSIN PUBLIC SERVICE CORPORATION, WESTON GENERATING STATION NO. 4, BY BLACK & VEATCH IN 2008. CONTOURS GENERATED FROM ASSUMED 2012 COUNTY WIDE LIDAR SURVEY BY MARATHON COUNTY CONSERVATION, PLANNING AND ZONING DEPARTMENT.
2. UTILIZED CONTROL SURVEY COMPLETED BY REI IN MAY OF 2014 AT THE WESTON POWER PLANT. REI SURVEYED 23 SITE CONTROL POINTS AND PROVIDED RESPECTIVE COORDINATES IN MARATHON COUNTY COORDINATE SYSTEM. A SITE SPECIFIC PROJECTION FILE WAS CREATED FOR WESTON PLANT COORDINATES AND PROJECTED TO NAD 1983 STATE PLANE WISCONSIN CENTRAL ZONE FIPS 4802 FEET.
3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).

CONTROL POINT DATA

CONTROL POINT NUMBER	COUNTY COORDINATES NORTHING	COUNTY COORDINATES EASTING	PLANT COORDINATES NORTHING	PLANT COORDINATES EASTING	PROJECTION COORDINATES proy	PROJECTION COORDINATES prox	WI STATE PLANE CENTRAL NORTHING	WI STATE PLANE CENTRAL EASTING	ELEVATION (FEET)	DESCRIPTION
5000	165,841.25	276,097.89	10,000.00	10,000.00	9,999.95	10,000.00	374,603.72	2,059,231.94	1,184.85	CP 1000, CONC. MONU. W/ ALUM. CAP
5002	165,524.93	275,948.13	9,650.03	10,000.00	9,650.00	10,000.01	374,287.02	2,059,083.11	1,177.35	CP 1002, CONC. MONU. W/ ALUM. CAP
5003	165,280.96	275,832.62	9,380.09	10,000.00	9,380.08	10,000.00	374,042.75	2,058,968.30	1,182.49	CP 1003, CONC. MONU. W/ ALUM. CAP
5005	165,043.32	275,720.08	9,117.15	9,999.97	9,117.15	9,999.97	373,804.82	2,058,856.44	1,179.27	CP 1005, CONC. MONU. W/ ALUM. CAP
5006	164,903.20	275,653.77	8,962.13	10,000.00	8,962.14	10,000.00	373,664.52	2,058,790.54	1,178.82	CP 1006, CONC. MONU. W/ ALUM. CAP
5007	164,604.97	275,512.57	8,632.16	9,999.99	8,632.19	9,999.99	373,365.93	2,058,650.19	1,178.46	CP 1007, CONC. MONU. W/ ALUM. CAP
5008	163,907.05	275,182.15	7,859.98	10,000.00	7,860.05	10,000.00	372,667.16	2,058,321.79	1,176.18	CP 1008, CONC. MONU. W/ ALUM. CAP
5009	166,012.44	275,736.35	10,000.02	9,599.98	9,999.97	9,600.00	374,773.87	2,058,869.96	1,166.67	CP 1009, CONC. MONU. W/ ALUM. CAP
5010	165,211.78	277,427.49	10,000.03	11,471.08	9,999.97	11,471.01	373,978.09	2,060,563.17	1,175.83	CP 1010, CONC. MONU. W/ ALUM. CAP
5014	164,651.44	277,162.21	9,380.07	11,471.09	9,380.05	11,471.01	373,417.07	2,060,299.51	1,174.23	CP 1014, CONC. MONU. W/ ALUM. CAP
5015	164,796.03	277,230.67	9,540.04	11,471.09	9,540.02	11,471.01	373,561.84	2,060,367.55	1,174.80	CP 1015, CONC. MONU. W/ ALUM. CAP
5016	164,895.43	277,277.73	9,650.01	11,471.09	9,649.98	11,471.01	373,661.35	2,060,414.32	1,174.44	CP 1016, CONC. MONU. W/ ALUM. CAP
5017	164,427.24	277,056.04	9,131.99	11,471.06	9,131.98	11,470.99	373,192.59	2,060,193.98	1,173.54	CP 1017, CONC. MONU. W/ ALUM. CAP
5018	164,654.86	276,282.55	9,006.74	10,674.57	9,006.75	10,674.53	373,418.00	2,059,419.95	1,178.10	CP 1018, DRILL HOLE IN S. SIDE OF MH RIM
5019	164,687.28	275,688.12	8,781.68	10,123.44	8,781.70	10,123.43	373,448.73	2,058,825.49	1,180.77	CP 1019, N.E. REBAR IN CONC. VAULT
5020	164,828.15	275,386.45	8,779.92	9,790.50	8,779.93	9,790.51	373,588.74	2,058,523.46	1,182.97	CP 1020, DRILL HOLE IN STRUCTURE BOLT (E. SIDE)
5022	164,925.77	275,722.24	9,011.83	10,052.22	9,011.84	10,052.22	373,687.29	2,058,858.93	1,180.65	CP 1022, S.E. REBAR IN CONC. VAULT
5023	164,541.86	276,031.62	8,797.23	10,496.13	8,797.25	10,496.10	373,304.30	2,059,169.36	1,180.39	CP 1023, DRILL HOLE IN N.E. FLANGE BOLT OF HYD.
5024	164,530.83	276,575.59	9,020.03	10,992.50	9,020.03	10,992.45	373,294.81	2,059,713.30	1,177.37	CP 1024, N.E. REBAR IN CONC. VAULT
5026	164,259.06	277,014.32	8,962.14	11,505.33	8,962.15	11,505.25	373,024.32	2,060,152.75	1,175.09	CP 1026, CONC. MONU. W/ ALUM. CAP
5027	164,297.10	277,033.22	9,004.61	11,506.13	9,004.61	11,506.05	373,062.41	2,060,171.54	1,175.27	CP 1027, CONC. MONU. W/ ALUM. CAP
5222	163,168.91	275,350.81	7,265.01	10,468.29	7,265.10	10,468.27	371,929.58	2,058,492.52	1,178.75	CP 222, CONC. MONU. W/ ALUM. CAP
5232	165,734.78	277,164.31	10,360.11	11,009.41	10,360.04	11,009.36	374,500.29	2,060,298.54	1,177.91	CP 232, CONC. MONU. W/ ALUM. CAP

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

DRAFT

Designed: JXT
Checked: JXT
Drawn: JLC
Submittal Date: 9/12/2016

GEI Consultants
3159 Voyager Drive
Green Bay, Wisconsin 54311
920-455-8200

WISCONSIN PUBLIC SERVICE CORPORATION
ROTHSCHILD, WISCONSIN

GEI Project 1609370

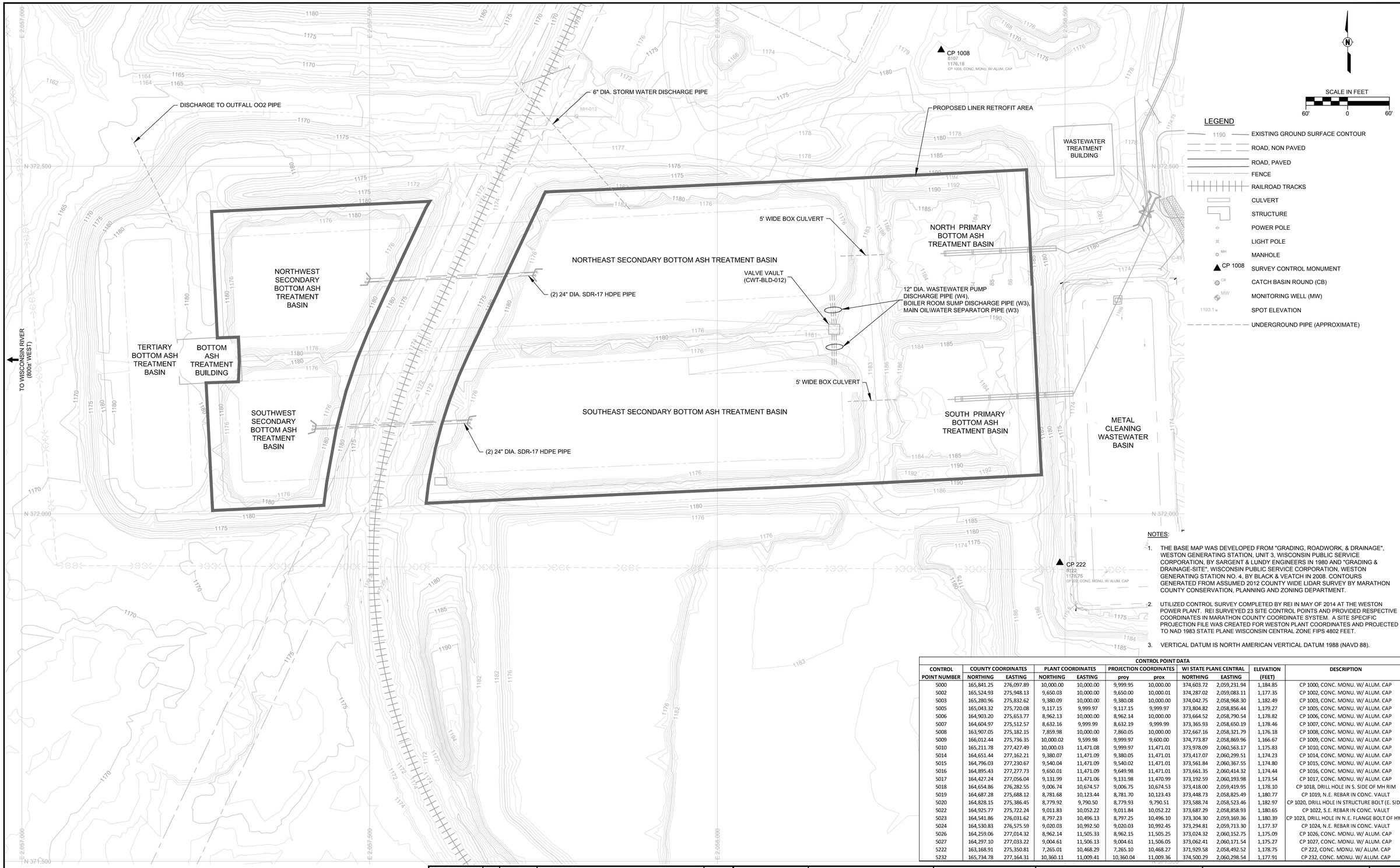
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

SITE LOCATION

DWG. NO. C-2

SHEET NO. 2

Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 C2.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



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5002	165,524.93	275,948.13	9,650.03	10,000.00	9,650.00	10,000.01	374,287.02	2,059,083.11	1,177.35	CP 1002, CONC. MONU. W/ ALUM. CAP
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5015	164,796.03	277,230.67	9,540.04	11,471.09	9,540.02	11,471.01	373,561.84	2,060,367.55	1,174.80	CP 1015, CONC. MONU. W/ ALUM. CAP
5016	164,895.43	277,277.73	9,650.01	11,471.09	9,649.98	11,471.01	373,661.35	2,060,414.32	1,174.44	CP 1016, CONC. MONU. W/ ALUM. CAP
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5022	164,925.77	275,722.24	9,011.83	10,052.22	9,011.84	10,052.22	373,687.29	2,058,858.93	1,180.65	CP 1022, S.E. REBAR IN CONC. VAULT
5023	164,541.86	276,031.62	8,797.23	10,496.13	8,797.25	10,496.10	373,304.30	2,059,169.36	1,180.39	CP 1023, DRILL HOLE IN N.E. FLANGE BOLT OF HYD.
5024	164,530.83	276,575.59	9,020.03	10,992.50	9,020.03	10,992.45	373,294.81	2,059,713.30	1,177.37	CP 1024, N.E. REBAR IN CONC. VAULT
5026	164,259.06	277,014.32	8,962.14	11,505.33	8,962.15	11,505.25	373,024.32	2,060,152.75	1,175.09	CP 1026, CONC. MONU. W/ ALUM. CAP
5027	164,297.10	277,033.22	9,004.61	11,506.13	9,004.61	11,506.05	373,062.41	2,060,171.54	1,175.27	CP 1027, CONC. MONU. W/ ALUM. CAP
5222	163,168.91	275,350.81	7,265.01	10,468.29	7,265.10	10,468.27	371,929.58	2,058,492.52	1,178.75	CP 222, CONC. MONU. W/ ALUM. CAP
5232	165,734.78	277,164.31	10,360.11	11,009.41	10,360.04	11,009.36	374,500.29	2,060,298.54	1,177.91	CP 232, CONC. MONU. W/ ALUM. CAP

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

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Submittal Date: 9/12/2016

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ROTHSCHILD, WISCONSIN

GEI Project 1609370

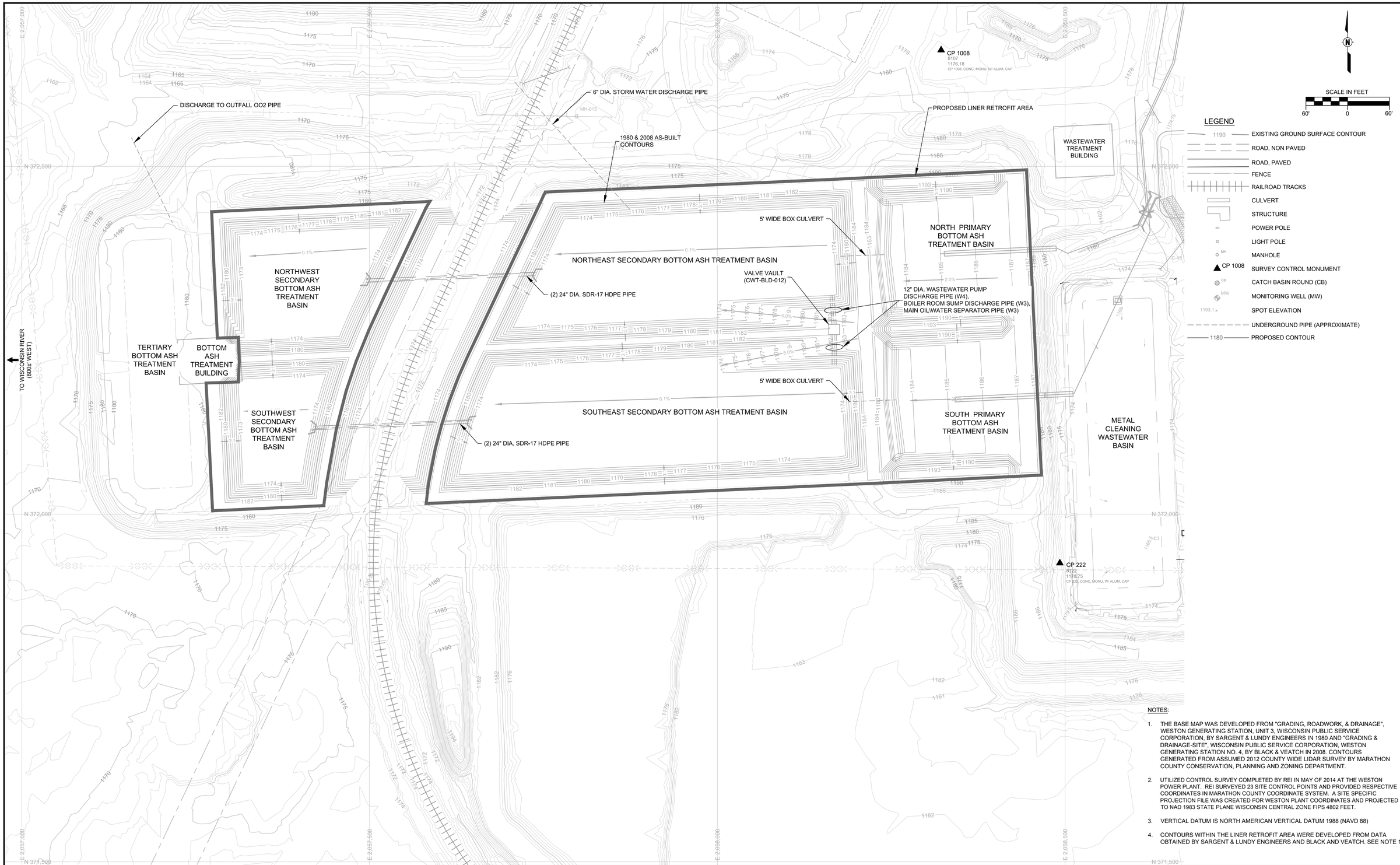
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

DWG. NO. C-3

EXISTING SITE CONDITIONS

SHEET NO. 3

Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



NOTES:

1. THE BASE MAP WAS DEVELOPED FROM "GRADING, ROADWORK, & DRAINAGE", WESTON GENERATING STATION, UNIT 3, WISCONSIN PUBLIC SERVICE CORPORATION, BY SARGENT & LUNDY ENGINEERS IN 1980 AND "GRADING & DRAINAGE-SITE", WISCONSIN PUBLIC SERVICE CORPORATION, WESTON GENERATING STATION NO. 4, BY BLACK & VEATCH IN 2008. CONTOURS GENERATED FROM ASSUMED 2012 COUNTY WIDE LIDAR SURVEY BY MARATHON COUNTY CONSERVATION, PLANNING AND ZONING DEPARTMENT.
2. UTILIZED CONTROL SURVEY COMPLETED BY REI IN MAY OF 2014 AT THE WESTON POWER PLANT. REI SURVEYED 23 SITE CONTROL POINTS AND PROVIDED RESPECTIVE COORDINATES IN MARATHON COUNTY COORDINATE SYSTEM. A SITE SPECIFIC PROJECTION FILE WAS CREATED FOR WESTON PLANT COORDINATES AND PROJECTED TO NAD 1983 STATE PLANE WISCONSIN CENTRAL ZONE FIPS 4802 FEET.
3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88)
4. CONTOURS WITHIN THE LINER RETROFIT AREA WERE DEVELOPED FROM DATA OBTAINED BY SARGENT & LUNDY ENGINEERS AND BLACK AND VEATCH. SEE NOTE 1.

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

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Submittal Date: 9/12/2016

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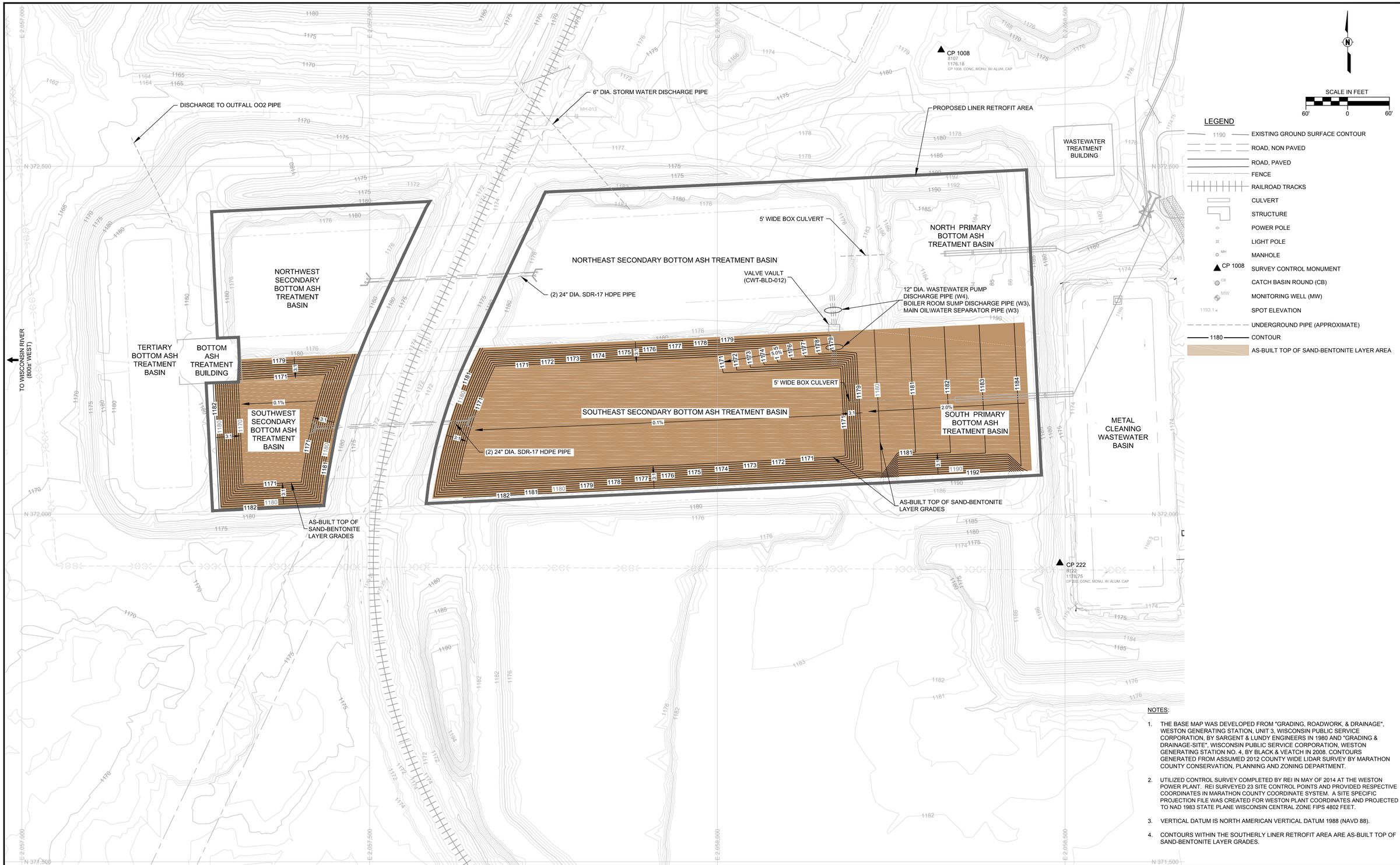
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

SARGENT & LUNDY AND BLACK & VEATCH AS-BUILT GRADES

DWG. NO. C-4

SHEET NO. 4

Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



NOTES:

1. THE BASE MAP WAS DEVELOPED FROM "GRADING, ROADWORK, & DRAINAGE", WESTON GENERATING STATION, UNIT 3, WISCONSIN PUBLIC SERVICE CORPORATION, BY SARGENT & LUNDY ENGINEERS IN 1980 AND "GRADING & DRAINAGE-SITE", WISCONSIN PUBLIC SERVICE CORPORATION, WESTON GENERATING STATION NO. 4, BY BLACK & VEATCH IN 2008. CONTOURS GENERATED FROM ASSUMED 2012 COUNTY WIDE LIDAR SURVEY BY MARATHON COUNTY CONSERVATION, PLANNING AND ZONING DEPARTMENT.
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3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
4. CONTOURS WITHIN THE SOUTHERLY LINER RETROFIT AREA ARE AS-BUILT TOP OF SAND-BENTONITE LAYER GRADES.

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

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GEI Project 1609370

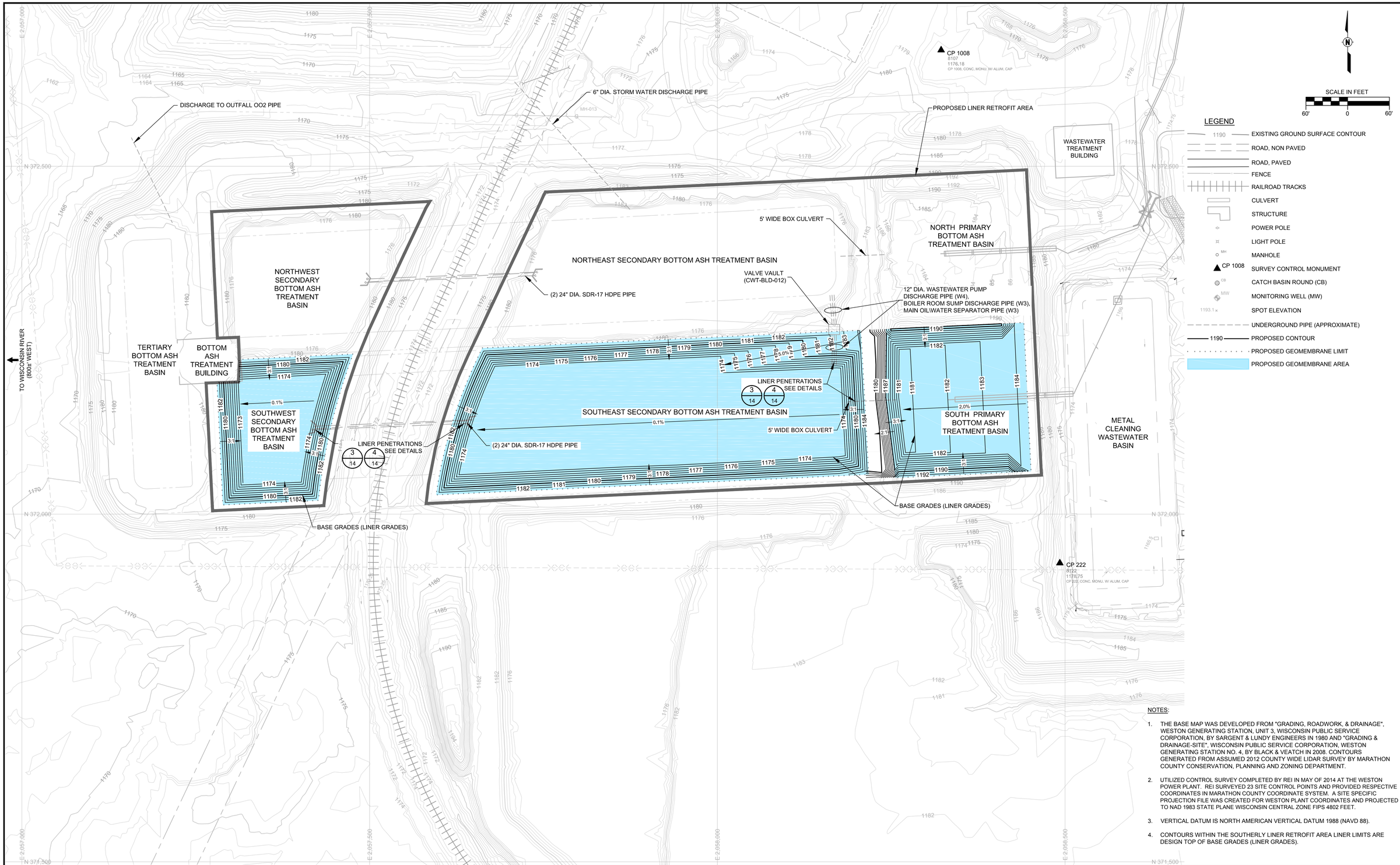
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

DWG. NO. C-5

AS-BUILT TOP OF SAND-BENTONITE LAYER - SOUTH PONDS

SHEET NO. 5

Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



NOTES:

1. THE BASE MAP WAS DEVELOPED FROM "GRADING, ROADWORK, & DRAINAGE", WESTON GENERATING STATION, UNIT 3, WISCONSIN PUBLIC SERVICE CORPORATION, BY SARGENT & LUNDY ENGINEERS IN 1980 AND "GRADING & DRAINAGE-SITE", WISCONSIN PUBLIC SERVICE CORPORATION, WESTON GENERATING STATION NO. 4, BY BLACK & VEATCH IN 2008. CONTOURS GENERATED FROM ASSUMED 2012 COUNTY WIDE LIDAR SURVEY BY MARATHON COUNTY CONSERVATION, PLANNING AND ZONING DEPARTMENT.
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3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
4. CONTOURS WITHIN THE SOUTHERLY LINER RETROFIT AREA LINER LIMITS ARE DESIGN TOP OF BASE GRADES (LINER GRADES).

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

DRAFT

Designed: JXT
Checked: JXT
Drawn: JLC
Submittal Date: 9/12/2016

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GEI Project 1609370

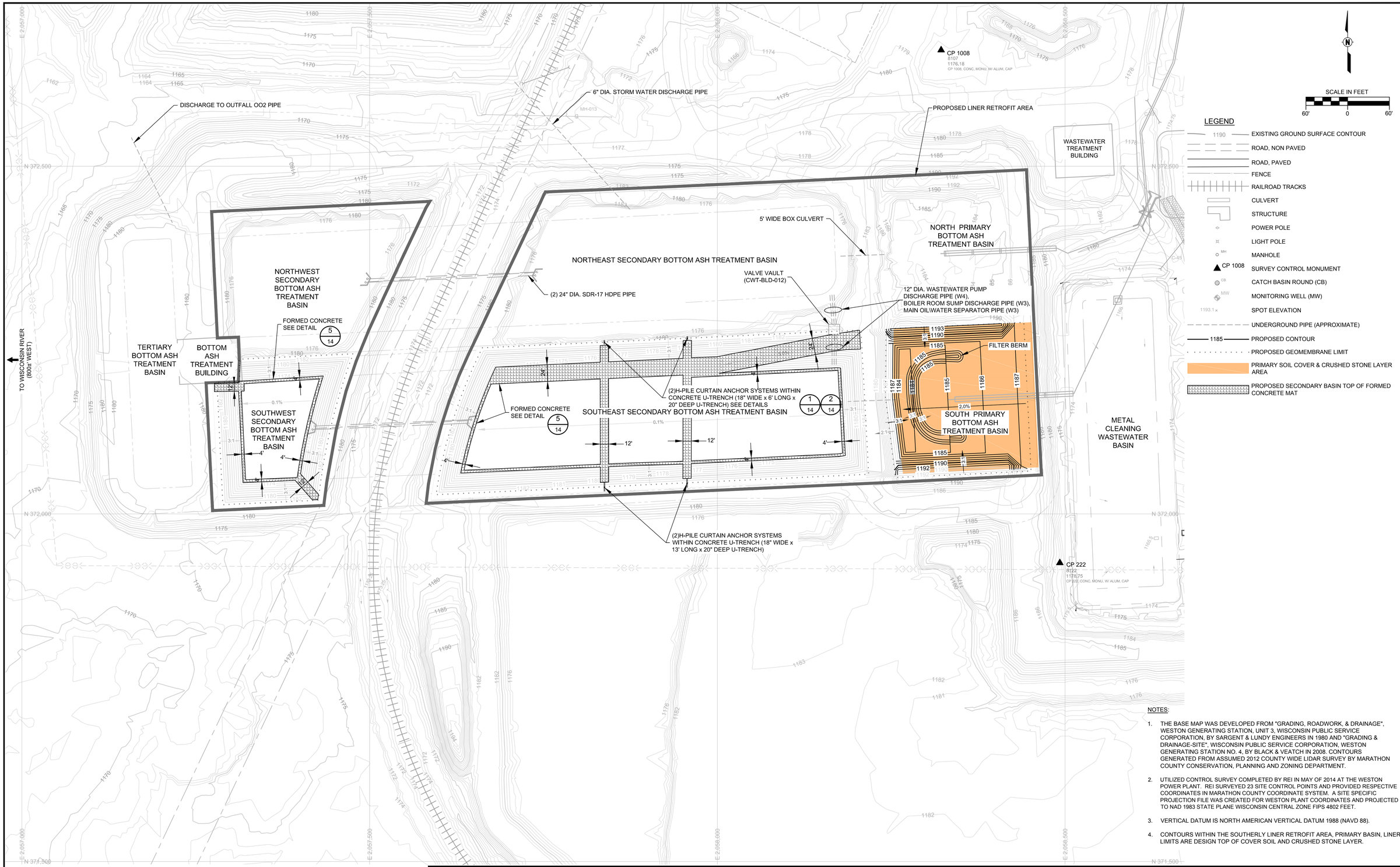
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

DWG. NO. C-6

BASE GRADES (LINER GRADES) - SOUTH PONDS

SHEET NO. 6

Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



NOTES:

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3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
4. CONTOURS WITHIN THE SOUTHERLY LINER RETROFIT AREA, PRIMARY BASIN, LINER LIMITS ARE DESIGN TOP OF COVER SOIL AND CRUSHED STONE LAYER.

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

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Designed: JXT
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Drawn: JLC
Submittal Date: 9/12/2016

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ROTHSCHILD, WISCONSIN

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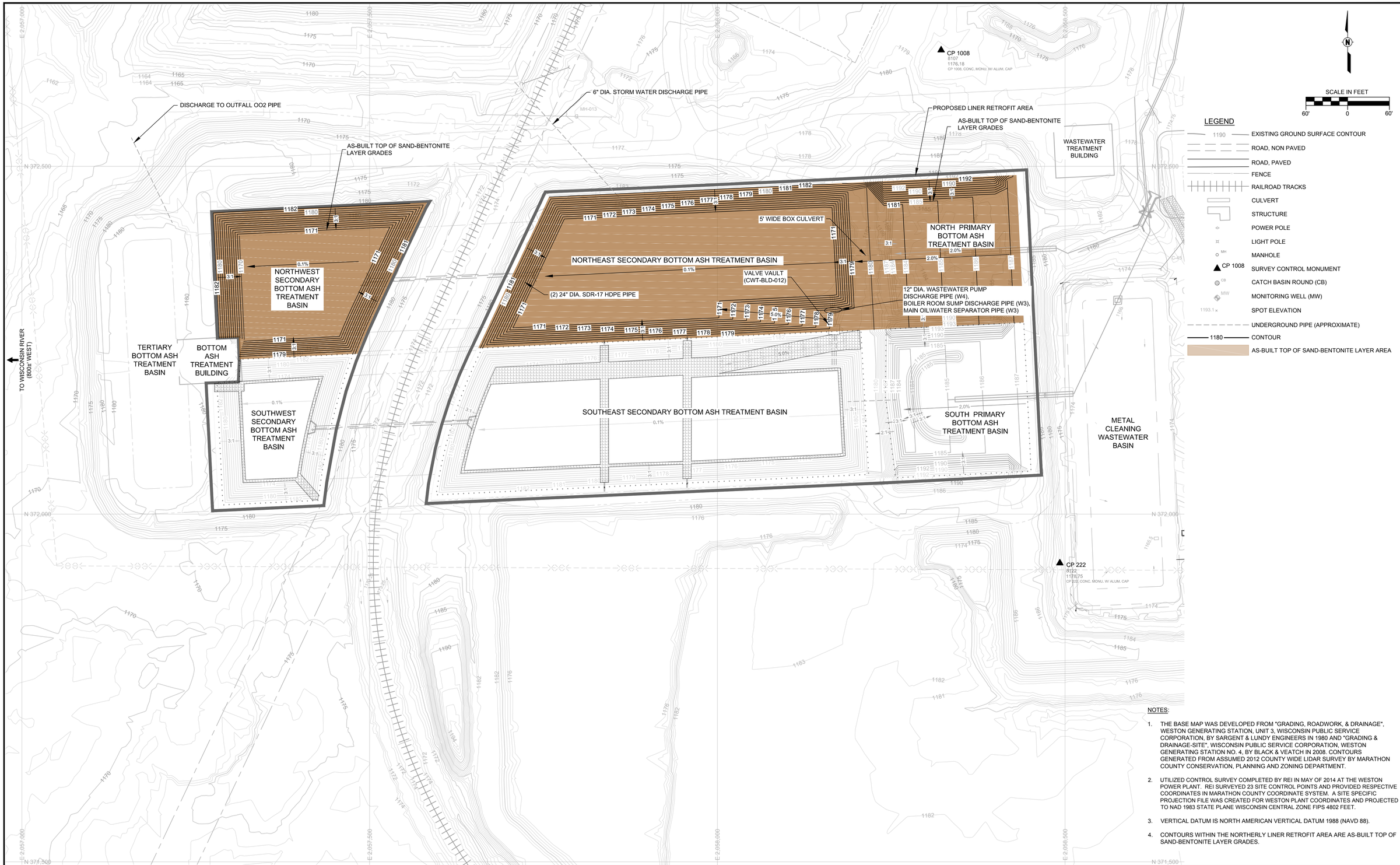
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

DWG. NO. C-7

PRIMARY BASIN SOIL COVER AND STONE LAYER, SECONDARY BASIN TOP OF FORMED CONCRETE MAT - SOUTH PONDS

SHEET NO. 7

Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



NOTES:

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3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
4. CONTOURS WITHIN THE NORTHERLY LINER RETROFIT AREA ARE AS-BUILT TOP OF SAND-BENTONITE LAYER GRADES.

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

DRAFT

Designed: JXT
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Drawn: JLC
Submittal Date: 9/12/2016

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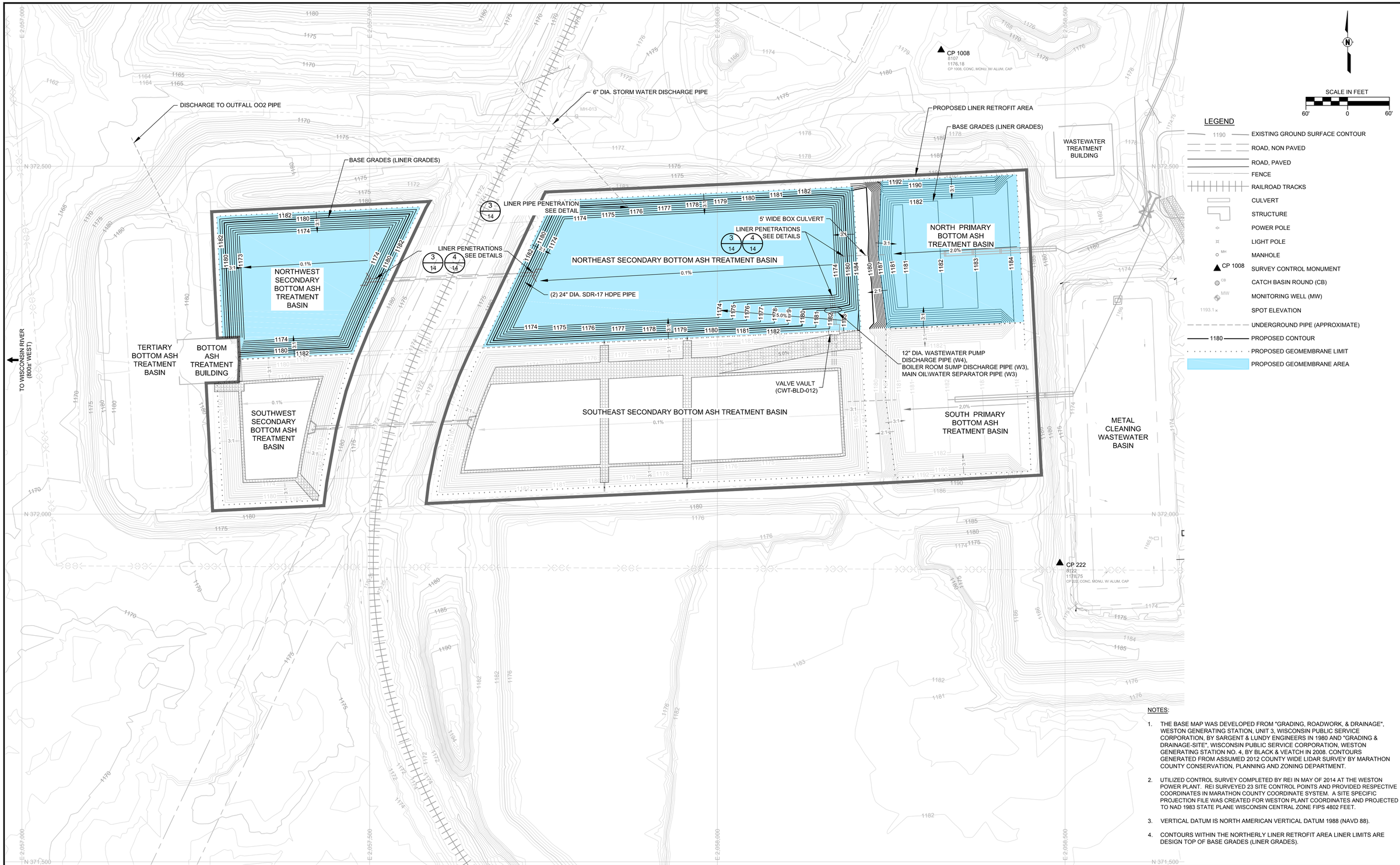
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

DWG. NO. C-8

AS-BUILT TOP OF SAND-BENTONITE LAYER - NORTH PONDS

SHEET NO. 8

Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



NOTES:

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3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD 88).
4. CONTOURS WITHIN THE NORTHERLY LINER RETROFIT AREA LINER LIMITS ARE DESIGN TOP OF BASE GRADES (LINER GRADES).

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

DRAFT

Designed: JXT
Checked: JXT
Drawn: JLC
Submittal Date: 9/12/2016

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ROTHSCHILD, WISCONSIN

GEI Project 1609370

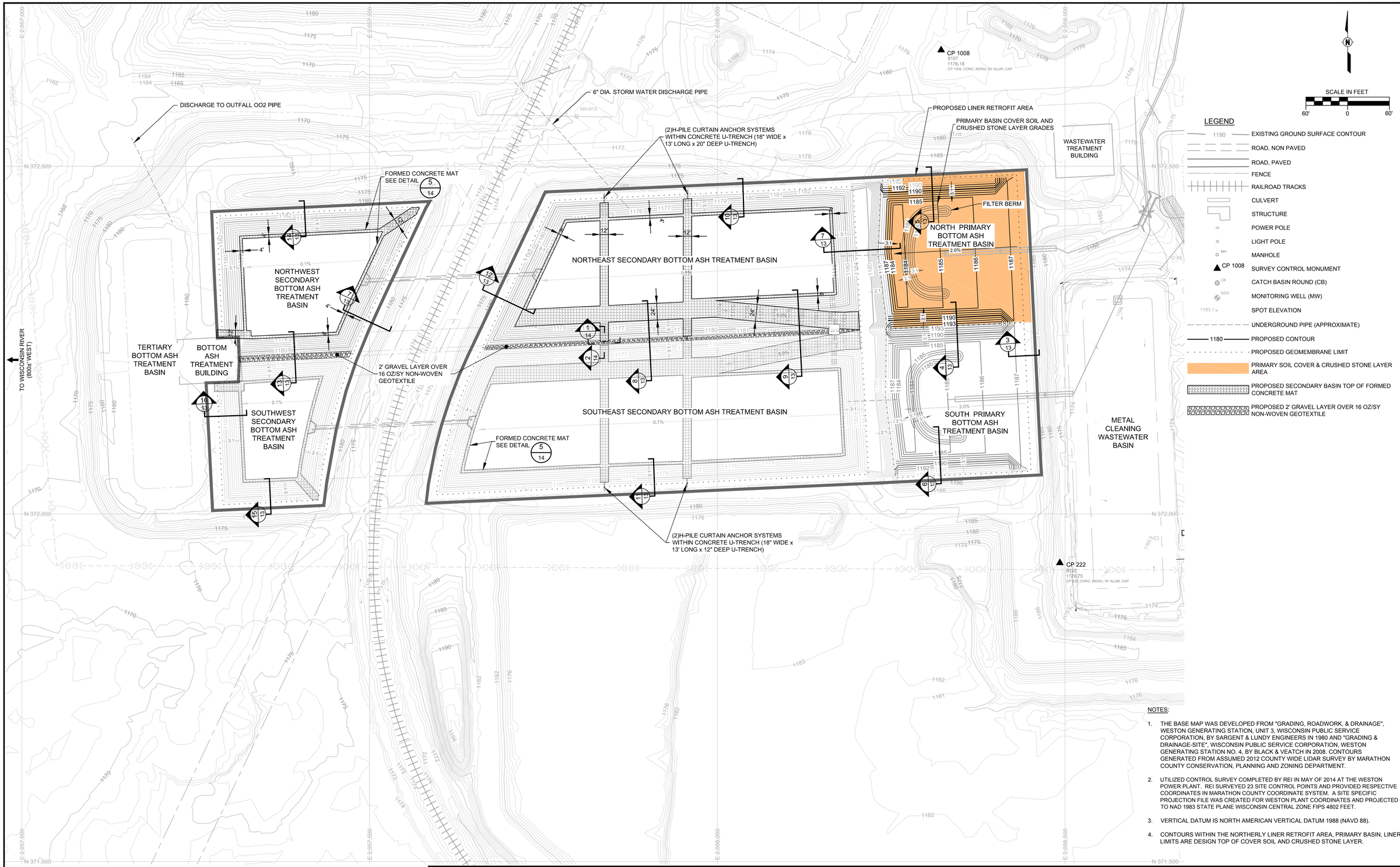
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

DWG. NO. C-9

BASE GRADES (LINER GRADES) - NORTH PONDS

SHEET NO. 9

Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



NOTES:

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4. CONTOURS WITHIN THE NORTHERLY LINER RETROFIT AREA, PRIMARY BASIN, LINER LIMITS ARE DESIGN TOP OF COVER SOIL AND CRUSHED STONE LAYER.

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

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ROTHSCHILD, WISCONSIN

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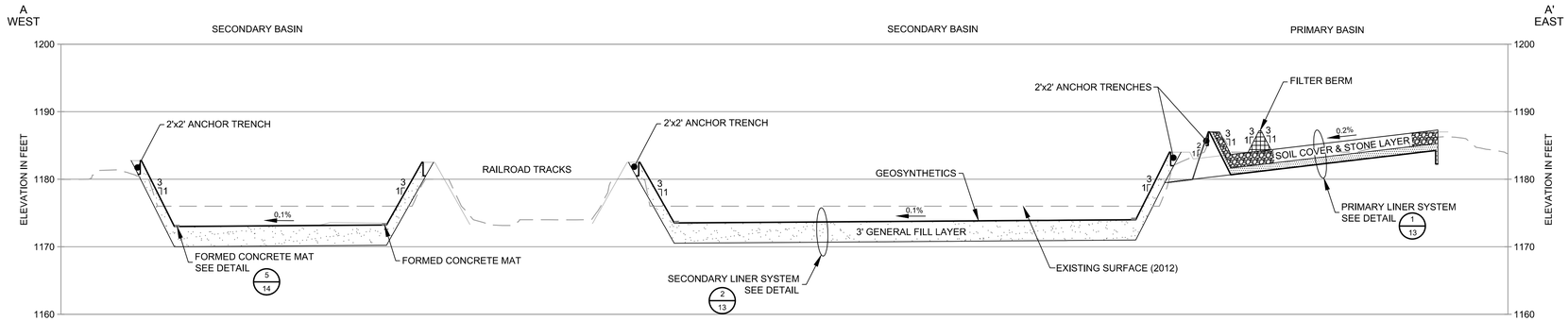
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

DWG. NO. C-10

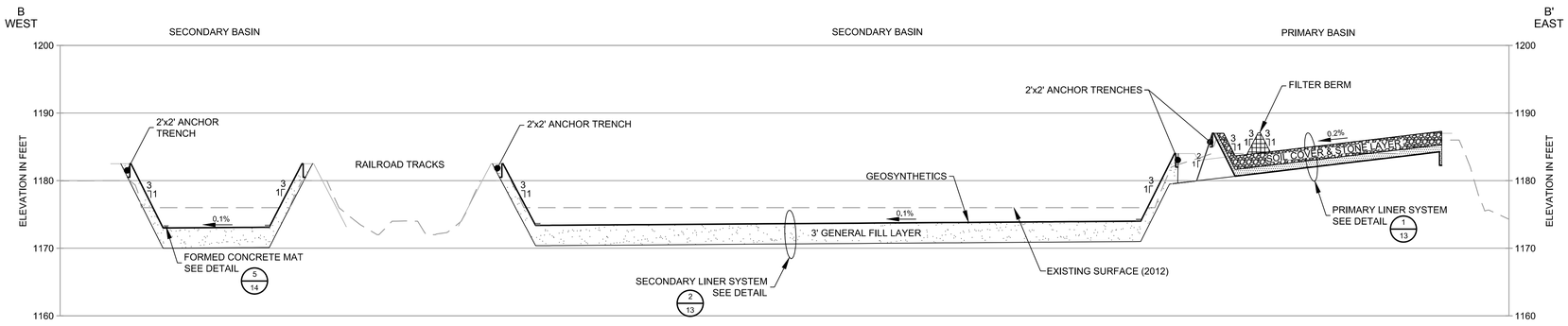
PRIMARY BASIN SOIL COVER AND STONE LAYER, SECONDARY BASIN TOP OF FORMED CONCRETE MAT - NORTH PONDS

SHEET NO. 10

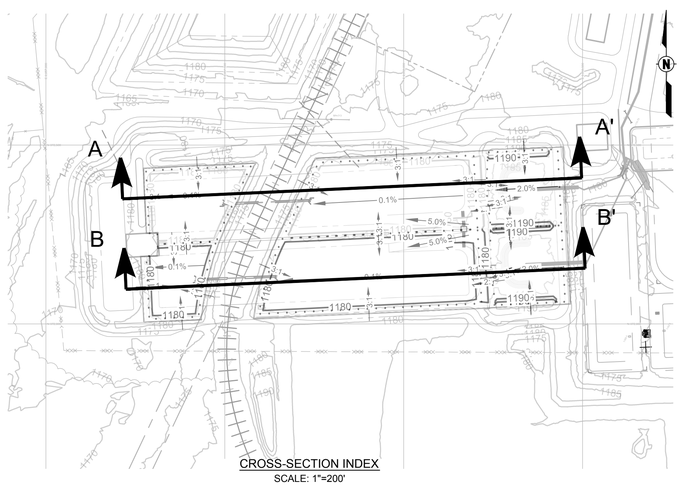
Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



CROSS-SECTION A-A'
SCALE: HORIZONTAL 1"=60'
VERTICAL 1"=10'



CROSS-SECTION B-B'
SCALE: HORIZONTAL 1"=60'
VERTICAL 1"=10'



CROSS-SECTION INDEX
SCALE: 1"=200'

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

DRAFT

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Checked: JXT
Drawn: JLC
Submittal Date: 9/12/2016

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WISCONSIN PUBLIC SERVICE CORPORATION
ROTHSCHILD, WISCONSIN

GEI Project 1609370

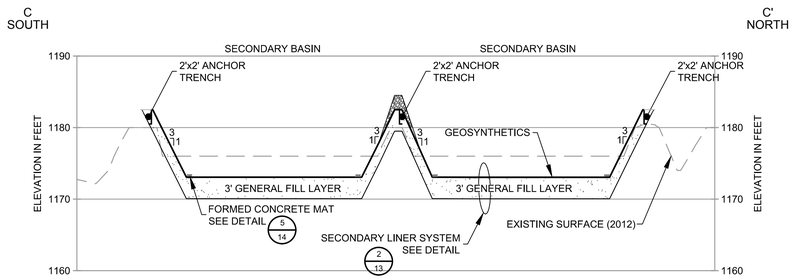
WESTON UNITS 3 & 4 BOTTOM ASH BASINS
LINER RETROFIT
ROTHSCHILD, WISCONSIN

CROSS-SECTIONS A-A' & B-B'

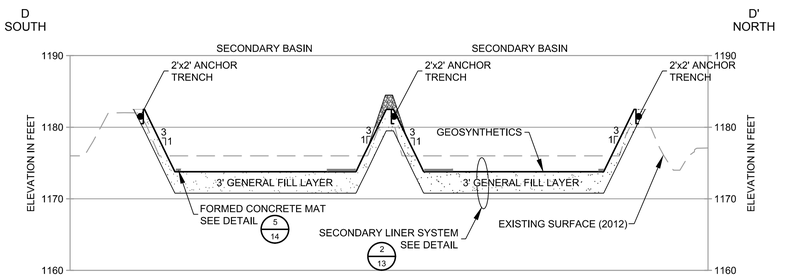
DWG. NO. C-11

SHEET NO. 11

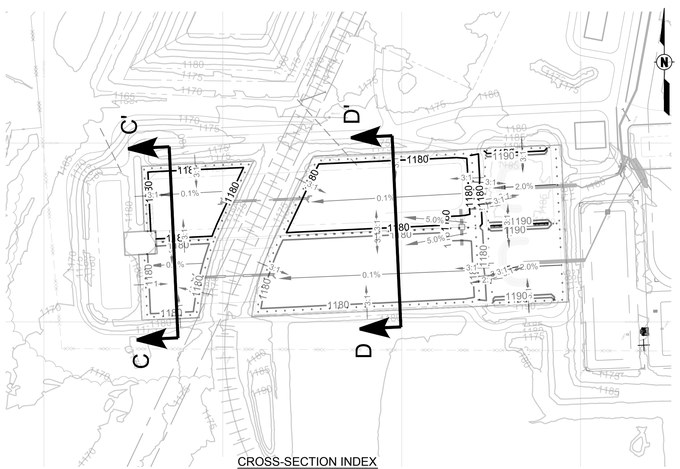
Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



CROSS-SECTION C-C'
SCALE: HORIZONTAL 1"=60'
VERTICAL 1"=10'



CROSS-SECTION D-D'
SCALE: HORIZONTAL 1"=60'
VERTICAL 1"=10'



CROSS-SECTION INDEX
SCALE: 1"=200'

Attention:

0 1"

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NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

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ROTHSCHILD, WISCONSIN

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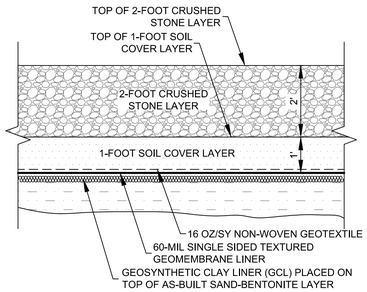
WESTON UNITS 3 & 4 BOTTOM ASH BASINS
LINER RETROFIT
ROTHSCHILD, WISCONSIN

CROSS-SECTIONS C-C' & D-D'

DWG. NO. C-12

SHEET NO. 12

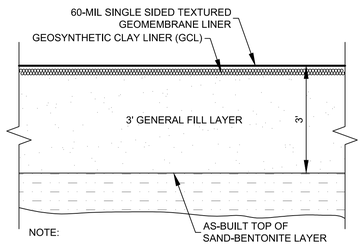
Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



NOTE:

60-MIL SINGLE SIDED TEXTURED GEOMEMBRANE LINER SHALL BE TEXTURED SIDE DOWN.

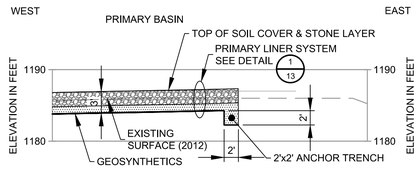
1/13 PRIMARY BASIN LINER DETAIL
SCALE: 1"=2'



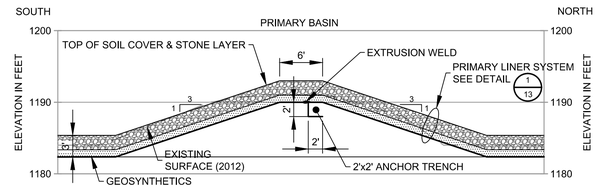
NOTE:

60-MIL SINGLE SIDED TEXTURED GEOMEMBRANE LINER SHALL BE TEXTURED SIDE DOWN.

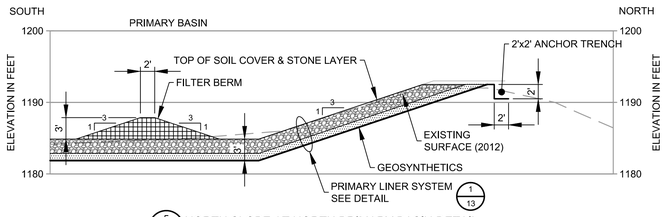
2/13 SECONDARY BASIN LINER DETAIL
SCALE: 1"=2'



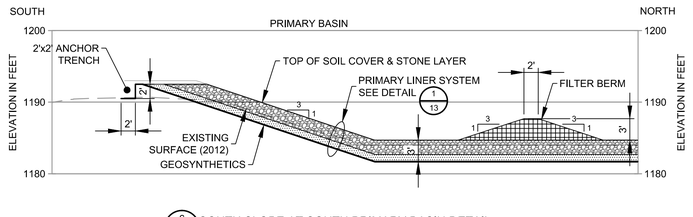
3/13 EAST SLOPE AT SOUTH PRIMARY BASIN DETAIL
SCALE: 1"=10'



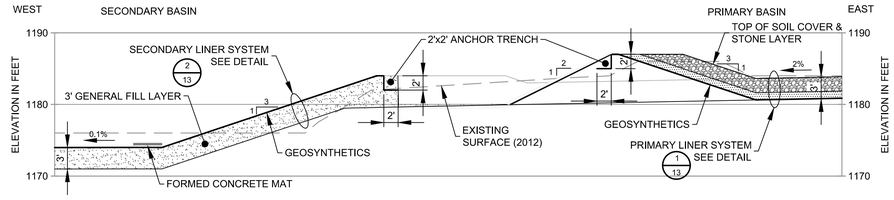
4/13 INTERIOR BERM AT PRIMARY BASIN DETAIL
SCALE: 1"=10'



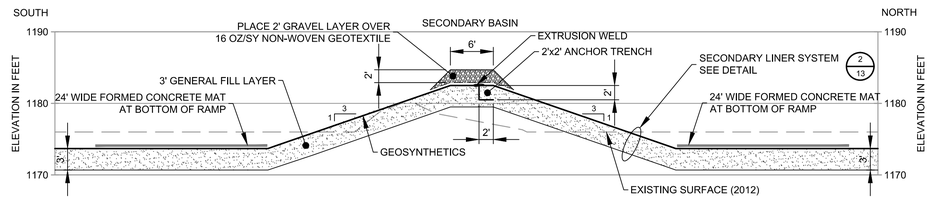
5/13 NORTH SLOPE AT NORTH PRIMARY BASIN DETAIL
SCALE: 1"=10'



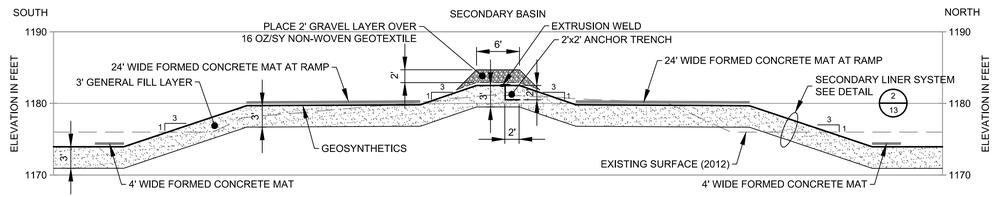
6/13 SOUTH SLOPE AT SOUTH PRIMARY BASIN DETAIL
SCALE: 1"=10'



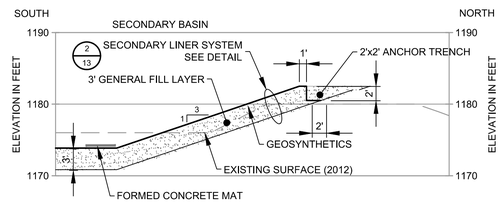
7/13 WEST SLOPE AT NORTH PRIMARY BASIN DETAIL
SCALE: 1"=10'



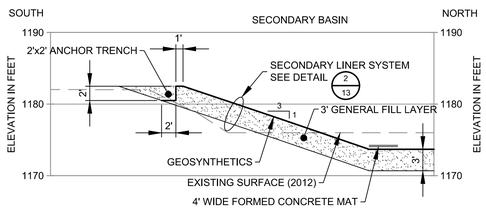
8/13 INTERIOR BERM AT SECONDARY BASIN DETAIL
SCALE: 1"=10'



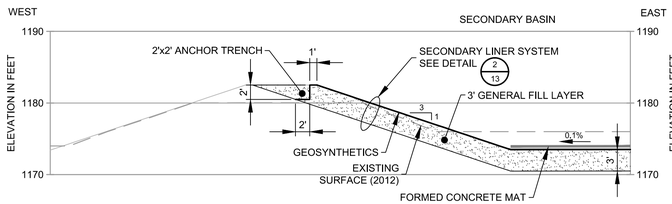
9/13 INTERIOR BERM AT RAMPS SECONDARY BASIN DETAIL
SCALE: 1"=10'



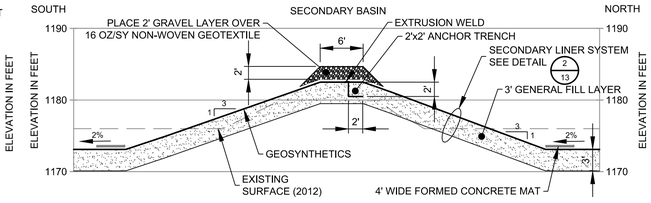
10/13 NORTH SLOPE AT NORTHEAST SECONDARY BASIN DETAIL
SCALE: 1"=10'



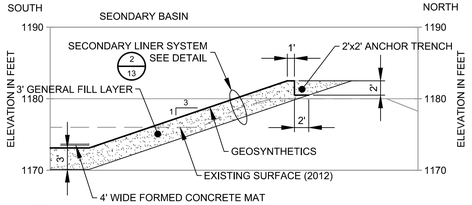
11/13 SOUTH SLOPE AT SOUTHEAST SECONDARY BASIN DETAIL
SCALE: 1"=10'



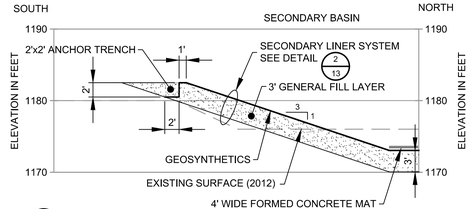
12/13 WEST SLOPE AT NORTHEAST SECONDARY BASIN DETAIL
SCALE: 1"=10'



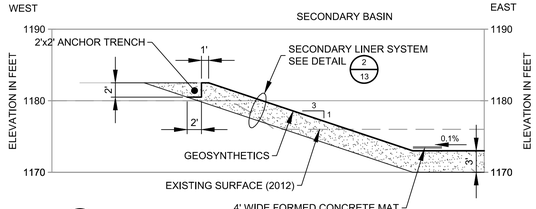
13/13 INTERIOR BERM AT WEST SECONDARY BASIN DETAIL
SCALE: 1"=10'



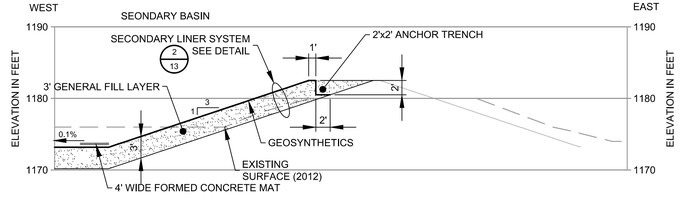
14/13 NORTH SLOPE AT NORTHWEST SECONDARY BASIN DETAIL
SCALE: 1"=10'



15/13 SOUTH SLOPE AT SOUTHWEST SECONDARY BASIN DETAIL
SCALE: 1"=10'



16/13 WEST SLOPE AT SOUTHWEST SECONDARY BASIN DETAIL
SCALE: 1"=10'



17/13 EAST SLOPE AT NORTHWEST SECONDARY BASIN DETAIL
SCALE: 1"=10'

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

DRAFT

Designed: JXT
Checked: JXT
Drawn: JLC
Submittal Date: 9/12/2016

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WISCONSIN PUBLIC SERVICE CORPORATION
ROTHSCHILD, WISCONSIN

GEI Project 1609370

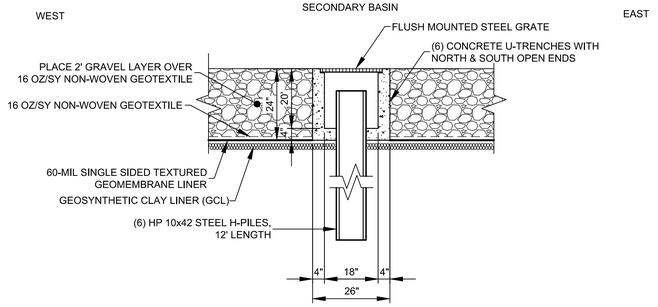
WESTON UNITS 3 & 4 BOTTOM ASH BASINS LINER RETROFIT
ROTHSCHILD, WISCONSIN

DETAILS

DWG. NO. C-13

SHEET NO. 13

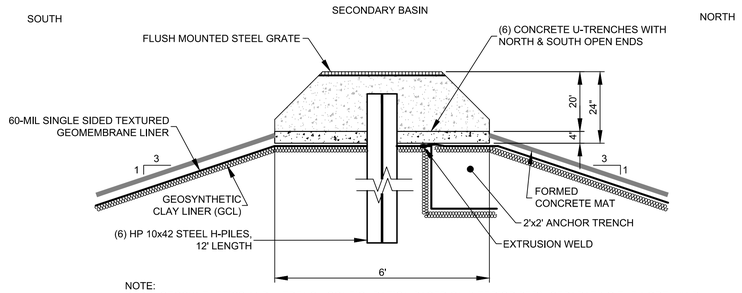
Filename: J:\LANDFILLS\WE - WESTON CCR PONDS\LINER RETRO\DWG\1609370 WORK.DWG Last saved by: JCALAWAY Last Plotted: 2016-09-13



(LOOKING NORTH)

1/14 SECONDARY BASIN H-PILE AND U-TRENCH DETAIL

SCALE: 1"=2'

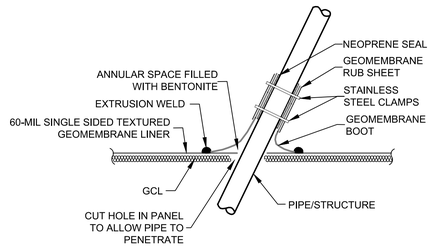


NOTE:
BERM, GEOSYNTHETICS AND U-TRENCH CONFIGURATION BASED ON INTERIOR BERM SEPARATING THE NORTH AND SOUTH SECONDARY BASINS. BERM, GEOSYNTHETICS AND U-TRENCH CONFIGURATION VARIES PER LOCATION.

(LOOKING WEST)

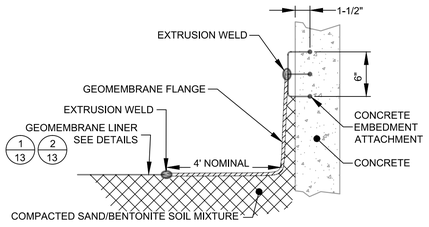
2/14 SECONDARY BASIN H-PILE AND U-TRENCH DETAIL

SCALE: 1"=2'

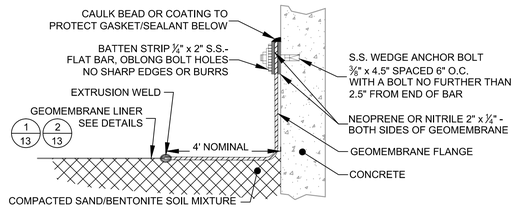


3/14 LINER PENETRATION PIPE BOOT DETAIL

NOT TO SCALE



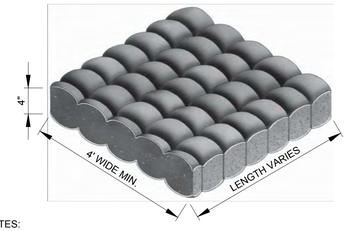
CONCRETE EMBEDMENT ATTACHMENT OPTION 1



MECHANICAL CONCRETE ATTACHMENT OPTION 2

4/14 GEOSYNTHETICS TO CONCRETE OPTIONS DETAIL

NOT TO SCALE



NOTES:

1. FORMED CONCRETE MAT WIDTH SHALL BE 4' WIDE MINIMUM FROM THE TOE OF SLOPE TOWARDS THE INTERIOR FLOOR. RAMP WIDTH SHALL BE 24' WIDE MINIMUM. THE LENGTH FOLLOWS THE TOE AND SHALL BE A CLOSED LOOP.
2. SEE PLANS SHEETS C-7 AND C-10 FOR FORMED CONCRETE MAT LAYOUT.

5/14 FORMED CONCRETE MAT DETAIL

NOT TO SCALE

Attention:

0 1"

If this scale bar does not measure 1" then drawing is not original scale.

NO.	DATE	ISSUE/REVISION	APP
0	X	X	X

DRAFT

Designed: JXT
Checked: JXT
Drawn: JLC
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WESTON UNITS 3 & 4 BOTTOM ASH BASINS
LINER RETROFIT
ROTHSCHILD, WISCONSIN

DETAILS

DWG. NO. C-14

SHEET NO. 14

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